Asthma + Respiratory
FOUNDATION NZ

NEW ZEALAND COPD GUIDELINES

2025 UPDATE

New Zealand COPD Guidelines: 2025 update

CONTENTS

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ABSTRACT

This update revises the Asthma and Respiratory Foundation New Zealand's *COPD Guidelines* in line with the latest national and international evidence. The aim is to provide simple, practical, evidence-based recommendations for the diagnosis, assessment, and management of chronic obstructive pulmonary disease (COPD) in clinical practice in a New Zealand context. The intended users are health professionals responsible for delivering acute and chronic COPD care in community and hospital settings, and those responsible for the training of such health professionals.

Chronic obstructive pulmonary disease (COPD) encompasses chronic bronchitis, emphysema, and chronic airflow obstruction. It is characterised by persistent respiratory symptoms and airflow limitation that is not fully reversible.

COPD is associated with a range of pathological changes in the lung. The airflow limitation is usually progressive and associated with an inflammatory response to inhaled noxious particles or gases.[1,2]

Symptoms include cough, sputum production, shortness of breath, and wheeze. At first, these are often ascribed to a "smoker's cough", getting old, or being unfit, leading to delayed diagnosis. Cough and sputum production may precede wheeze by many years. Symptoms may worsen and become severe and chronic, but not all of those with cough and wheeze advance to progressive disease.

Patients with COPD often have exacerbations, when symptoms become much worse and require more intensive treatment. These exacerbations have a significant morbidity and mortality.

Many patients have extra-pulmonary effects and important comorbidities that contribute to the severity of the disease. Important comorbidities include asthma, bronchiectasis, lung cancer, and cardiovascular disease. COPD can lead to debilitation, polycythaemia, osteoporosis, sarcopenia, depression and anxiety. Urinary incontinence related to cough is common.

COPD is often confused with asthma. They are separate diseases, although some asthmatics develop irreversible airflow obstruction and some patients with COPD have a mixed inflammatory pattern. Asthma–COPD overlap (ACO) may be present when it can be difficult to distinguish between the diseases, or in patients who have both conditions.[3]

Guidelines review

The COPD-X Guidelines 2024[1] and the Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2025 Report[2] were reviewed to update these Guidelines. A systematic review was not performed, although relevant references were reviewed when necessary.

Readers are referred to the COPD-X and GOLD documents for the detail that they provide. References are only provided when they differ from the COPD-X guidelines or GOLD. Where there are several medications, these are listed alphabetically and the order does not indicate a preference.

Grading

No levels of evidence grades are provided, due to the short format of the Guidelines. Readers are referred to the COPD-X and GOLD documents for the levels of evidence on which the recommendations are based.

Guideline development group

This group included representatives from a range of professions and disciplines relevant to the scope of the guidelines.

Robert Hancox, Stuart Jones, Christina Baggott, James Fingleton, Syed Hussain, Sandra Hotu, and Wendy McRae are respiratory physicians. Justin Travers is a respiratory and general physician. Robert Young is a general physician. Sarah Rhodes and Sarah Candy are respiratory physiotherapists. Cheryl Davies is manager of the Tū Kotahi Maori Asthma Trust. Nicola Corna and Betty Poot are nurse practitioners. Jim Reid is a general practitioner. Joanna Turner is a pharmacist and education and development manager at the Asthma and Respiratory Foundation New Zealand. Murray Moore is a patient representative.

Peer review

The draft guidelines were peer-reviewed by a wide range of respiratory health experts and representatives from key professional organisations, including the Clinical Advisory Pharmacists Association, General Practice New Zealand, Hutt Hospital Respiratory Department, Occupational Therapy Board of New Zealand, Physiotherapy New Zealand, Royal New Zealand College of General Practitioners, members of the Royal Australasian College of Physicians and the Thoracic Society of Australia and New Zealand, the Tō tātou reo advance care planning programme, Wellington Free Ambulance.

All feedback received was discussed by the Guideline development group, who decided on the final wording.

Dissemination plan

The guidelines will be translated into tools for practical use by health professionals and used to update health pathways and existing consumer resources. A summary of the key messages and highlights in the guidelines will be published in the New Zealand Medical Journal. The full guidelines will be available on the Asthma and Respiratory Foundation New Zealand (ARFNZ) website, as well as being disseminated widely via a range of publications, training opportunities, and other communication channels to health professionals, primary health organisations, hospitals, and training organisations for health professionals. A lay summary of the guidelines and consumer resources will be published on the ARFNZ website.

Implementation

The implementation of the guidelines by organisations will require communication, education, and training strategies.

Expiry date

The guidelines will be reviewed in 2030, or earlier if new evidence emerges to require an update to the recommendations.

COPD in Māori

Māori experience inequitable health outcomes compared with non-Māori. Obligations to address these inequitable health outcomes are underpinned by Te Tiriti o Waitangi and other national and international declarations and include equitable access to health services in ways that best meet their needs.

- COPD among Māori is more common, severe, and fatal than among non-Māori, non-Pacific, and non-Asian peoples: severe COPD and hospitalisation rates are 3 to 4 times more common and mortality is twice as high.[3]
- Māori whānau also have greater exposure to environmental triggers for COPD, such as smoking, vaping, secondhand smoke exposure, and substandard housing.
- Māori have worse lung function for given levels of smoking and the burden of COPD affects Māori 15-20 years younger than non-Māori.[4]

Reduction and elimination of these inequities requires an approach which begins with addressing the basic causes of inequities, stemming from colonisation and racism.[5] Broader determinants of health need to be considered, such as substandard housing and overcrowding, financial, and transport difficulties with referrals made to support services.

To effectively manage COPD among Māori, it is crucial to optimise access to quality healthcare services which are delivered in a culturally safe way. Engagement can be optimised with whakawhanaungatanga (creating culturally meaningful connections). This is highly valued by Māori, as it emphasises the importance of creating bonds through shared experiences and mutual respect. Health information which is understandable, and self-management support, should be delivered within a therapeutic alliance. When mainstream pulmonary rehabilitation programmes lack culturally appropriate practices, it can deter Māori from participating.[6] Ensuring cultural safety and adopting a pro-equity approach are essential to overcoming these barriers.

It is highly recommended that:

- Clinical audits and quality improvement activities be implemented as they are necessary for monitoring and improving COPD care and outcomes for Māori whānau.
- Healthcare providers should support staff to develop cultural safety skills for engaging Māori with COPD and their whānau.
- A systematic approach to health literacy and COPD education for Māori whānau is followed.
- Assess patients using a Māori model of care: https://www.health.govt.nz/maori-health/maori-health-models.

Integrating Māori leadership in COPD management programmes, including pulmonary rehabilitation, can significantly enhance the effectiveness, accessibility, and cultural appropriateness of these initiatives, ultimately leading to better health outcomes for Māori with COPD.

COPD in Pacific peoples

Pacific peoples in Aotearoa New Zealand face COPD health inequities due to historical and socio-economic determinants. Pacific people experience a disproportionate burden of COPD, with hospitalisation rates about 2 times higher than non-Māori, non-Pacific New Zealanders.[3]

Although Pacific peoples are diverse in culture, language, and tradition, there are shared values that are important to consider in the healthcare setting. 'Teu le va' refers to the Pacific concept of actively valuing and nurturing relationships. This can be developed by health professionals in the clinical setting through making meaningful connections, sharing experiences, and building rapport with patients. Pacific models of health can help health professionals to engage Pacific patients and their families in these talanoa (discussions) in order to empower them in knowledge and management of COPD.[7]

To effectively address the disproportionate burden of COPD among Pacific peoples, targeted recommendations are essential:

- Recognise Pacific peoples as a high-risk group for COPD and ensure they receive collaborative and targeted care, with a family-centered approach to self-management.
- Health professionals should use the concept of 'Teu le va' and build connection with patients and their families.
- The approach should include addressing wider determinants of health risk factors such as substandard housing, overcrowding, health literacy, language barriers, obesity, smoking, vaping, and poor access to pulmonary rehabilitation and healthcare services.
- Healthcare providers should consider using a Pacific model of health, such as a Fonofale model, which encompasses a holistic approach to health: www.health.govt.nz/strategies-initiatives/health-strategies/te-mana-ola-the-pacific-health-strategy.[7]

Pathogenesis

Tobacco smoking remains the most important cause of COPD. Most smokers will develop airways changes, about half will develop airflow limitation, and up to 20% will develop significant disability.

Other potential risk factors include chronic exposures to vapours, gases, dust or fumes, indoor and outdoor air pollution, inhaled recreational substances, and environmental tobacco smoke.
It is not yet clear whether smoking cannabis causes COPD similar to tobacco, although it often leads to symptoms of bronchitis. There is now longitudinal evidence suggesting that vaping causes COPD, even in non-smokers, with recent meta-analyses suggesting a 50% higher risk of COPD in people who vape.[8,9]
Some people develop COPD without smoking or apparent exposures. COPD may also develop in patients with other chronic lung diseases such as asthma. Impaired lung growth, leading to a relatively low peak young-adult lung function, increases the risk of COPD in later life. It is uncertain if the clinical features of COPD associated with impaired lung function growth or asthma are the same as COPD due to smoking and other exposures.

The inflammatory process in COPD is characterised by high numbers of neutrophils, macrophages, and T-lymphocytes in the airways and lung parenchyma. This inflammation leads to narrowing of peripheral airways and destruction of alveoli, causing airflow obstruction and decreased gas transfer.

Inflammation, fibrosis, and sputum production in small airways causes air trapping during expiration leading to hyperinflation. This reduces inspiratory capacity and causes shortness of breath on exercise.

In patients presenting at a young age (particularly those younger than 40 years of age), alpha-1 antitrypsin deficiency should be considered. This genetic defect causes a reduction in the major anti-protease in lung parenchyma, leaving the lung susceptible to the destructive effects of neutrophil elastase and other endogenous proteases, which are released as part of the inflammatory response to smoking.

Diagnosis

A diagnosis of COPD should be considered in patients with a history of exposure to smoking or other noxious agents presenting with respiratory symptoms, including chronic cough, sputum production, shortness of breath or wheeze: particularly in those above the age of 40 years. There is both underdiagnosis and misdiagnosis of COPD in the community. There is a risk of inappropriate treatment in both scenarios.

Spirometry demonstrating the presence of airflow obstruction with $FEV_1/FVC < 0.7$ is required to formally diagnose COPD (see below). In light or never-smokers without a history of exposure to other noxious substances (see above), alternative diagnoses should be considered.

- The diagnosis of COPD should be confirmed by spirometry (see 'Spirometry' section pg 4). If this is not available in primary care, patients should be referred for this. There are few contraindications, but a small proportion of patients cannot do adequate spirometry.

- Although the chest x-ray is often abnormal, COPD can't be diagnosed from chest x-ray findings. Chest x-rays may be useful in excluding alternative diagnoses. Chest CT is not routinely required for diagnosis but can provide additional detail on the presence and extent of emphysema and lung bullae, or provide information on airway abnormalities.
- Peak flow is not useful for diagnosing or monitoring COPD.
- In some patients, asthma and COPD can be difficult to differentiate and both conditions can co-exist in the same patient. This is sometimes referred to as asthma-COPD overlap (ACO). There are important differences in treatment recommendations for asthma and COPD (see 'Asthma and COPD overlap (ACO)' section pg 20).

Initial assessment of a patient with suspected COPD:

- Establish exposure to risk factors for COPD
- Confirm airflow obstruction and its severity with spirometry (Table 1)
- Assess current burden of symptoms and impact on daily life (Tables 1 and 2)
- Take a history of exacerbations
- Review blood eosinophil counts (when not taking oral corticosteroids)
- Identify comorbidities/treatable traits

Assessing severity

Spirometry assesses the severity of airflow obstruction. Used in conjunction with the severity of symptoms and presence of exacerbations, this helps to assess the severity of COPD (Table 1).

The degree of airflow obstruction does not always correlate with the severity of symptoms or exacerbation history.

- The impact of breathlessness on daily activities can be quantified using the modified Medical Research Council (mMRC) Dyspnoea Scale (Table 2).
- The COPD Assessment Test (CAT) is an eight-item questionnaire that can measure the symptomatic impact of COPD and response to treatment (see Appendix 1).
- Functional tests, such as the six-minute walk test, shuttle walk tests and sit-to-stand tests, can help to assess functional limitation, disease progression, and response to treatment.

Spirometry

Spirometry is required to diagnose COPD and is part of the assessment of COPD severity. It should be performed post-bronchodilator. Patients do not need to withhold their usual bronchodilators: spirometry while treated with a long-acting bronchodilator is considered a post-bronchodilator test and is adequate for diagnosis and severity assessment. Pre- and post-bronchodilator spirometry (bronchodilator responsiveness or reversibility testing) is occasionally done, but does not reliably differentiate asthma from COPD and is not routinely needed for diagnosis or management.

- Airflow obstruction that is not fully reversible is indicated by a post-bronchodilator forced expiratory volume in once second to forced vital capacity (FEV_1/FVC) ratio <0.70 or below the age-specific lower limit of normal (LLN) (see footnote).
- The severity of the obstruction is diagnosed using the post-bronchodilator FEV_1 as a % of the predicted value or the z-score value (Table 1). It is possible to have airflow obstruction with an FEV_1/FVC ratio <0.70 (see footnote) but an FEV_1 in the normal range.
- A restrictive pattern on spirometry is inconsistent with a diagnosis of COPD and, if spirometry has been done correctly, suggests an alternative cause of symptoms (eg, morbid obesity, neuromuscular weakness, or interstitial lung disease). Patients with a restrictive pattern may benefit from specialist referral for further investigation.
- Some patients with COPD cannot blow out long enough to do a true FVC. The Forced Expiratory Volume at 6 seconds (FEV_6) can be used as an approximation of the FVC, but will overestimate the FEV_1/FVC ratio.
- A small subset of patients with normal spirometry have evidence of emphysema on CT scan. There is limited evidence to guide management in these patients, but if they are symptomatic or having exacerbations we recommend treatment for COPD according to this guideline.
- Other lung function tests such as static lung volumes, bronchodilator responsiveness testing, fraction exhaled nitric oxide (FeNO), and diffusing capacity (DL_{CO}) can be helpful in assessment or if the diagnosis is unclear.
- If it is uncertain whether the patient has asthma or COPD, bronchodilator responsiveness testing can occasionally help. A very large response to bronchodilator (>400 mL) may indicate that a component of asthma is likely.

**Footnote: There is disagreement about the criteria for airflow obstruction. The FEV_1/FVC ratio naturally declines with age, and defining airflow obstruction by an FEV_1/FVC ratio <0.70 may miss mild airflow obstruction in younger patients and over-diagnose it in the elderly. Some guidelines recommend using an age-specific lower limit of normal, but for clinical purposes, the <0.70 cut-point is easy to apply and unlikely to greatly influence management in those with mild airflow obstruction. The grading of severity also varies between guidelines, with the GOLD guidelines using different categories to COPD-X (in Table 1), but this is also unlikely to greatly influence clinical management. Note that many laboratories now report findings using z-scores (standard deviation differences) instead of (or in addition to) % predicted. This is technically preferable, but may be more difficult to communicate to patients. Z-scores also have a wide range of normal values in the elderly and may underestimate severity.*

Table 1: Assessing the severity of COPD*

	Mild	Moderate	Severe
Typical symptoms	Few symptoms. Breathless on moderate exertion	Breathless walking on level ground	Breathless on minimal exertion
	Little or no effect on daily activities	Increasing limitation of daily activities	Daily activities severely curtailed
	Cough and sputum production	Recurrent chest infections	Frequent chest infections
		Exacerbations requiring oral corticosteroids and/or antibiotics	Exacerbations of increasing frequency and severity
FEV_1	60 to 80% predicted *or* z-score -1.65 to -2.5	40 to 59% predicted *or* z-score -2.51 to -4	<40% predicted *or* z-score <-4

*Adapted from COPD-X/Lung Foundation Australia's Stepwise Management of Stable COPD

Table 2: Modified Medical Research Council (mMRC) Dyspnoea Scale for grading the severity of breathlessness during daily activities.*

Grade	Symptom complex
0	I only get breathless with strenuous exercise
1	I get short of breath when hurrying on level ground or walking up a slight hill
2	On level ground, I walk slower than people of the same age because of breathlessness, or I have to stop for breath when walking at my own pace on the level
3	I stop for breath after walking about 100 metres or after a few minutes on level ground
4	I am too breathless to leave the house or I am breathless when dressing or undressing

* The mMRC Dyspnoea Scale is very similar to the original MRC Scale, which ranges from 1 to 5 rather than 0 to 4 (ie, MRC grade 3=modified MRC grade 2).

Non-pharmacological management (Box 1)

Smoking cessation

Stopping smoking is the most important treatment for COPD: every person who is still smoking should be offered help to quit. Reducing smoking-related health risks requires complete cessation of all tobacco and other smoked products, including cannabis, other recreational substances, and tobacco substitutes.

- All forms of nicotine replacement therapy, in association with smoking cessation support, are useful in aiding smoking cessation and increase the rate of quitting.
- Oral bupropion, varenicline, and nortriptyline have been shown to be effective and should be considered in those patients struggling to give up despite nicotine replacement therapy. Most of these are fully funded on prescription. Cytisine may also be effective, but is not currently available in New Zealand.
- Referral to a smoking cessation support service is recommended.
- "Lung age", calculated from spirometry, can be used to help motivate patients to quit smoking.

The effectiveness of e-cigarettes/vapes and heated tobacco in smoking cessation is controversial. Most of these contain nicotine and they are highly addictive. They also contain many other chemicals and their long-term safety has not been shown. There is evidence of severe lung injury and lung abnormalities linked to vaping/e-cigarette use.

- E-cigarettes used within the context of a supportive smoking cessation programme have been shown to aid in smoking cessation in selected groups of motivated patients.
- Smokers using e-cigarettes and vaping to quit smoking should be advised to stop using them as soon as possible after quitting smoking.

Box 1: Key messages for non-pharmacological management of COPD.

A four-step consultation plan for COPD is shown in Appendix 2.

Recommendations:

- Smoking cessation is the most important component of management, and every patient who is still smoking should be offered help to quit.
- Offer pulmonary rehabilitation to all patients with COPD who are limited by their breathing.
- Promote regular exercise (20–30 minutes per day).
- Address obesity and under-nutrition.
- Some patients will benefit from review by a respiratory physiotherapist and breathing exercises.
- Individual breathlessness plans, including handheld fan therapy, can help manage symptoms.
- *Complete self-management plan.*
- A few carefully selected patients may benefit from thoracic surgery, endobronchial valve therapy or referral for transplantation. These options should be considered as part of respiratory specialist review in secondary care.

- Dual use of vapes/e-cigarettes and tobacco cigarettes should be avoided.
- E-cigarettes, vapes, and heated tobacco should never be used near an oxygen source, as this is a fire risk.

Physical activity

Physical activity reduces mortality and exacerbations in people with COPD. Patients should be encouraged to:[10]

- Be active on most, preferably all, days of the week.
- Do at least 20–30 minutes of exercise per day. Start with 10 minute bouts of exercise.
- Exercise to an intensity that should cause the patient to "huff and puff" or feel breathless: getting out of breath will not cause harm.
- Exercise should include aerobic (five days per week), strengthening (two days per week) and flexibility (daily).
- Inspiratory muscle training using a threshold loading or target-flow resistive device can improve inspiratory muscle strength, quality of life, dyspnoea, and exercise capacity, but confers no more benefit than whole body exercise training and access to the devices and training is limited.

Pulmonary rehabilitation

Pulmonary rehabilitation should be offered to all patients with COPD who are limited by their symptoms. Although there may be barriers to attending pulmonary rehabilitation classes, there are a variety of ways to deliver pulmonary rehabilitation to patients in different settings depending on local respiratory services and patient preferences.

- Pulmonary rehabilitation reduces breathlessness, improves quality of life, and reduces depression in patients with COPD.
- Patients gain significant benefit from rehabilitation regardless of the degree of breathlessness, but the most breathless patients benefit the most.
- Exacerbations of COPD are an indication for referral to pulmonary rehabilitation and an early engagement with pulmonary rehabilitation after exacerbation should be encouraged. This has been shown to reduce further hospitalisations and may reduce mortality.
- Exercise training is the cornerstone of pulmonary rehabilitation. Patients should be encouraged to continue to exercise following rehabilitation in order to maintain the benefits.
- The optimal model for supervised maintenance of exercise programmes remains unclear.
- The benefits of pulmonary rehabilitation decline over time and repeat attendance at pulmonary rehabilitation programmes should be encouraged in patients with functional decline or exacerbations.
- Patients should be offered the option of home-based pulmonary rehabilitation as an alternative to centre-based pulmonary rehabilitation. Home-based models of pulmonary rehabilitation can achieve equivalent health care benefits to centre-based pulmonary rehabilitation.
- Mind-body interventions (e.g. mindfulness-based therapy, yoga, and relaxation) as an add-on to pulmonary rehabilitation, improve both physical and psychological outcomes.

See Appendix 3 'Useful documents and resources' for a list of regional pulmonary rehabilitation classes available in New Zealand.

Breathlessness management strategies

In addition to pulmonary rehabilitation, patients may benefit from seeing a respiratory physiotherapist for individualised breathing exercises or breathless management strategies:

- Diaphragmatic breathing and pursed lip breathing exercises may benefit some patients. These support and/or correct the breathing pattern disorders caused by COPD and improve exercise capacity, but they have inconsistent effects on dyspnoea or health-related quality of life scores.
- Hand-held fan therapy: the airflow and cooling effects of the fan applied to the face, alongside other breathlessness management strategies, such as relaxation, pacing, and positioning, can reduce dyspnoea.
- Energy conservation techniques which include activity pacing, use of aids and assistive equipment, positioning and co-ordination of breathing with tasks, can reduce energy expenditure and task-related desaturation without a significant increase in time to complete activities.
- Hikitia Te Hā (te ao Māori breathing exercises) may help manage breathlessness (www.allright.org.nz/tools/hikitia-te-ha).
- Some evidence suggests that waiata (singing) groups may improve quality of life in COPD.[11]

Other considerations include smoking cessation, which can improve breathlessness. Oxygen is not an effective treatment for breathlessness in patients who are not hypoxic. See 'Optimising self-management' section: 'Develop a breathlessness plan' pg 9.

Sputum management/sputum clearance techniques

Patients with chronic sputum production may benefit from seeing a physiotherapist (ideally a respiratory physiotherapist) for an individualised sputum management plan. Airway clearance techniques enhance sputum clearance, reduce hospital admissions, improve health-related quality of life, and may also improve exercise tolerance and reduce the need for antibiotics.

- A wide variety of airway clearance techniques are available. No one technique is superior for all patients.
- The choice of technique should be based on the clinician's assessment, resource availability, and patient acceptability.

Nutrition

Both undernutrition and obesity are common in COPD and contribute to morbidity and mortality. Nutritional risk screening should be considered in all COPD patients: the Malnutrition Universal Screening Tool ('MUST') is a five-step screening tool that identifies adults who are at risk of malnutrition: www.bapen.org.uk/pdfs/must/must_full.pdf.

Undernutrition

Weight loss in COPD patients is driven by high nutrition requirements and insufficient dietary intake, especially during exacerbations. Muscle wasting and loss of strength worsen health status and respiratory and physical function.[12] Unintentional weight loss of 5-10% over 3-6 months indicates a risk of malnutrition irrespective of body mass index [BMI]. Ask about appetite, difficulty eating, diet, and barriers to meal preparation.

Undernutrition can usually be managed through dietary advice:

- Increasing the frequency of eating: three regular small meals with small nutritious snacks in between.
- Having high-energy foods: milkshakes, standard milk, butter, oil, avocado, cream, cheese, sugar, honey.
- Milky drinks or soups, instead of water, tea, or coffee.
- Over-the-counter nutrition supplements.

Nutrition supplements should be prescribed when food intake is insufficient. Those at high risk of malnutrition (e.g. BMI <18.5 kg/m^2, weight loss >5% over 3-6 months, or poor oral intake) and where nutritional needs are complex, should be referred to a dietitian.

Obese or overweight patients:

- The goal is to achieve weight reduction while preserving muscle mass.
- Follow "Eating and Activity Guidelines for New Zealand Adults".[13]
- Unintentional weight loss and muscle loss should be monitored in overweight and obese patients, as loss of fat-free mass is associated with poorer outcomes in COPD patients.[12]
- A Green Prescription may also be beneficial.

Housing

There is strong evidence that a warm, dry, and smoke-free home is associated with better asthma control, and it is likely that the same is true for COPD. The Healthy Homes Initiative provides information about the programme and eligibility criteria: https://hhi.org.nz.

Assisted ventilation

Short-term NIV

Non-invasive ventilation (NIV) with bi-level positive airway pressure reduces mortality and need for intubation in patients admitted to hospital with acute hypercapnic respiratory failure as a result of an exacerbation of COPD (see 'Acute exacerbations' section: 'Management' pgs 17–18). In most instances, NIV is not required once the patient has recovered.

Long-term NIV

Recommendations for long-term NIV in people with COPD are less clear. Those with stable severe COPD and chronic hypercapnic respiratory failure may gain mortality benefits from long-term NIV. In people with severe COPD who remain hypercapnic after a severe COPD exacerbation, long-term NIV may improve admission-free survival. Consideration for long-term NIV should be discussed with a respiratory specialist.

Interventional and surgical approaches to the management of advanced COPD

In selected patients, interventional procedures may help to alleviate dyspnoea and improve quality of life. They have significant risks and are only performed in specialist centres after careful multi-disciplinary assessment.

Bullectomy

Bullectomy can be considered where there is a very large bulla compressing other lung tissue. Removing the bulla allows the preserved lung tissue to function better.

Lung volume reduction surgery

Lung volume reduction surgery can improve exercise capacity and reduce dyspnoea in people with upper-lobe predominant emphysema. The surgery has a significant early mortality, but may improve long-term mortality.

Bronchoscopic lung volume reduction

Bronchoscopic lung volume reduction with endobronchial valves is an effective and less invasive alternative to surgical lung volume reduction. Patients most likely to benefit are those with severe COPD with hyperinflation and appropriate lung fissure anatomy. Improvements in lung function, exercise capacity and quality of life have been demonstrated. Endobronchial valve therapy is available in New Zealand.

Lung transplantation

Consideration for lung transplantation is appropriate in younger patients (usually <65 but up to 70 years). Assessment is on a case by case basis. Patients most likely to be considered are ex-smokers with very severe obstruction and symptoms, or those who have progressive deterioration despite optimised management, including pulmonary rehabilitation.

Optimising self-management

Self-management is optimised when patients and whānau are empowered to manage the medical, social, psychological and spiritual aspects of their health in alliance with healthcare providers. Healthcare providers should deliver healthcare services in a culturally safe and non-judgmental way (see sections: 'COPD in Māori' and 'COPD in Pacific peoples' pgs 2–3).

Develop a therapeutic alliance

Trust is central to a therapeutic alliance and established when the patient feels known, valued and understood.[5] Education and support in patients undertaking health promoting activities can be optimised when delivered within a therapeutic alliance.

To tailor education and support to the needs of the patient and whānau, a holistic approach is required. This includes consideration of physical, emotional, social and spiritual dimensions of the patient/whānau. Spiritual concerns are important for many patients, and their spiritual distress can negatively impact quality of life and health outcomes. For patients with advanced COPD, spiritual well-being levels are similar to those with inoperable lung cancer, highlighting significant spiritual needs.[14] Understanding these dimensions enhances trust, empathy and compassion from healthcare professionals.

Provide education

- Learning needs of patients and whānau are diverse. Healthcare providers should avoid making assumptions that knowledge exists. The onus is not on the patient/whānau to understand health information, but on the healthcare provider to provide health information in a way that can be understood. Methods, such as teach-back, scaffolding of information into manageable units, and whānau support, help to embed knowledge and skills. Consideration of power imbalance is important in order for patients to feel comfortable to ask questions.
- Clinicians should ask about the patient's understanding of the disease and the rationale for treatment, to clarify misunderstandings, and to work to optimise self-management.
- There are many inhalers available to treat COPD and people can easily get confused about these. Demonstrate the use of the inhaler device and ensure that patients can use them correctly.
- The choice of inhaler should be individually tailored, including considering patient preference and ability to use the device, particularly in those with reduced manual dexterity or cognitive impairment.
- There are many practical challenges for people living with COPD, such as completing everyday tasks, holding down a job, and having access to transport. Awareness of these challenges and referral to support services (e.g. occupational therapy, health improvement practitioners, patient advocates, and cultural support workers) can be beneficial. The social and cultural context of a patient/whānau should be considered when tailoring support.
- Patients may benefit from support groups (www.asthmafoundation.org.nz/about-us/support-groups).

Develop an action plan

Personalised action plans (self-management plans) should be offered to all people with COPD. They improve patient understanding, enhance quality of life and reduce hospital admissions.

- Action plans should:
  - Detail regular treatment.
  - Explain how to recognise and treat deteriorating symptoms.
  - Specify doses and durations of treatment for exacerbations.
  - Record the patient's normal oxygen saturation (SpO_2) and whether the patient is known to be a CO_2 retainer.
- Patients at risk of exacerbations may be offered antibiotics and/or prednisone to have at home as part of their action plan. The action plan should provide a timeframe for clinical review once they have started medicines for an acute exacerbation of COPD.
- Action plans should be reviewed at each COPD review and after an exacerbation.

See Appendix 2 for information on developing an action plan.

The Asthma and Respiratory Foundation New Zealand's COPD Action Plan is shown in the Appendix 4. Electronic versions and print copies, in multiple translations, are available at: www.asthmafoundation.org.nz/resources.

Develop a breathlessness plan

- Interventions and techniques that can improve breathlessness include self-management education, breathing exercises, pacing, supported upright forward leaning ('positioning'), using breathing techniques, and a hand-held fan. (See 'Breathlessness management strategies' pg 7 and Appendix 5).
- Smoking cessation also improves breathlessness.
- Oxygen is not an effective treatment for breathlessness in patients who are not hypoxic.

The Asthma and Respiratory Foundation New Zealand's 'Breathlessness Strategies for COPD' and the one-page 'Breathlessness Quick Reference' (also available in Māori and Samoan) are shown in Appendices 5 and 6, and are available at www.asthmafoundation.org.nz/resources.

Pharmacological management (Box 2)

Inhaled medication for COPD

The purpose of pharmacological management in COPD is symptom control and prevention of exacerbations, with the aim of improving quality of life.

- Prescriptions should be based on drug class. Choice of a specific inhaler should be guided by patient preference and their ability to use the inhaler device. An inhaler device identification chart with a list of inhalers available in New Zealand is available at www.asthmafoundation.org.nz/resources.
- Check inhaler adherence and inhaler technique regularly, as they often decline over time. Check these before escalating treatment (see Appendix 3 'Useful documents and resources' for a link on how-to-use inhaler devices videos).
- Treatment escalation should follow a stepwise approach based on breathlessness and exacerbation frequency. It should take into account patient preferences, inhaler device, regimen complexity, cost, and side effects.
- The COPD Assessment Test is an eight-item questionnaire that can be used to measure the symptomatic impact of COPD and response to therapy (see Appendix 1).
- Effects of treatment on dyspnoea should be apparent within six weeks. Effects on exacerbation frequency may need to be assessed over 6 to 12 months.
- Inhaled medications are usually very well tolerated, but side effects can occur. If there is no evidence of benefit, consider withdrawing them.
- Dry-powder and soft-mist inhalers have a substantially lower impact on greenhouse gas emissions than pressurised metered-dose inhalers.[15] Most patients are able to use these and willing to consider them if recommended by their health practitioner.[16]

Role of short-acting bronchodilators

- Short-acting $beta_2$ agonists (SABA: salbutamol or terbutaline) and short-acting muscarinic antagonists (SAMA: ipratropium), either individually or in combination, can be taken as-needed to provide short-term relief of breathlessness. Regular use of short-acting bronchodilators is not recommended. Avoid using a SAMA in patients taking a long-acting muscarinic antagonist (LAMA).
- Short-acting bronchodilators have a limited role in the long-term management of COPD. The need for more than very occasional short-acting bronchodilators should trigger consideration of long-acting maintenance therapy.

Box 2: Key messages for pharmacological management of COPD.

A suggested four-step consultation plan for COPD is shown in Appendix 2.

Recommendations:

- Inhaler technique, device suitability, and adherence to treatment should be reviewed regularly and before any medication changes.
- We suggest a LAMA as the first-line long-acting bronchodilator, both for breathlessness and reduction of exacerbation risk.
- We recommend prompt escalation to LAMA/LABA in most patients.
- The main role for ICS is to prevent exacerbations in patients with frequent exacerbations.
- Higher blood eosinophils (≥300 cells/μL) are associated with a greater response to ICS and may identify patients who should receive ICS/LAMA/LABA.
- Patients with asthma/COPD overlap should receive ICS.
- For patients requiring ICS/LAMA/LABA, a single combined inhaler should be considered for improved adherence.
- Within each drug class, choice of treatment should be guided by a patient's preference for inhaler device.
- Treatment should be escalated quickly for patients with severe COPD or frequent exacerbations.
- Provide all patients with a written/electronic personalised COPD action plan (see Appendix 4).

Do not*:

- Do not prescribe regular SABA.
- Do not routinely prescribe a SAMA to patients on a LAMA.
- Do not prescribe long-term oral corticosteroids as maintenance therapy for COPD.
- Do not routinely prescribe theophylline.
- Do not use short-term response to bronchodilator (e.g., bronchodilator responsivness testing) to predict benefit from long-term bronchodilator therapy.
- Do not prescribe nebulised bronchodilators in patients with stable COPD.
- Do not withdraw ICS in patients with asthma/COPD overlap or raised blood eosinophils.

**Do not recommendations are intended as guidance to highlight prescribing practices that are rarely appropriate. Clinicians must consider the circumstances of individual patients to decide whether they apply in a specific case.*

Role of long-acting bronchodilators (Table 3)

- For patients with ongoing dyspnoea or who are using short-acting bronchodilators more than very occasionally, a regular long-acting muscarinic antagonist (LAMA) such as glycopyrronium, tiotropium, or umeclidinium is recommended, unless there is evidence of asthma/COPD overlap (see 'Asthma and COPD overlap (ACO)' section, pg 20).

Table 3: Simplified maintenance inhaler management of COPD.

When treating	Start with	Escalate to
COPD without exacerbations	LAMA*	LABA/LAMA
COPD with exacerbations	LAMA*	LABA/LAMA Consider ICS/LAMA/LABA if eosinophilia or frequent exacerbations**
Asthma/COPD overlap	ICS/LABA	ICS/LAMA/LABA

* Pharmac funding requires a trial of LAMA before funding LAMA/LABA

** Pharmac funding requires more than one exacerbation a year or one exacerbation needing hospital care and blood eosinophils ≥0.3

Do not forget non-pharmacologic treatments.

- It is not necessary to trial regular short-acting bronchodilators before starting a long-acting bronchodilator if symptoms or exacerbation history suggest that a long-acting bronchodilator is indicated. Short-term response to SABA or SAMA (bronchodilator responsiveness) does not predict benefit from long-acting bronchodilator therapy.
- Do not continue to use ipratropium in patients taking a LAMA.
- Both LAMAs and long-acting beta agonists (LABAs) improve lung function, symptoms and quality of life, but LAMAs are recommended as the first-line long-acting medication for COPD because they reduce exacerbation risk. If LAMAs are contra-indicated, a LABA, such as formoterol, indacaterol, or salmeterol is recommended.
- In patients who remain breathless or who continue to exacerbate despite treatment with a single long-acting bronchodilator, combination LAMA/LABA therapy is recommended (eg, glycopyrronium/indacaterol, olodaterol/tiotropium, or umeclidinium/vilanterol). This improves lung function, reduces symptoms, and reduces exacerbations compared to either drug alone.
- Most symptomatic patients benefit from dual LAMA/LABA therapy. Pharmac currently requires a trial of LAMA therapy before issuing a special authority for dual treatment: a quick escalation to dual therapy is recommended.

Role of inhaled corticosteroids (ICS)

- Patients with recurrent exacerbations or an eosinophilic pattern of disease may benefit from adding an ICS: usually as ICS/LAMA/LABA triple therapy (Table 3 and see below).
- Blood eosinophil counts predict the benefit of ICS in preventing exacerbations: people with blood eosinophil counts consistently ≤100 cells/μL are unlikely to benefit, whereas people with counts ≥300 cells/μL are most likely to benefit. However, a single blood test may not be representative because eosinophil counts can vary over time. Oral corticosteroids suppress blood eosinophils: counts done when a patient is taking oral steroids will not be informative.
- An ICS should form part of the regimen for patients with asthma/COPD overlap (see 'Asthma and COPD overlap (ACO)' section, pg 20). This should be prescribed as a combination inhaler containing ICS/LAMA/LABA or ICS/LABA to avoid the risk of LABA monotherapy in patients with poor adherence to a separate ICS inhaler.
- Patients with recurrent exacerbations (more than once per year) or a severe exacerbation requiring hospital care benefit from being on ICS as part of triple therapy (see following section: 'Role of triple therapy (ICS/LAMA/LABA')).

Role of triple therapy (ICS/LAMA/LABA)

- Escalation to triple therapy should be considered in patients who continue to exacerbate (more than once a year), or have an exacerbation requiring hospital care.
- Escalation to triple therapy should also be considered in patients taking dual LAMA/LABA therapy who have blood eosinophils ≥300 cells/μL.
- A subset of patients with persistent breathlessness and exercise limitation (e.g. CAT score >10), despite LAMA/LABA combination therapy, may also benefit from triple therapy.
- Direct escalation to triple therapy, without stepwise up-titration, may be reasonable in the setting of a severe exacerbation.
- If triple therapy is indicated, we recommend using a single inhaler for improved adherence. Pharmac funding currently requires a special authority for this.

ICS withdrawal

- The risk of pneumonia in patients with severe COPD is increased with regular ICS. Withdrawing ICS should be considered if:
  - There is no evidence of benefit from ICS in terms of improved symptoms or fewer exacerbations.
  - The patient develops pneumonia or other ICS adverse effects.
  - The patient does not have a history of frequent exacerbations and is stable for 12 months.
- If ICS treatment is withdrawn, the patient should be reviewed after 4–6 weeks to ensure that this doesn't cause a deterioration in symptoms or CAT score.
- Withdrawal of ICS may not be appropriate if the blood eosinophil count is elevated. A blood eosinophil count ≥300 cells/μL is associated with an increased exacerbation risk after ICS withdrawal.
- ICS should not be withdrawn in patients with a diagnosis of asthma/COPD overlap (see 'Asthma and COPD overlap (ACO)' section, pg 20).

Additional therapies

- There is no evidence that routine use of nebulised bronchodilators is beneficial.
- Theophylline has not shown consistent benefits on exacerbation, lung function, symptoms, or quality of life in randomised controlled trials. In view of its narrow therapeutic index and side-effect profile, we do not recommend its routine use.
- There is considerable evidence of harm and no evidence of benefit from long-term oral corticosteroids.
- Long-term macrolide antibiotics, such azithromycin and erythromycin, can reduce the risk of

exacerbations over one year in former smokers who have exacerbations, despite optimal inhaled treatment. Azithromycin is not currently funded in New Zealand for this indication. Long-term macrolide therapy is associated with significant risks, including bacterial resistance, gastrointestinal and cardiovascular side effects, and hearing impairment. Long-term macrolides should rarely be initiated without specialist advice.

- Regular treatment with evidence-based mucolytics (e.g. carbocysteine, erdosteine, or N-acetylcysteine) may reduce the risk of exacerbations in some patients. These treatments are not currently funded in New Zealand.
- In patients with severe and very severe COPD and a history of exacerbations, PDE4 inhibitors improve lung function, reduce the risk of exacerbations, and have modest benefits for symptoms and quality of life. They have significant gastrointestinal side effects. These treatments are not currently available in New Zealand.
- Alpha-1 antitrypsin augmentation therapy may slow the progression of emphysema in patients with alpha-1 antitrypsin deficiency. This is not currently available in New Zealand.
- Recent studies have shown that COPD patients with evidence of type 2 inflammation (high eosinophils, high FeNO) have fewer exacerbations when treated with targeted biologics (e.g. dupilumab, mepolizumab), however at the time of writing these medications are neither licenced nor funded for COPD patients in New Zealand.

Oxygen therapy

- Oxygen is a treatment for hypoxia, not dyspnoea. Oxygen does not reduce the sensation of breathlessness or improve quality of life in patients who are not hypoxic. Oxygen may not improve breathlessness even in those who are hypoxic. "Short Burst" oxygen to relieve exercise dyspnoea is not effective.[17]
- Oxygen is a drug therapy and should be prescribed (See Box 3).
- Long-term oxygen therapy has survival benefits for patients with severe hypoxaemia. It should be used for at least 15 hours a day. The survival benefits are not apparent until months or years after starting treatment. Patients should adhere to the amount of oxygen prescribed and be monitored for adverse effects.
- Recent evidence suggests that using oxygen for 15 hours per day is adequate: oxygen therapy for 24 hours a day does not lead to a lower risk of hospitalisation or death within one year.
- Assessment for long-term oxygen therapy supply should be done by a specialist respiratory service. The causes of the hypoxia should be explored, and the patient's pharmacological and non-pharmacological management should be optimised. A target saturation range and oxygen flow rate should be established.
- Consider investigating patients for obstructive sleep apnoea/obesity hypoventilation if their nocturnal arterial oxygen saturation repeatedly falls below 88%.

Box 3: Criteria for oxygen.

Criteria for supply of long-term oxygen therapy (LTOT):

- Assess when the patient's respiratory condition is stable—at least six weeks after hospital discharge or an acute respiratory illness.
- Arterial oxygen tension (PaO_2) (measured by arterial blood gas) less than 7.3 kPa (55 mmHg) indicates the need for long-term oxygen (oxygen saturation usually <88%).
- PaO_2<8.0 kPa (60 mmHg) (oxygen saturation up to 91%) may also be an indication for long-term oxygen if there is evidence of polycythaemia (haematocrit > 0.55) and/or cor pulmonale/right heart failure.

Criteria for oxygen in palliative care:

- Terminal illness with a life expectancy less than 3 months
- Oxygen saturation SpO_2 <90%
- Dyspnoea not adequately controlled by optimal treatment for dyspnoea and pain (physiotherapy, narcotics, anxiolytics)

There is a fire risk associated with oxygen use and smoking or other flammable sources such as gas appliances, open flames, and vaping devices. Current smoking, use of heated tobacco, e-cigarettes, or vaping devices are absolute contra-indications to oxygen supply.

Flying with oxygen

Flying is generally safe for patients with COPD, including those with chronic respiratory failure who are on long-term oxygen therapy.

- Before flying, patients should ideally be clinically stable.
- Supplemental oxygen is unlikely to be required if the resting oxygen saturation is ≥95%, and is likely to be required if oxygen saturation is ≤88%. Patients with oxygen saturation values between these levels might require specialist assessment.
- Those already on long-term oxygen therapy need an increase in flow rate of 1–2 L per minute during the flight.
- Patients receiving oxygen therapy will need to contact the airline prior to flying.

Vaccination

Vaccinations are important for patients with COPD, who are at increased risk of respiratory and other infections. (www.immune.org.nz)

- Yearly influenza vaccination reduces the risk of serious illness and death and should be actively promoted to patients with COPD.
- COVID-19 vaccination should be encouraged to reduce the risk of severe COVID-19 and related complications.
- Pneumococcal vaccination reduces the risk of pneumonia and exacerbations, but is not currently funded for COPD patients in New Zealand.
  - Two types of pneumococcal vaccine are approved for use. A suggested schedule is one dose of 13-valent protein conjugate vaccine (PCV13) given first, followed at least eight weeks later by the first dose of 23-valent polysaccharide vaccine (23PPV). A second dose of 23PPV is given a minimum of five years later. A maximum of 3 doses of 23PPV is recommended in an adult lifetime.
- Respiratory syncytial virus (RSV) vaccine is now available but currently not funded in New Zealand. A single dose is recommended for patients over 50 years with COPD. RSV vaccination can reduce the risk of hospitalisation due to RSV disease. The need for revaccination is not yet clear.
- It is recommended that other vaccinations are kept up to date including pertussis/whooping cough (funded for over 65 years and over 45 years in some people) and herpes zoster/shingles (funded at age 65).

Acute exacerbations

COPD exacerbations are characterised by a deterioration in symptoms that is beyond normal day-to-day variations, is acute in onset, and may warrant additional medication or hospital admission. Key symptoms include increased shortness of breath, increased sputum purulence and volume, increased cough, and wheeze. Confusion or altered cognition may also be a feature. Exacerbations are often caused by bacterial or viral infections, but may also be non-infective. It can be difficult to distinguish an exacerbation of COPD from worsening cardiac failure, acute coronary syndromes, pulmonary embolus, or pneumonia. Many patients with COPD have these comorbidities, which may complicate or precipitate an exacerbation of COPD.

Exacerbations of COPD are associated with accelerated loss of lung function, even in patients with mild disease. Prolonged or repeated exacerbations are associated with worse health status, more frequent future exacerbations, and a high risk of death.

Early diagnosis and prompt management of exacerbations of COPD may prevent functional deterioration and reduce hospital admissions. Education of the patient, carers, other support people, and whānau may aid in the early detection of exacerbations.

The approach to managing an exacerbation should take into account existing advance care directives and established shared goals of care.

Assessment (Figures 1 and 2)

- Most exacerbations can be managed at home. Indications for hospitalisation include, but are not limited to, a sudden worsening of symptoms, confusion or drowsiness, signs such as cyanosis and peripheral oedema, failure to respond to medical management, low oxygen saturation by pulse oximetry (SpO_2), the presence of serious comorbidities, including heart failure and newly occurring arrhythmias, as well as insufficient home support, lack of telephone, transport or distance to hospital.
- It is useful to know what the patient's normal oxygen saturation is (this may be recorded on the COPD self-management plan).
- A guide to acute severity assessment is shown in Table 4.
- Several prognostic scores have been proposed. The most validated one is DECAF, but this includes COPD with pneumonia and requires an arterial blood gas, complete blood count, and chest x-ray, which are unlikely to be available in primary care. An alternative is CURB-65, which was developed for pneumonia but has been found to be equally effective at predicting short term-mortality in COPD in New Zealand studies.[18] CRB-65 is a simpler version that does not require any laboratory measures (Table 5).
- A full blood count, if taken before starting oral corticosteroids, can help to distinguish if eosinophilic or neutrophilic (infection) inflammation are

Table 4: Assessment of exacerbation severity.*

Mild to moderate	**Severe**	**Life-threatening / imminent respiratory arrest**
More short of breath than usual	Very short of breath	Extremely short of breath
Able to speak in sentences	Only a few words per breath	Unable to speak
Usually have wheeze		May not have a wheeze
Some chest/neck indrawing	Severe neck/chest indrawing	May be no chest/neck indrawing
	Tripod positioning	
SpO_2 near usual level	SpO_2 well below their usual level	SpO_2 rapidly falling
Normal level of consciousness	May be agitated	Severe agitation and/or falling level of consciousness
Not all patients will have all of these features		

*Adapted from: National Ambulance Sector Clinical Working Group.
Clinical Procedures & Guidelines 2019. St John & Wellington Free Ambulance.

Table 5: Assessment of short-term (one-month) prognosis.

CURB65*	**CRB65***	**DECAF*#**
C – Confusion	C – Confusion	D – Dyspnoea: unable to leave house = 1 point; unable to wash/dress = 2 points
U – Urea >7 mmol/L		E – Eosinophils <0.05 x 10^9/L
R – Respiratory rate ≥30/min	R – Respiratory rate ≥30/min	C – Consolidation on CXR
B – Blood pressure: systolic<90, diastolic <60 mmHg	B – Blood pressure: systolic <90, diastolic<60 mmHg	A – Acidaemia: Blood pH <7.3
65 – age ≥65	65 – age ≥65	F – atrial Fibrillation
Low risk score ≤1: ~2% mortality	Low risk score ≤1: ~4% mortality	Low risk score ≤1: ~3% mortality
High risk score ≥3: ~20% mortality	High risk score ≥2: ~17% mortality	High risk score ≥4: ~20% mortality

*Score 1 point for the presence of each factor.
#DECAF scores have been validated in patients with COPD *and* pneumonia, and CURB65 and CRB65 have not.

Figure 1: Pre-hospital management of acute exacerbation of COPD.

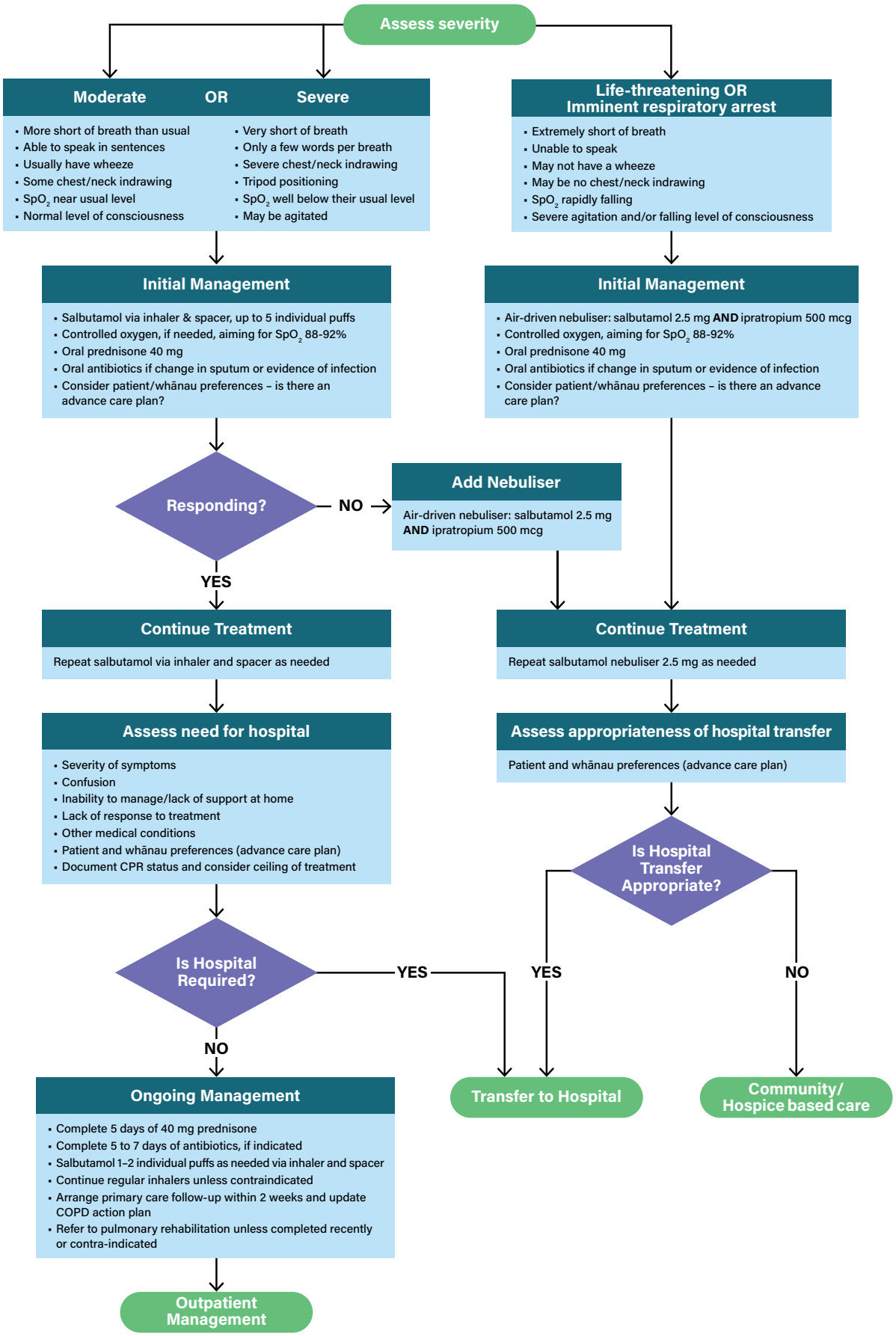
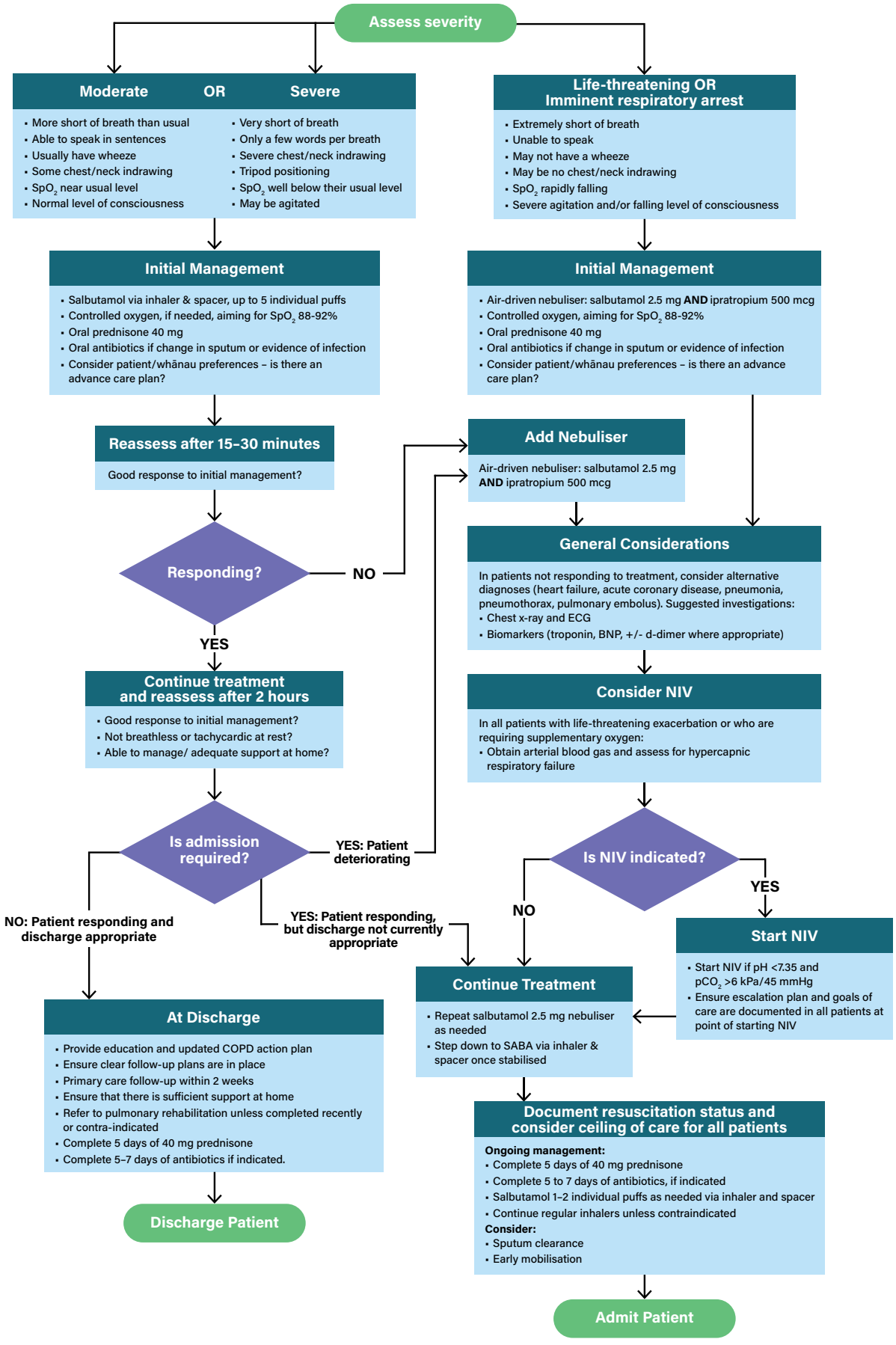


Figure 2: Hospital management of exacerbation of COPD.



contributing to the exacerbation. Eosinophilic inflammation helps to predict a response to oral corticosteroids.

- A chest x-ray and electrocardiogram help to identify alternative diagnoses and complications, such as pulmonary oedema, pulmonary embolus, pneumothorax, pneumonia, pleural effusion, arrhythmias, myocardial ischaemia, and others. Biomarkers (troponins, B-natriuretic peptide, D-dimer) can help to identify comorbidities and abnormalities of these are associated with a worse prognosis.

Management (Box 4, Figures 1 and 2)

Use breathless management strategies (see Appendices 5 and 6): supported forward lean with arms on a chair or table, use a fan, and practise breathing control techniques.

Bronchodilators

- Short-acting inhaled beta$_2$ agonists, with or without short-acting anti-muscarinics, are the initial bronchodilator of choice to treat an acute exacerbation. These can be delivered via pressurised metered-dose inhaler and spacer, dry powder inhalers, or nebuliser. We recommend salbutamol via a spacer. One actuation of the inhaler should be used each time and repeated as necessary.
- Spacer technique is important when using a pressurised metered-dose inhaler. In an exacerbation, we recommend one actuation into the spacer followed by 4–6 tidal breaths. Observe and repeat if required.
- The bronchodilator effect of 8–10 puffs of 100 mcg salbutamol via a spacer is equivalent to 5 mg salbutamol via a nebuliser. We recommend that no more than five puffs are used at a time (each puff given individually via a spacer).
- If patients do not respond to multiple doses of an inhaled short-acting beta$_2$ agonist, additional bronchodilator treatment such as ipratropium is recommended.
- There is no evidence that nebulisers are more effective than inhalers via a spacer. If salbutamol via a nebuliser is necessary, we recommend a maximum dose of 2.5 mg at a time. Patients with COPD often have cardiac comorbidities. Higher doses are associated with an increased risk of tremors, elevated heart rate, palpitations, and lower blood pressure, without evidence of any additional benefit.
- If nebulisers are given for acute COPD exacerbations, they should be air driven to reduce the risk of type 2 respiratory failure, due to high flow oxygen.
- Maintenance ICS, LAMA and LABA should be continued during an exacerbation.
- There is limited evidence that intravenous (IV) magnesium may be helpful in some COPD exacerbations. We do not recommend its routine use.
- There is no evidence to guide the use of adrenaline for COPD exacerbations. We do not recommend its use in the absence of anaphylaxis.

Box 4: Key messages for exacerbation management in COPD.

Recommendations:

- Early diagnosis and prompt management of exacerbations of COPD may prevent functional deterioration and reduce hospital admissions.
- Most mild to moderate exacerbations can be managed at home.
- Short-acting inhaled beta2 agonists with or without short-acting anti-muscarinics are the initial bronchodilators of choice to treat an acute exacerbation.
- Give short course oral corticosteroids (e.g., prednisone 40 mg once daily for five days).
- Give short-course antibiotics for purulent sputum and/or other evidence of infection.
- Titrate oxygen to target saturations of 88–92%.
- Non-invasive ventilation (NIV) reduces mortality in patients with hypercapnic respiratory failure due to an acute exacerbation of COPD.
- Careful discharge planning and referral to pulmonary rehabilitation may reduce the risk of future exacerbations and admission
- Review medication and inhaler technique after an exacerbation.

Corticosteroids

- Systemic corticosteroids (e.g. prednisone 40 mg once daily) can improve lung function, improve oxygenation, and shorten recovery time. They should usually be given for five days. Longer courses should generally be avoided due to the risk of side effects.
- Intravenous steroids should be avoided. There is no evidence of benefit compared with oral corticosteroids for treatment failure, relapse, or mortality. Hyperglycaemia rates are higher with IV corticosteroids.
- Emerging evidence suggests that benralizumab (anti IL5αR biologic) has a lower rate of treatment failure than prednisone in eosinophilic exacerbations of COPD.[19] However this is neither funded nor licensed for this indication in New Zealand.

Antibiotics

- Respiratory tract infections are the most common precipitants of exacerbations of COPD. These may be viral, bacterial, or mixed. Common bacterial pathogens include *Haemophilus influenzae, Streptococcus pneumonia,* and *Moraxella catarrhalis. Mycoplasma pneumoniae* and *Chlamydia pneumoniae* have also been reported. *Pseudomonas aeruginosa* and *Staphylococcus aureus* are uncommon but occur more frequently in severe COPD.
- Antibiotics, when indicated by the presence of purulent sputum, fever and/or raised inflammatory markers (e.g. CRP >50), can shorten recovery time and reduce the risk of relapse and treatment failure, and should usually be prescribed for 5 days.
- Oral antibiotics such as amoxicillin or doxycycline are recommended. If the patient has previously failed treatment with these or resistant organisms have been isolated previously, amoxicillin-clavulanate can be prescribed. If pneumonia, *Pseudomonas* or *Staphylococci* are suspected, appropriate antibiotics should be used.
- Consider sputum culture if the patient has recurrent exacerbations or does not respond to initial antibiotics.

Oxygen

- If indicated, oxygen should be prescribed and titrated via nasal prongs or a controlled flow device to target saturations of 88–92%.
- Oxygen delivery via a high-flow humidified nasal device can improve ventilation and airway clearance, as well as reduce the physiological dead space and work of breathing.

Supported ventilation

- Non-invasive ventilation (NIV) reduces mortality by about 50%, reduces the need for intubation, and shortens the length of stay in hospital in patients with rising arterial carbon dioxide tension ($PaCO_2$) levels due to COPD. It should be considered in patients who present with hypercapnic respiratory failure (arterial pH <7.35, $PaCO_2$ >6 kPa/45 mmHg).
- An arterial blood gas should be considered in every patient with a severe exacerbation, an oxygen saturation less than 90%, or signs of cor pulmonale.
- A venous blood gas pH ≤7.34 has good sensitivity and specificity for acidaemia (pH ≤7.35) but does not reliably predict arterial $PaCO_2$ and cannot diagnose hypercapnic respiratory failure. An arterial blood gas is necessary to assess the need for NIV.
- Ward-based NIV can reduce the requirement for HDU/ICU admission but should be conducted in an appropriately monitored setting with trained clinical staff.
- At the time of initiating NIV, the shared goals of care, CPR status, and ceiling of treatment should be considered and a clear written escalation plan established.

Airway clearance techniques

- Patients with excess sputum production benefit from airway clearance techniques during an exacerbation.
- Where available, referral to a respiratory physiotherapist will enable individualised airway clearance techniques.

After an exacerbation

- Exacerbations are opportunities to review the pharmacological and non-pharmacological strategies in place, provide COPD education, and to develop an acute management/action plan. Record the normal oxygen saturation and whether the patient is a CO_2 retainer on the plan.
- Review of inhaler technique and adherence should occur in every patient following an exacerbation (see 'Optimising self-management' section, pgs 8–9).
- All medications should be reviewed following an exacerbation of COPD and adjusted as appropriate. Triple ICS/LAMA/LABA therapy is usually indicated after one severe (hospital) or two moderate exacerbations in any year.
- Refer to a pulmonary rehabilitation programme unless recently completed or contraindicated.
- If the patient is being discharged from hospital, ensure that there is sufficient support at home. This may require social work, physiotherapy, occupational therapy, and other allied health input.
- Ensure that clear follow-up plans are in place. For patients being discharged, we recommend primary care follow-up within two weeks.
- Consider follow-up spirometry if this has not been done.
- Consider discussing advance care planning and palliative care referral, especially among patients having recurrent severe exacerbations (see 'End-of-life care' section, pg 21).
- Don't miss the opportunity to discuss smoking cessation.

Comorbidities and treatable traits

Identify and manage comorbidities

- People with COPD often have other conditions. Lung cancer, bronchiectasis, ischaemic heart disease, congestive heart failure, diabetes, anxiety, depression, gastro-oesophageal reflux, and osteoporosis are all more common among people with COPD than in the general population.
- These conditions can negatively impact on the management of COPD and, in turn, the presence of COPD can negatively impact on the treatment and prognosis of comorbid conditions.
- A systematic approach to the assessment and management of comorbidities has been proposed as part of the 'treatable traits' concept. This recommends that management is personalised to the individual, with the systematic identification and treatment of the comorbidities and disease characteristics that may contribute to the patient's presentation and are potentially amenable to treatment. There is preliminary evidence to suggest that this approach improves quality of life.

Lung cancer

- There is a strong association between COPD and lung cancer, more so than is explained by the shared risk factor of smoking.
- Haemoptysis is not a symptom of COPD and should be investigated to rule out lung cancer. Unexplained weight loss and a new persistent cough may also be symptoms of lung cancer.
- Although patients with severe COPD may be unfit for surgery because of poor lung function, they may still be eligible for curative-intent cancer treatment. Newer radiotherapy techniques, such as stereotactic ablative radiotherapy, can deliver curative-intent treatment with little effect on lung function.
- A person with lung cancer who has a poor life expectancy due to advanced COPD or other comorbidities may not require any treatment for an early stage, slow-growing and asymptomatic lung cancer.

Cardiac disease

- People with COPD have a high risk of ischaemic heart disease and cardiac failure and should have a cardiovascular risk assessment completed. Severe COPD is associated with pulmonary hypertension and cor pulmonale.
- Low FEV_1 and FVC values predict cardiac mortality.
- Smoking cessation reduces cardiovascular risk as well as the rate of lung function decline in COPD.
- If beta-blockers are needed for cardiac disease, then cardioselective beta-blockers such as bisoprolol should be used. Inhaled SABA and LABA therapy can be used alongside cardioselective beta-blocker therapy.
- Bronchodilators may have pro-arrhythmic effects. There is an acceptable safety profile for long-acting beta agonist and anticholinergic bronchodilators at prescribed doses, but caution should be employed with high doses of short-acting $beta_2$ agonists during a COPD exacerbation or when using theophylline. There may be a risk of developing arrhythmias such as atrial fibrillation in these situations.

Mental health disorders

- Anxiety and depression are common in COPD but are not always recognised. Freely available screening tools, such as the Hospital Anxiety and Depression Scale (HADS) or Patient Health Questionnaire (PHQ), can be used to identify anxiety or depression.
- Breathlessness, activity limitation, and loss of social connections are risk factors for the development of anxiety and depression. In turn, anxiety and depression increase the perception of breathlessness and may increase symptom burden, leading to a reduction in social activity and exercise avoidance.
- Anxiety and depression have been associated with more frequent exacerbations, hospitalisation and mortality, therefore effective treatment has the potential to improve COPD-related outcomes as well as mental health.
- Pulmonary rehabilitation can improve anxiety and depression scores.
- Cognitive behavioural therapy (CBT) has shown potential to help with anxiety and depression in a number of small studies, although a larger RCT of low intensity CBT delivered by respiratory clinicians did not show evidence of benefit. To be effective, CBT may need to be provided as a high intensity programme delivered by a mental health practitioner.
- Benzodiazepines are not recommended for treatment of anxiety or depression in COPD due to limited evidence of effectiveness and the potential for side effects, including depression of respiratory drive and increased risk of falls.
- In the absence of high quality evidence specific to people with COPD, treatment of anxiety and depression should not change in the presence of COPD.
- Smoking and therefore COPD are common among people with mental health disorders, and COPD may be underdiagnosed and undertreated in this group: COPD should be treated as usual in patients with mental health conditions.

Other comorbidities

- The presence of gastro-oesophageal reflux is a risk factor for COPD exacerbations, possibly due to lung injury from aspiration. It is sensible to treat reflux symptoms with proton pump inhibitors, although it has not been proven that this reduces the risk of COPD exacerbations.
- Allergic rhinitis may increase COPD symptoms.
- Obstructive sleep apnoea syndrome and obesity lead to worse night-time hypoxaemia in people with COPD. Appropriate treatment of these comorbidities with nocturnal continuous positive airways pressure (CPAP) or NIV can improve sleep quality, reduce pulmonary hypertension, and may reduce mortality.
- Identification of coexisting non-COPD lung disease, such as bronchiectasis or interstitial lung disease, is an opportunity to use disease-specific treatment to improve respiratory symptoms. (See also "Asthma and COPD overlap (ACO)" in the next column).

Multiple comorbidities and frailty

- People with multiple comorbidities are more vulnerable to adverse outcomes, including mortality. COPD treatments may impact on control of comorbid conditions. For example, prednisone taken for a COPD exacerbation can adversely affect diabetic glycaemic control.
- COPD is a risk factor for falls. Sarcopenia, hypoxemia, dyspnoea, and fatigue are associated with impaired balance.
- Cognitive impairment is common in COPD, particularly during exacerbations. This can affect COPD disease education and adherence to medication and self-management plans.
- Some COPD treatments, such as pulmonary rehabilitation or lung transplantation, may not be able to be delivered safely due to comorbidities.
- People with COPD and comorbidities may be taking many medications. COPD medication can add to the problem of polypharmacy and we recommend a regular medicines review.

Asthma and COPD overlap (ACO) (Box 5)

Patients with features of both asthma and COPD appear to have a worse prognosis than those with COPD alone according to many, but not all, studies. Treatment recommendations are based on expert opinion because patients with asthma and COPD overlap (ACO) have been excluded from most controlled trials.

- Patients with ACO are broadly characterised by the following:
  - Asthma diagnosed before aged 40 years old, and
  - A smoking history of >10 pack years or comparable aero-pollutant exposure, with
  - Highly variable expiratory volumes (change in FEV_1 >400 mL) and/or
  - Elevated eosinophils (>0.3 x 10^6).
- We recommend inhaled corticosteroids in low or moderate doses to target asthma-like inflammatory pathways in combination with a single or dual long-acting bronchodilator.
- We recommend ICS/LABA as initial therapy, followed by the addition of a LAMA (i.e. triple therapy) if there are persistent symptoms or exacerbations.
- We recommend using either an asthma or COPD action plan, depending on the dominant clinical features.
- Although recent studies in asthma favour the use of combined budesonide/formoterol reliever inhalers, the role of these inhalers in ACO remains uncertain, as there are no data to support this approach at this time.

Box 5: Principles of management of asthma–COPD overlap.

- There are no data to support the use of ICS alone in asthma–COPD overlap.
- Data from asthma trials suggest that LABA monotherapy may be harmful.
- Observational evidence suggests that ICS combined with long-acting bronchodilators should be the mainstay of therapy in ACO.
- Non-pharmacological approaches to the management of COPD are also recommended in people with ACO (e.g., smoking cessation, vaccinations, exercise, pulmonary rehabilitation and treatment of comorbidities).
- ICS withdrawal is not recommended in patients with ACO, due to possible increases in exacerbations and mortality.

End-of-life care

Advance care planning

End-of-life care is important in advanced COPD. As the goals of care change, patients and their family/ whānau require realistic advice and support to make informed decisions and plan for the future.

- Discussion about advance care plans, advance directives, and shared goals of care should be undertaken as part of usual management at a suitable time in the disease course.
- Advance care plans can be made at any stage of the disease and do not need to wait until the patient is approaching the end of life.
- Most patients with life-limiting conditions prefer to identify their goals of treatment and discuss preferences for end-of-life care early. Good communication with patients who have a terminal illness is associated with better end-of-life care and fewer medical interventions.
- A useful strategy when deciding whether end-of-life discussions are appropriate is to consider the question: "Would I be surprised if this patient died in the next 12 months?"
- The following features should also prompt health practitioners to consider initiating discussions about advance care plans, centred on the patient's preferences for end-of-life care:
  - Breathless at rest or on minimal exertion or housebound
  - Weight loss or cachexia
  - FEV_1<30% of predicted
  - Meets criteria for long-term oxygen therapy
  - Two or more hospitalisations in the previous year for exacerbations
  - An admission with respiratory failure requiring non-invasive ventilation
- A structured advance care plan will reduce the burden of setting the ceiling of treatment by unfamiliar staff and family members during an acute admission and allow implementation of a patient's choice of health care when they are no longer capable of expressing their choice.
- In general, patients and their family/ whānau want an honest conversation that is balanced between realistic information and appropriate hope.
- Consider early referral to local hospice and/or palliative care services.
- More details and Advance Care Plans are available at: www.myacp.org.nz.

Pharmacological management of chronic dyspnoea

While relieving dyspnoea is a major goal of COPD care, few pharmacological agents have been shown to have a role in treating this symptom. Consider referring the patient to palliative care services.

Morphine

The use of opiates for the treatment of breathlessness is controversial and no longer recommended outside of palliative, end-of-life care. We have updated our recommendations based on a recent meta-analysis and ERS Clinical Practice guideline.[20,21]

- Opioids have not been shown to reduce the level breathlessness experienced in daily life compared to placebo, nor have they been shown to improve health-related quality of life or reduce cough in patients with COPD. Although some patients do experience a reduction in symptoms, it is difficult to predict who will respond to opioid therapy.[20,21]
- The frequency of adverse events is high among people receiving opioids, including constipation, nausea or vomiting, drowsiness, and falls.
- In cases where opioids are being considered to manage breathlessness associated with end-stage COPD, shared decision-making is required. Consideration should be given to the patient's goals and their willingness to use opiates, their understanding of how to take the medication correctly, and the broader impacts on their life (e.g. ability to drive), as well as potential side effects.
- A trial of opiates should only be undertaken if other contributors to breathlessness have been managed, and the patient has tried non-pharmacological management strategies.
- When used for breathlessness, lower doses are usually required than used for pain (e.g. 2.5 mg to 5 mg every four hours). The patient should have regular follow-up to titrate the dose (use the lowest effective dose) or withdraw the treatment if clinical improvement is not noted.
- Opioids may still have a role at the very end of life where the balance between benefit and adverse effects may be more favourable.

Benzodiazepines and Antidepressants

Current evidence indicates that benzodiazepines and antidepressants do not reduce breathlessness in advanced respiratory disease.[22,23] They may be harmful and we do not recommended them for management of dyspnoea. They may have an appropriate role in treating depression and anxiety in some patients.

- Despite the lack of evidence of benefit, benzodiazepines, including intranasal midazolam, have been widely used for dyspnoea.
- Drug dependence, escalating doses and respiratory depression are well-recognised complications of benzodiazepine use. They should not be used in patients at risk of hypercapnic respiratory failure.
- Benzodiazepines increase the risk of falls among patients with COPD and may also increase the risk of COPD exacerbations and pneumonia.
- Antidepressants may also have adverse effects.

Acknowledgements:

We thank Kelson Tu'akoi, Siobhan Tu'akoi, Jorjia Stewart, Sophie Hooke, and Richard Egan for their valuable contributions to these guidelines.

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Appendix 1: COPD assessment test (CAT)

Name:

Date:

CAT
COPD Assessment Test

How is your COPD? Take the COPD Assessment Test (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

Example: I am very happy	0 X 2 3 4 5	I am sad	
			POINTS
I never cough	0 1 2 3 4 5	I cough all the time	
I have no phlegm (mucus) in my chest at all	0 1 2 3 4 5	My chest is full of phlegm (mucus)	
My chest does not feel tight at all	0 1 2 3 4 5	My chest feels very tight	
When I walk up a hill or one flight of stairs I am not breathless	0 1 2 3 4 5	When I walk up a hill or one flight of stairs I am very breathless	
I am not limited doing any activities at home	0 1 2 3 4 5	I am very limited doing activities at home	
I am confident leaving my home despite my lung condition	0 1 2 3 4 5	I am not at all confident leaving my home because of my lung condition	
I sleep soundly	0 1 2 3 4 5	I don't sleep soundly because of my lung condition	
I have lots of energy	0 1 2 3 4 5	I have no energy at all	
		TOTAL SCORE	

What does your COPD Assessment Test (CAT) result mean?

A score between 0 and 10 suggests a low impact.
This score should only be interpreted and acted on in partnership with your healthcare professional.

A score between 11 and 20 suggests a medium impact.
This score should only be interpreted and acted on in partnership with your healthcare professional.

A score between 21 and 30 suggests a high impact.
This score should only be interpreted and acted on in partnership with your healthcare professional.

A score between 31 and 40 suggests a very high impact.
This score should only be interpreted and acted on in partnership with your healthcare professional.

For further information about your COPD and what your test result might mean, make an appointment to see your health care professional.* Modified version for use in New Zealand. This does not replace a full assessment from your Doctor. COPD Assessment Test and CAT logo are trade marks of the GlaxoSmithKline group of companies. COPD Assessment Test is distributed by GlaxoSmithKline NZ Limited, Auckland.

TAPS NP21784-PM-NZ-CPU-QST-240001

Date of Approval: **09 2025** Date of Expiry: **09 2027**

*Please note that normal doctor fees will apply.

Appendix 2: The four-step COPD consultation

1. Assess COPD control and exacerbation risk	2. Consider other relevant clinical issues	3. Decide whether the treatment plan needs to be changed	4. Complete the COPD self-management (action) plan
Review history of COPD exacerbations in last 12 months (requiring oral corticosteroids or antibiotics) Complete CAT score Complete mMRC (breathlessness score) Review last spirometry result Assess current status: • Breathlessness • Exercise tolerance • Sputum volume • Sputum colour • Oxygen saturations • Flu vaccine • Weight Check frequency of using reliever medication Check inhaler technique	Assess the patient's knowledge of their personal signs and symptoms of an exacerbation Ask about adherence with maintenance treatment Review smoking status and cessation strategies Assess whether the patient is coping with activities of daily living Consider a nutritional assessment Consider whether patient requires further specialist review if symptoms and presentation don't correlate Review for any co-morbid conditions Consider discussing or reviewing an advance care plan	Consider whether additional drug treatment is required if COPD is not adequately controlled such as increasing breathlessness or recent exacerbation Consider withdrawal of ICS if patient is stable and there is no evidence of benefit or if there has been recent pneumonia. If ICS is withdrawn review patient in 4–6 weeks Consider if a home supply of antibiotics and oral corticosteroid is required Discuss an exercise plan and/or refer to pulmonary rehabilitation and/or physiotherapy Recommend flu pneumococcal and RSV vaccines Refer for assessment for domiciliary oxygen if resting oxygen saturations <88% on room air when well and smoke free Refer for support services/ specialist review if appropriate	Complete the details on the front page of the patient's plan Review the signs and symptoms of worsening COPD and of a chest infection with the patient (unwell, very unwell and extremely unwell) Remind the patient what to do when unwell: • breathing control techniques • correct inhaler technique • chest clearance (if required) • energy conservation techniques Enter the antibiotic name and length of course (usually 5 days) Enter the prednisone regimen (usually 40 mg daily for 5 days) Advise the patient of a time for clinical review after starting home supply of prednisone and antibiotics (if applicable)

These steps are likely to need more than one consultation.

Appendix 3: Useful documents and resources

An updated list of resources will be maintained on the Asthma and Respiratory Foundation New Zealand website: www.asthmafoundation.org.nz/resources/topic/copd

This includes printed and downloadable copies of:

- New Zealand COPD Guidelines 2025
- New Zealand COPD Guidelines – Quick Reference Guide
- COPD Action Plans (English, Māori, Samoan, Tongan, Simplified Chinese)
- Breathlessness Strategies for COPD
- Breathlessness Quick Reference (English, Māori, Samoan)
- 'COPD – Fundamental information on chronic obstructive pulmonary disease' patient handbook
- How to use - Inhaler Device Chart
- Inhaler Device Identification Chart

Patient information is also available on the Asthma and Respiratory Foundation New Zealand website: www.asthmafoundation.org.nz/your-health/living-with-copd

Pulmonary rehabilitation classes:

A detailed list of pulmonary rehabilitation classes available in New Zealand can be found on the Asthma and Respiratory Foundation New Zealand website: www.asthmafoundation.org.nz/about-us/support-groups

Other useful resources:

1. Health New Zealand | Te Whatu Ora. 2024. Chronic obstructive pulmonary disease (COPD): info.health.nz/conditions-treatments/lungs/chronic-obstructive-pulmonary-disease
2. The Lung Foundation (Australia) website has many resources for patients with COPD: lungfoundation.com.au/lung-diseases/copd/living-with
3. Airway clearance techniques: bronchiectasis.com.au/resources/videos/the-active-cycle-of-breathing-technique
4. Smoke free services: www.smokefree.org.nz
5. Quitline: quit.org.nz
6. Māori health models of care: www.health.govt.nz/maori-health/maori-health-models
7. Pacific health models: hpfnz.org.nz/pacific-health-promotion/pacific-health-models
8. Te Mana Ola: The Pacific Health Strategy: www.health.govt.nz/strategies-initiatives/health-strategies/te-mana-ola-the-pacific-health-strategy
9. Advance Care planning: www.myacp.org.nz
10. Supporting Breathlessness: www.supporting-breathlessness.org.uk
11. 'How-to use' inhaler videos, Healthify NZ: healthify.nz/medicines-a-z/i/inhaler-devices
12. Pacific Healthy Homes initiative, Ministry for Pacific Peoples: www.mpp.govt.nz/programmes-and-funding/health/pacific-healthy-homes
13. Healthy Homes Initiative: www.hhi.org.nz

About me

(tick all that apply)

- ☐ I am a known CO_2 retainer
- ☐ I have an Advance Care Plan
- ☐ Long-term home oxygen and flow rate: _____ *L/min*

Remember

- Keep your action plan up to date
- Make sure your inhalers aren't empty or expired
- Take your medications as prescribed
- Regularly check your inhaler technique with your healthcare practitioner

Tips for managing your breathlessness

Scan this QR code for a guide on managing your breathlessness.

My Breathlessness Plan

1. Stop what you are doing

2. Find a resting position

3. Use your fan, or the breeze

4. Begin your preferred breathing technique for 2-3 minutes

If you are still feeling breathless, follow your Action Plan on the next page

Using a spacer

If you use a metered dose inhaler (MDI), a spacer will help get the correct dose of medication into your lungs.

Ask your healthcare professional about a spacer, they can provide them free of charge. If you don't already have one, you need one. Spacers increase your medication's effectiveness.

1. Shake the inhaler well (holding it upright).

2. Fit the inhaler into the opening at the end of the spacer.

3. Seal lips firmly around the mouth piece, press the inhaler once only.

4. Take 4-6 slow breaths in and out through your mouth. Do not remove the spacer from your mouth between breaths.

   OR take one slow deep breath in and hold this for 10 seconds.

5. Repeat steps 1-4 for further doses.

Washing your spacer

Wash your spacer once a week with warm water and dishwashing liquid.

Do not rinse, drip dry to ensure that your medicine gets into your lungs and doesn't stick to the sides of the spacer.

Produced by Asthma and Respiratory Foundation NZ
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Asthma + Respiratory FOUNDATION NZ

COPD

(Chronic Obstructive Pulmonary Disease)

Action Plan

This COPD Action Plan belongs to:

_____

Better breathing, better living.

YOUR COPD ACTION PLAN

Name | Healthcare practitioner

Date of plan | Healthcare practice phone

Know your COPD symptoms...

Know when and how to take your medicine...

NORMAL FOR ME

When I am well my 'normal' is

- I have a usual amount of cough/sputum
- I can do my usual activities
- I can walk _____ metres/km
- Oxygen saturations _____ % breathing room air

[name]	*puffs every morning*	
	puffs every night	
[name]	*puffs every morning*	
	puffs every night	

Reliever:	*puffs when you need it to relieve your symptoms*

I'M UNWELL

These signs suggest my COPD is worse:

- I am more breathless
- I need my reliever medicine more often
- I am more tired/fatigued
- I am losing my appetite
- I may have a fever (hot/cold flushes, temperature)
- I may have more sputum

What should I do?

- Breathing control techniques – *scan QR code on back page*
- Rest more
- Sputum clearance
- Take reliever inhaler regularly (for example every 4 hours)
- Make an appointment to see my Primary Health Care team within 3 days

Start prednisone: _____ *mg for* _____ *days*

If I have all of the following symptoms it is a sign of a chest infection:

- There is an increase in the amount of sputum
- My sputum has changed to a darker colour
- I am more breathless than usual

Start antibiotics for signs of a chest infection:

[name]	*times per day for*	*days*

I'M VERY UNWELL

I am becoming more unwell if:

- I am getting worse despite the extra medicines

OR

- I am no better 48 hours after taking prednisone

What should I do?

- Breathing control techniques – *scan QR code on back page*
- Rest more
- Sputum clearance
- Phone my Primary Health Care team to make an urgent appointment today or go to After Hours Medical Centre

Important: See a healthcare practitioner today

Other instructions:

EMERGENCY

I'm *extremely* unwell

- I am very breathless
- I am not getting any relief from my reliever medicine
- I am scared
- I may be unusually confused or drowsy
- I may have chest pain

What should I do?

- **Dial 111** for an ambulance or press your medical alarm button
- Take extra reliever as needed until the ambulance arrives
- Breathing control techniques

Plan prepared by

Next review date

Signature

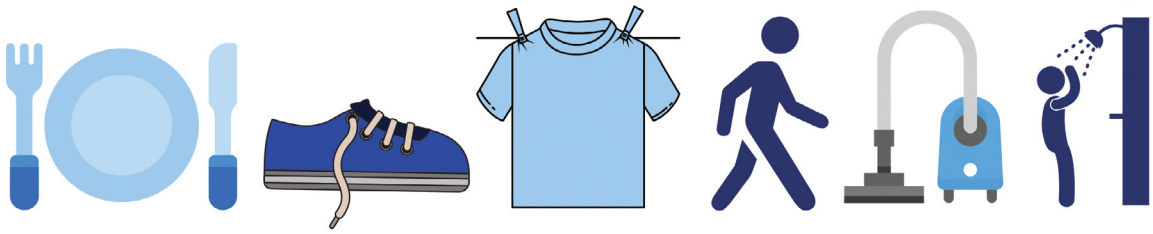
Appendix 5: Breathlessness strategies for COPD

BREATHLESSNESS
STRATEGIES FOR COPD

Asthma + Respiratory FOUNDATION NZ

Breathlessness is a major symptom in COPD. It can often seem to come on for no apparent reason or with very little exertion. This can cause people to feel frightened, out of control and anxious

COMMON ACTIVITIES THAT CAN CAUSE BREATHLESSNESS



Many activities can cause breathlessness such as, walking, bending down, showering, getting dressed, going to the toilet, vacuuming, hanging out washing, and lifting things.

Eating can be challenging as it can require effort to prepare food and then it is difficult to eat food due to breathlessness. Eating a large portion can also cause breathlessness.

MANAGING BREATHLESSNESS

These strategies can help manage chronic breathlessness in stable lung disease. If your breathlessness becomes out of control and unmanageable rapidly, please seek medical attention.

1 CONSERVE YOUR ENERGY & PACE YOURSELF

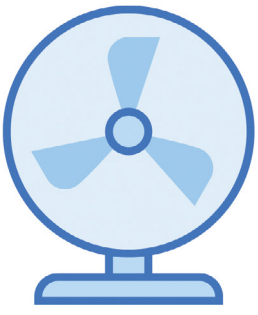
People who are breathless often rush to get tasks done. This is not a useful strategy. Learning to pace yourself helps keep control of your breathing so that you can manage independently for longer.

- ***Plan your day:*** *Don't try to fit too much in—allow plenty of time to carry out tasks. Cut bigger tasks down into smaller manageable parts and Allow for plenty of rest periods between each task.*
- ***Prioritise tasks:*** *Which tasks can wait until you feel less breathless?*
- ***Adapt tasks:*** *Can you sit down to complete the task? Is there a simpler way to complete the task?*
- ***Delegate:*** *Can someone help you with the task?*

2 USE A FAN

A fan can help control breathlessness. Hand-held fans are a great option because they are cheap, quiet and easily portable. A free-standing fan, a desktop fan or the breeze through an open door or window can also help.

To use the fan: Hold the fan about 15 centimetres from your face so you can feel the air on your top lip. Slowly move the fan from side to side so that the breeze covers the bottom half of your face



MANAGING BREATHLESSNESS

3 FIND A RESTING POSITION

Find your resting position – this is a position which helps you relax and breathe better. You may already unconsciously use these.

Lean forward with arms resting on your knees or the sides of a chair. Position knees slightly apart

Lean forward over a table or surface resting on your arms up on some pillows or similar

Lean forward with arms resting on a surface such as supermarket trolley, or back of a chair. Alternately, rest standing with your back against a wall.

4 BREATHING CONTROL TECHNIQUES

There are several different breathing techniques that can be used to manage breathlessness. Practice them to find what suits you.

BREATHING CONTROL

1) Place one hand on your tummy.
2) Relax upper chest & shoulders.
3) Breathe in gently through your nose (feel your tummy move out).
4) Breathe out through your nose and/or mouth and your tummy will move in.

PURSED LIPS

This can be used with all activities and at rest.
1) Breathe in gently through your nose.
2) Breathe out with your lips pursed as if you are whistling or blowing through a straw

BLOW AS YOU GO

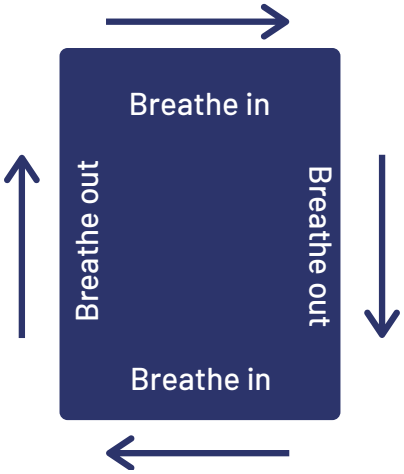
Use this when doing something that makes you breathless, such as hanging out washing.
1) Breathe in before you make the effort.
2) Breathe out while making the effort.

PACED BREATHING

Useful when you're active (climbing stairs or walking).
1) Pace your steps to your breathing.
2) Breathe in.
3) Breathe out as you go up a stair.

BREATHE AROUND THE RECTANGLE

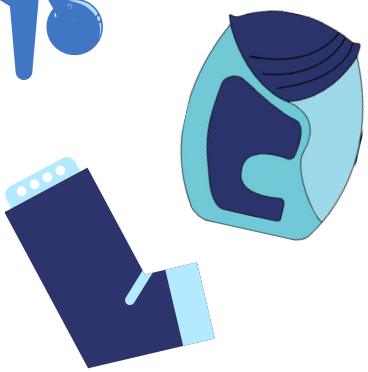
1) Focus on a rectangle shape eg door frame or window
2) Breathe in along the short side
3) Breathe out along the long side



MANAGING BREATHLESSNESS

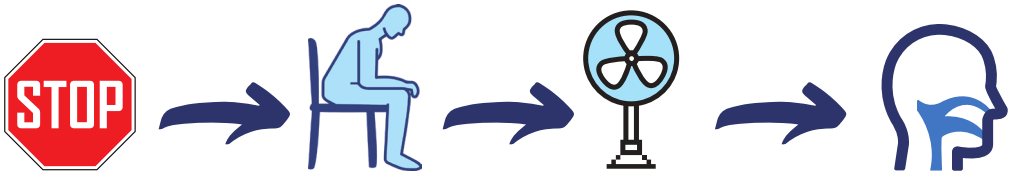
5 DISTRACTION AND RELAXATION
Focus on things that bring you pleasure or calmness. Mindfulness and meditation can be useful.

6 EXERCISE
Regular activity is important to maintain fitness and strength, but should be done in moderation. Ask to be referred to your local pulmonary rehabilitation program.



7 MEDICATION
Use your prescribed medication as directed. If you have difficulty managing your breathlessness, talk to your doctor or nurse practitioner as there may be other medications that may help.

WHEN FEELING BREATHLESS...



Stop what you are doing → **Find a resting position** → **Use your fan or the breeze** → **Choose your preferred breathing technique, & continue for 2-3 minutes**

AFTER 2-3 MINUTES EVALUATE YOUR BREATHLESSNESS

Are you feeling less breathless and more in control?
Yes: *Continue with your activity*
OR
No: *Take reliever medication through a spacer, then resume breathing technique for another 2-3 minutes*

If you still feel no better, then assess whether you need to seek medical help

Appendix 6: Breathlessness strategies: quick reference guide

Breathlessness quick reference

Tips for managing breathlessness at home

Asthma + Respiratory FOUNDATION NZ

Conserve your energy and pace yourself

Plan your day: Will I have time for a break?

Prioritise tasks: What's most important?

Adapt tasks: Can it be done easier?

Delegate: Can someone else help?

Use a fan

Use either a hand-held fan, freestanding fan, a desktop fan, or the breeze through an open door or window. Hold the fan about 15 centimetres from your face so you can feel the air on your top lip.

Change your position

- Lean forward with arms resting on your knees or the sides of a chair and position knees slightly apart.

- Lean forward over a table or surface resting on your arms up on some pillows or similar.

- Lean forward with arms resting on a surface eg supermarket trolley, or back of a chair. Alternately rest standing with your back against a wall.

Breathing techniques

- **Breathing control/tummy control:** Place hands on tummy, breathe in (tummy goes out), breathe out (tummy goes in).
- **Pursed-lip breathing:** Breathe in through your nose, breathe out like through a straw.
- **Blow as you go:** Breathe in before exerting effort, breathe out while making the effort.
- **Paced breathing:** Breathe in for a few counts, breathe out for a few counts.
- **Breathe around the rectangle:** breathe in on the short side, breathe out on the long side.

Distraction and meditation

Focus on things that bring you pleasure or calmness, such as mindfulness or meditation.

Exercise

Regular activity should be done in moderation. Ask to be referred to your local pulmonary rehabilitation program.

Take your medication

Use your prescribed medication as directed. If you have difficulty managing your breathlessness, talk to your healthcare professional as there may be other medications that may help.

When feeling breathless...

Stop what you're doing

Rest your position

Use your fan

Start your breathing technique

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