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## NZ COPD GUIDELINES

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## RESOURCES AND TOOLS

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<td></td>
<td>10</td>
</tr>
</tbody>
</table>

The content of this quick reference guide is sourced from the ‘New Zealand COPD Guidelines 2021’ which can be found at www.nzrespiratoryguidelines.co.nz
COPD SYMPTOMS

COPD should be considered in anyone over the age of 40 with any of the following ongoing symptoms:
• Chronic cough
• Chronic sputum production
• Wheeze
• Shortness of breath

NB: There is usually a history of cigarette smoking or exposure to smoke or other noxious substances with most diagnoses. There is also a higher risk for those of Māori and/or Pasifika descent.

COPD DIAGNOSIS USING SPIROMETRY

The diagnosis of COPD should be confirmed by spirometry. Spirometry may be done both before and after bronchodilator to assess reversibility*, but the diagnosis and severity are determined by post-bronchodilator measurements.

Diagnosis
• Irreversible airflow obstruction is diagnosed if post-bronchodilator FEV₁/FVC ratio is < 0.70*
• If there is partial reversibility and a substantial (>400ml) improvement in FEV₁ post-bronchodilator, then asthma or Asthma-COPD Overlap is likely

Assess severity
The severity of the obstruction is diagnosed using the post-bronchodilator FEV₁ as a % of the predicted value**

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEV₁ ≈ 60-80% predicted</td>
<td>FEV₁ ≈ 40-59% predicted</td>
<td>FEV₁ &lt; 40% predicted</td>
</tr>
</tbody>
</table>

* For more information on the criteria for airflow obstruction and reversibility testing see p.4 in the NZ COPD Guidelines full document at nzrespiratoryguidelines.co.nz.

** Predicted values are determined on the basis of age, height, sex, and ethnicity.
ASSESSING COPD SEVERITY

Spirometry should be used in conjunction with overall severity.

Symptoms to assess

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breathless on moderate exertion</td>
<td>Breathless walking on level ground</td>
<td>Breathless on minimal exertion</td>
</tr>
<tr>
<td>Little or no effect on daily activities</td>
<td>Increasing limitation on daily activities</td>
<td>Daily activities severely curtailed</td>
</tr>
<tr>
<td>Few symptoms</td>
<td>Exacerbations requiring oral corticosteroids and/or antibiotics</td>
<td>Exacerbations of increasing frequency and severity</td>
</tr>
<tr>
<td>Cough and sputum production</td>
<td>Recurrent chest infections</td>
<td></td>
</tr>
</tbody>
</table>

Modified Medical Research Council (mMRC) Dyspnoea Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Symptom complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>I only get breathless with strenuous exercise</td>
</tr>
<tr>
<td>1</td>
<td>I get short of breath when hurrying on level ground or walking up a slight hill</td>
</tr>
<tr>
<td>2</td>
<td>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</td>
</tr>
<tr>
<td>3</td>
<td>I stop for breath after walking about 100 metres or after a few minutes on level ground</td>
</tr>
<tr>
<td>4</td>
<td>I am too breathless to leave the house or I am breathless when dressing or undressing</td>
</tr>
</tbody>
</table>

The COPD Assessment Test (CAT) can measure the impact of COPD and response to treatment, visit: www.catestonline.org
NON-PHARMACOLOGICAL MANAGEMENT OF COPD

Smoking cessation
Smoking cessation is the most important component of COPD management and every patient who is still smoking should be offered support to quit. Referral to a local smoking cessation support service is recommended.

Exercise
Promote 20-30 minutes per day of "huff and puff" exercise, or exercise which causes the patient to feel breathless. Muscle strengthening activities at least twice a week.

Pulmonary rehabilitation
Offer pulmonary rehabilitation to all patients. If this cannot be accessed, an in-home exercise programme should be considered. Patients may also benefit from local support groups. A list of groups can be found here: www.asthmafoundation.org.nz/about-us/support-groups

Breathlessness management
Individual breathlessness plans (see p.10 for resources), including hand-held fan therapy, diaphragmatic breathing, and pursed lips breathing exercises can help manage symptoms. Some patients will benefit from review by a respiratory physiotherapist and breathing exercises.

Sputum management
Patients with chronic sputum production may benefit from seeing a physiotherapist for an individualised chest clearance plan.

Nutrition
Malnutrition and obesity contribute to morbidity and mortality in COPD. Consider referral to a dietician, or high-calorie nutritional supplements, for those who are malnourished, and weight loss advice for those who are obese.

Housing
A smoke-free, warm, dry home environment is likely to improve COPD control.
PHARMACOLOGICAL MANAGEMENT OF COPD

Inhaled medication for COPD
Inhaler technique, device suitability, and adherence should be reviewed regularly. Incorrect inhaler technique and poor adherence are common reasons why inhalers don’t work. Review these before deciding to change to a different inhaler.

- **SABAs** and **SAMAs** can be used for symptom relief
- **LAMAs** are the first-line long-acting bronchodilator, both for breathlessness and reduction of exacerbation risk
- Escalate to a **LABA/LAMA** if LAMA alone does not control breathlessness/exacerbations
- **ICS** are to prevent exacerbations in patients with frequent exacerbations
- **Higher blood eosinophils** are associated with a greater response to ICS and may identify patients who should receive ICS/LABA in preference to LABA/LAMA
- **Asthma/COPD overlap** patients should receive ICS irrespective of blood eosinophils, lung function and exacerbation frequency, preferably as combination ICS/LABA

Practice points:
- Choice of treatment should be guided by patient preferences for inhaler device. Treatment can be escalated more quickly for patients with severe COPD or frequent exacerbations
- Provide all patients with a written/electronic personalised COPD action plan (see resources p.10)

Simplified maintenance inhaler management of COPD

<table>
<thead>
<tr>
<th>When treating</th>
<th>Start with</th>
<th>If needed, move on to</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD without frequent exacerbations</td>
<td>LAMA</td>
<td>LABA/LAMA</td>
</tr>
<tr>
<td>COPD with frequent exacerbations</td>
<td>LAMA</td>
<td>LABA/LAMA (consider ICS/LABA if eosinophilia) then LABA/LAMA/ICS</td>
</tr>
<tr>
<td>Asthma/COPD overlap</td>
<td>ICS/LABA</td>
<td>ICS/LABA plus LAMA</td>
</tr>
</tbody>
</table>

Remember
- Do not routinely prescribe a SAMA to patients on a LAMA
- Try to avoid long-term oral corticosteroids
- Do not routinely prescribe theophylline
- Do not use short-term response to bronchodilator to predict benefit from long-term bronchodilator therapy
- Do not routinely prescribe nebulisers for stable COPD

ICS withdrawal
Withdraw ICS if there is no evidence of benefit, the patient develops pneumonia or other adverse affects, or if the patient is stable. However, do not withdraw ICS in patients with asthma/COPD overlap or raised blood eosinophils. Review patient 4-6 weeks after ICS withdrawal.
OXYGEN THERAPY FOR COPD

**Note:** 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 O$_2$ supply.

Evaluation of the patient and consideration for long-term oxygen therapy supply should be done by a specialist respiratory service. Oxygen does not reduce the sensation of breathlessness in patients who are not hypoxic. Oxygen may not improve breathlessness even in those who are hypoxic.

**Key points on oxygen therapy**

- Oxygen is a drug and should not be used unless it is prescribed
- Oxygen is a treatment for hypoxia, not dyspnoea
- Long-term oxygen therapy is only beneficial if it is used for at least 16 hours a day

**Criteria for supply of long-term oxygen therapy**

- Assess when the patient is stable, at least six weeks after hospital discharge or an acute respiratory illness
- PaO$_2$ (measured by arterial blood gas) less than 7.3kPa (55mmHg) indicates the need for long-term oxygen (oxygen saturation usually < 88%).
- PaO$_2$ <8.0kPa (60mmHg) (oxygen saturation up to 91%) may 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)
ACUTE COPD EXACERBATIONS

COPD exacerbations are characterised by an acute change in the patient’s baseline dyspnoea, cough and/or sputum beyond normal day-to-day variations.

Key symptoms
• Increased shortness of breath
• Sputum purulence and volume increased
• Increased cough and wheeze

Notes
• COPD exacerbations are associated with accelerated loss of lung function
• Prolonged exacerbations are associated with worse health status and more frequent future exacerbations.
• Early diagnosis and management of exacerbations may prevent functional deterioration and reduce hospital admissions.

Assessment of COPD exacerbation severity

<table>
<thead>
<tr>
<th>Mild to moderate</th>
<th>Severe</th>
<th>Life-threatening / imminent respiratory arrest</th>
</tr>
</thead>
<tbody>
<tr>
<td>More short of breath than usual</td>
<td>Very short of breath</td>
<td>Extremely short of breath</td>
</tr>
<tr>
<td>Able to speak in sentences</td>
<td>Only a few words per breath</td>
<td>Unable to speak</td>
</tr>
<tr>
<td>Usually have wheeze</td>
<td>May not have wheeze</td>
<td>May not have wheeze</td>
</tr>
<tr>
<td>Some chest/neck indrawing</td>
<td>Severe neck/cheat indrawing</td>
<td>May be no chest/neck indrawing</td>
</tr>
<tr>
<td>Tripod positioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpO₂ near usual level</td>
<td>SpO₂ well below their usual level</td>
<td>SpO₂ rapidly falling</td>
</tr>
<tr>
<td>Normal level of consciousness</td>
<td>May be agitated</td>
<td>Severe agitation and/or falling level of consciousness</td>
</tr>
</tbody>
</table>

Key messages for exacerbation management
• Most exacerbations can be managed at home
• SABA with or without SAMA are the first-line bronchodilator to treat an acute exacerbation
• Give short course oral corticosteroids e.g. prednisone 40mg once daily for 5 days
• Give short-course antibiotics, for purulent sputum and/or other evidence of infection
• Titrate oxygen to target saturations of 88 to 92%
• Non-invasive ventilation (NIV) reduces mortality in patients with hypercapnic respiratory failure due to an exacerbation
• Careful discharge planning and referral to pulmonary rehabilitation may reduce the risk of future exacerbations and admissions
Pre-hospital Management of Acute Exacerbation of COPD

Assess severity

Moderate

OR

Severe

Life-threatening OR

Imminent respiratory arrest

Initial Management

• More short of breath than usual
• Able to speak in sentences
• Usually have wheeze
• Some chest/neck indrawing
• SpO₂ near usual level
• Normal level of consciousness

• Very short of breath
• Only a few words per breath
• Severe chest/neck indrawing
• Tripod positioning
• SpO₂ well below their usual level
• Severe agitation and/or falling level of consciousness

• Extremely short of breath
• Unable to speak
• May not have a wheeze
• May have cyanosis
• Unable to peak
• Extremities of coolness

Initial Management

Further Consideration: A review of medical records and discussion with respiratory specialist

Management of severe exacerbations

• Salbutamol via inhaler & spacer, up to 5 individual puffs
• Controlled oxygen, if needed, aiming for SpO₂ 88‐92%
• Oral prednisone 40mg
• Oral antibiotics if change in sputum or evidence of infection

Air‐driven nebuliser: Salbutamol 2.5mg AND Ipratropium 500mcg

• Controlled oxygen, aiming for SpO₂ 88‐92%
• Oral prednisone 40mg
• Oral antibiotics if change in sputum or evidence of infection

Responding?

YES

Continue Treatment

Repeat salbutamol via inhaler and spacer as needed

Air‐driven nebuliser:
Salbutamol 2.5mg AND Ipratropium 500mcg

NO

Assess need for hospital transfer

• Repeat salbutamol nebuliser 2.5mg as needed
• Patient and whānau preferences (advance care plan)

Transfer to Hospital

• Repeat salbutamol nebuliser 2.5mg as needed
• Patient and whānau preferences (advance care plan)

Is Hospital Required?

YES

Ongoing Management

• Severity of symptoms
• Confusion
• Inability to manage/lack of support at home
• Lack of response to treatment
• Other medical conditions
• Patient and whānau preferences (advance care plan)
• Document resuscitation status and consider ceiling of care for each patient
• Review and update care plans (advance care plan)
• Review of medications
• Track of response to treatment
• Notify to manage or/and support of home
• Consider
• Severity of symptoms

Transfer to Hospital

• Repeat salbutamol nebuliser 2.5mg AND Ipratropium 500mcg

Add Nebuliser

Community/Hospice based care

• Repeat salbutamol nebuliser 2.5mg AND Ipratropium 500mcg

YES

Repeat salbutamol nebuliser 2.5mg as needed

• Patient and whānau preferences (advance care plan)

NO

Assess need for hospital transfer

• Repeat salbutamol nebuliser 2.5mg as needed
• Patient and whānau preferences (advance care plan)

Transfer to Hospital

• Repeat salbutamol nebuliser 2.5mg as needed
• Patient and whānau preferences (advance care plan)

Is Hospital Required?

YES

Ongoing Management

• Severity of symptoms
• Confusion
• Inability to manage/lack of support at home
• Lack of response to treatment
• Other medical conditions
• Patient and whānau preferences (advance care plan)
• Document resuscitation status and consider ceiling of care for all patients

Transfer to Hospital

• Repeat salbutamol nebuliser 2.5mg AND Ipratropium 500mcg

Add Nebuliser

Community/Hospice based care

• Repeat salbutamol nebuliser 2.5mg AND Ipratropium 500mcg

YES

Repeat salbutamol nebuliser 2.5mg as needed

• Patient and whānau preferences (advance care plan)

NO

Assess need for hospital transfer

• Repeat salbutamol nebuliser 2.5mg as needed
• Patient and whānau preferences (advance care plan)

Transfer to Hospital

• Repeat salbutamol nebuliser 2.5mg as needed
• Patient and whānau preferences (advance care plan)

Is Hospital Required?

YES
**General Considerations**

*Continue treatment and reassess after 2 hours.*

**At Discharge**

*Document resuscitation status and consider ceiling of care for all patients.*

**Discharge Patient**

**Responding?**

- YES: Patient responding, but discharge not currently appropriate
- YES: Patient deteriorating
- NO: Patient responding and discharge appropriate

- Good response to initial management?
  - Not breathless or tachycardic at rest?
  - Able to manage/adequate support at home?

- Provide education and updated COPD action plan
- Ensure clear follow-up plans are in place
- Primary care follow-up within 2 weeks
- Ensure that there is sufficient support at home
- Refer to pulmonary rehabilitation unless completed recently or contra-indicated
- Prescribe prednisone and antibiotics if indicated, to complete course.

**Ongoing management:**

- Complete 5 days of prednisone
- Complete 5 to 7 days of antibiotics, if indicated
- Salbutamol as needed via inhaler & spacer
- Continue regular inhalers unless contraindicated

- Consider:
  - Sputum clearance
  - Early Mobilisation

**In patients not responding to treatment, consider alternative diagnoses (heart failure, acute coronary disease, pneumonia, pneumothorax, pulmonary embolus). Suggested investigations:**

- Chest X Ray and ECG
- Biomarkers (troponin, BNP, +/- d-dimer where appropriate)

**Consider NIV**

- In all patients with life-threatening exacerbation or who are requiring supplementary oxygen:
  - Obtain arterial blood gas and assess for hypercapnic respiratory failure
  - Consider any advance care plan, and patient/whānau preferences

**Start NIV**

- YES
  - Continue treatment
- NO
  - Repeat Salbutamol 2.5mg nebuliser as needed
  - Step down to SABA via inhaler & spacer once stabilised
  - Start NIV if pH <7.35 and pCO$_2$ >6 kPa /45mmHg

- Ensure escalation plan and goals of care are documented in all patients

**Admit Patient**

- Air‐driven nebuliser: Salbutamol 2.5mg AND Ipratropium 500mcg
- Controlled oxygen, aiming for SpO$_2$ 88‐92%
- Oral prednisone 40mg
- Oral antibiotics if change in sputum or evidence of infection

**Initial Management**

**Assess Severity**

- Moderate OR Severe

**Additional Considerations**

- Consider NIV: controlled oxygen, SpO$_2$ 88‐92%
### 4-STEP COPD CONSULTATION*

#### 1. Assess COPD control and exacerbation risk
- Review history of COPD exacerbations in last 12 months (requiring oral corticosteroids or antibiotics)
- Complete CAT score**
- Complete mMRC Dyspnoea Scale with patient***(Breathlessness score)
- Review last spirometry result
- Assess current status:
  - Breathlessness
  - Exercise tolerance
  - Sputum volume
  - Sputum colour
  - Oxygen saturations
  - Flu vaccine
  - Weight

#### 2. Consider other relevant clinical issues
- Assess the patient’s knowledge of their personal signs and symptoms of an exacerbation
- Ask about adherence with maintenance treatment
- Check frequency of using reliever medication
- Check inhaler technique
- Review smoking status and cessation strategies
- Assess whether the patient is coping with ADLs
- Consider a nutritional assessment
- Consider further specialist review if symptoms and presentation don’t correlate
- Review for any co-morbid conditions

#### 3. Decide whether treatment plan needs to change
- Consider if 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 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 annual flu vaccine and consider pneumococcal vaccine
- 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

#### 4. Complete a COPD Action Plan
- Complete the front page of the patient’s plan
- Review the signs and symptoms of worsening COPD and of a chest infection (e.g., 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 type and length of course for an exacerbation (usually 5-7 days)
- Enter the prednisone regimen (usually 40mg daily for 5 days)
- Set a time for clinical review after starting home supply of prednisone and antibiotics (if applicable)
- Enter additional instructions in the steps to manage breathlessness section
- Give the patient a copy of the plan and save on the patient record

*Please note, the 4-step consultation will likely take more than one visit
**The COPD Assessment test (CAT) can be accessed at www.catestonline.org
***The mMRC Dyspnoea Scale can be found on p.2
FURTHER COPD RESOURCES AND TOOLS

Resources available to order or download at

shop.asthmaandrespiratory.org.nz

- Full Asthma and COPD Guidelines
- Asthma and COPD Action Plans
- Interactive PDFs
- Educational Booklets
- Breathlessness guides

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- Full Asthma and COPD Guidelines
- Asthma and COPD Action Plans
- Interactive PDFs
- Educational Booklets
- Breathlessness guides
Asthma & COPD Fundamentals

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- Endorsed by College of Nurses Aotearoa NZ
- Aligns with NZ Asthma & COPD Guidelines
- Four online modules
- Study at your own pace

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Abbreviations used throughout this guide:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADLs</td>
<td>Activities of daily living</td>
</tr>
<tr>
<td>BNP</td>
<td>Brain natriuretic peptide</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>FEV&lt;sub&gt;1&lt;/sub&gt;</td>
<td>Forced expiratory volume in one second</td>
</tr>
<tr>
<td>FEV&lt;sub&gt;6&lt;/sub&gt;</td>
<td>Forced expiratory volume in six seconds</td>
</tr>
<tr>
<td>FVC</td>
<td>Forced vital capacity</td>
</tr>
<tr>
<td>ICS</td>
<td>Inhaled corticosteroid</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>LABA</td>
<td>Long-acting beta agonist</td>
</tr>
<tr>
<td>LAMA</td>
<td>Long-acting muscarinic antagonist</td>
</tr>
<tr>
<td>mMRC</td>
<td>Modified Medical Research Council</td>
</tr>
<tr>
<td>NIV</td>
<td>Non-invasive ventilation</td>
</tr>
<tr>
<td>PaCO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Arterial carbon dioxide tension</td>
</tr>
<tr>
<td>PaO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Arterial oxygen tension</td>
</tr>
<tr>
<td>SABA</td>
<td>Short-acting beta agonist</td>
</tr>
<tr>
<td>SAMA</td>
<td>Short-acting muscarinic antagonist</td>
</tr>
<tr>
<td>SPO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Oxygen saturation by pulse oximetry</td>
</tr>
</tbody>
</table>