The optimal management of patients with COPD

Key practice points

- In 2015 two medicines were added to the COPD toolkit: indacaterol (fully subsidised) and glycopyrronium (fully subsidised with Special Authority approval)
- Oral corticosteroids are now recommended for only five days for patients with moderate or severe COPD exacerbations; treatment courses of less than two weeks do not need to be tapered
- End-of-life discussions with patients and family/whānau affected by COPD should be initiated early

Chronic obstructive pulmonary disease (COPD) affects one in seven people in New Zealand aged over 40 years.[1] It is largely preventable as more than 85% of cases are caused by smoking.[2]

The burden of COPD among Māori and Pacific peoples represents one of the most significant healthcare disparities in New Zealand. The prevalence of COPD among Māori is more than twice that of non-Māori and the impact of the disease is greater.[3]

Diagnosing COPD

A clinical diagnosis of COPD can be considered in anyone aged over 35 years who has had long-term exposure to cigarette smoke, occupational exposure to dust, fumes or gas and has typical symptoms of COPD, i.e. breathlessness, cough, and/or sputum production.[4]

Spirometry is required to confirm a diagnosis of COPD in patients with symptoms and risk factors.[5] A FEV_1 < 80% predicted and a FEV_1/FVC ratio < 0.7 indicates an airflow limitation.[4] This is not, however, disease specific and it may not be possible to differentiate between conditions such as COPD, chronic bronchitis or asthma using spirometry.[6] Features such as the age of the patient, pattern of symptoms, e.g. constant versus intermittent, and time course of symptoms, e.g. slow progression or spontaneous development, are useful to differentiate between respiratory conditions. Post-bronchodilator spirometry is helpful for differentiating asthma from COPD, but less so if the patient has asthma with fixed airflow limitation.[7]

The results of spirometry are also used to assess the severity of COPD, in combination with the clinical signs and symptoms of hypoxaemia, hypercapnia, pulmonary hypertension, heart failure and polycythaemia.[4]

Screening for COPD with spirometry testing in asymptomatic patients is not recommended as there is no evidence that earlier detection improves outcomes in patients with COPD before they develop significant symptoms.[5]

The management of patients with COPD

The non-pharmacological interventions for patients with COPD are:

- Smoking cessation
- Physical activity

- Pulmonary rehabilitation
- Maintenance of bodyweight in patients with advanced COPD

The pharmacological treatment of COPD is escalated in a stepwise manner according to the severity of the patient's condition in order to:

- Control the patient's symptoms
- Reduce their risk of exacerbations

Step 1: For all patients with COPD prescribe an inhaled short-acting beta2-agonist (SABA, e.g. salbutamol or terbutaline) or a short-acting muscarinic antagonist (SAMA, e.g. ipratropium) for use during periods of acute breathlessness.[4] Patients should be educated in the correct use of inhalers and spacers before treatment is initiated and their technique regularly reviewed, particularly before stepping up treatment. The patient's ability to use an inhaler may dictate the choice of medicine.

Step 2: For patients with COPD and persistent dyspnoea consider the addition of a long-acting beta2-agonist (LABA, e.g. salmeterol, indacaterol or formoterol) or a long-acting muscarinic receptor antagonist (LAMA, e.g. tiotropium* or glycopyrronium*).[4] There is good evidence that both LABA and LAMA can produce day-to-day improvements in lung function, symptom severity and reduce the frequency of exacerbations.[4]

Step 3: For patients with a FEV_1 < 50% of predicted and two or more exacerbations in a 12-month period consider prescribing a fixed-dose inhaled corticosteroid (ICS) in combination with a LABA, e.g. fluticasone + salmeterol or budesonide + formoterol*.[4] If the patient begins combination treatment remember to cease any LABA monotherapy. Patients who continue to experience frequent exacerbations may also benefit from the addition of a LAMA to a combination corticosteroid + LABA inhaler.

Table 1: The stepwise escalation of pharmacological treatment for COPD, based on severity, adapted from Abramson *et al*, 2014[1]

Severity	MILD	MODERATE	SEVERE
	▪ Few symptoms ▪ Breathless on moderate exertion ▪ Recurrent chest infections ▪ Little or no effect on daily activities ▪ $FEV_1 \approx 60–80\%$ predicted	▪ Increasing dyspnoea ▪ Breathless walking on level ground ▪ Increasing limitation of daily activities ▪ Cough and sputum production ▪ Infections requiring corticosteroids ▪ $FEV_1 \approx 40–59\%$ predicted	▪ Dyspnoea on minimal exertion ▪ Daily activities severely restricted ▪ Experiencing regular sputum production ▪ Chronic cough ▪ FEV_1 < 40% predicted
Medicines management	**CHECK DEVICE USAGE TECHNIQUE AND ADHERENCE AT EACH VISIT** – Up to 90% of patients do not use devices correctly		
	FOR ALL PATIENTS: Inhaled short-acting reliever, e.g. salbutamol, terbutaline or ipratropium		
	SYMPTOM RELIEF IF PERSISTENT TROUBLESOME DYSPNOEA: Add a long-acting beta agonist (LABA, e.g. salmeterol, indacaterol or formoterol) OR a long-acting muscarinic antagonist (LAMA, e.g. tiotropium* or glycopyrronium*). **This may also help to prevent exacerbations.** * Special Authority criteria apply; must have tried ipratropium first, see NZF for details		
	EXACERBATION PREVENTION IF TWO OR MORE EXACERBATIONS IN LAST 12 MONTHS AND FEV_1 < 50% PREDICTED: CHANGE TO inhaled corticosteroid (ICS)/LABA combination treatment (fluticasone/salmeterol OR budesonide/formoterol*); ADD a LAMA (e.g. tiotropium* or glycopyrronium*) if the patient continues to experience frequent exacerbations. N.B. When considering the use of inhaled corticosteroids in patients with COPD it is important to consider the risk of adverse effects, particularly pneumonia * Special Authority criteria apply; must have tried ipratropium first, see NZF for details		

Balance the risks versus benefits of ICS treatment. The long-term use of ICS has been shown to reduce the rate of exacerbations and slow the decline in quality of life in people with COPD.[4, 5] However, ICS use can increase the risk of pneumonia and other respiratory conditions in patients with COPD.

The role of ICS in the treatment of COPD will be more closely examined in Best Practice Journal in 2016.

* Subsidised with Special Authority approval

Managing exacerbations

Patients with COPD who have frequent exacerbations are more likely to experience a rapid decline in FEV_1 and are more likely to die of COPD-related complications.[4] Prompt treatment of exacerbations is important; a delay of greater than 24 hours approximately doubles the likelihood of hospital admission.[4] An exacerbation in the previous 12 months is the greatest risk factor for a future exacerbation.[4]

Management of a patient with an acute exacerbation of COPD includes:

- Inhaled bronchodilator (four to eight puffs of 100 microgram salbutamol inhaler), every three to four hours
- Breathing relaxation techniques
- Oral corticosteroids for five days, if moderate to severe exacerbation
- Oral antibiotics for five to ten days if there are signs of chest infection

Oral corticosteroids reduce the severity of COPD exacerbations and improve recovery time for the patient. Prednisone 30 – 50 mg, once daily in the morning, for five days can be prescribed for patients with moderate or severe exacerbations.[4] Prescribing oral corticosteroids for periods of 14 days to reduce the severity of exacerbations is no longer considered necessary.[8] Corticosteroid use does not need to be tapered in patients prescribed treatment courses of less than two weeks.

If patients display signs of chest infection prescribe oral antibiotics for five to ten days. Bacterial infection is thought to be involved in approximately half of exacerbations in patients with COPD.[4] Recommended treatments include: amoxicillin, 500 mg, three times daily or doxycycline, 100 mg, twice daily (other doxycycline regimens may recommend 200 mg, twice daily on day one, followed by 100 mg, once or twice daily).[4] Sputum culture is not routinely required unless the patient is not responding to antibiotic treatment or has had multiple bacterial infections over a period of several months.[4]

Regular follow-up is essential

The lung function of people with COPD can be expected to decline and regular follow-up is important. The patient's response to treatment is used to determine the success of interventions as spirometry may not reliably detect improvements in lung function. When a change is made to the patient's treatment clinically significant changes in symptoms such as dyspnoea can be expected to be detected within six weeks.[4] Changes in the patient's quality of life are best assessed over a longer period of time.[4]

Patients with advanced COPD

Low-dose opioids can relieve dyspnoea by decreasing the patient's respiratory rate without causing hypercapnia or hypoxia.[9] Initially, low doses of morphine can be trialled on an as-required basis for refractory dyspnoea, e.g. 2 mg of an oral solution pre-measured in a syringe or 2.5 mg of an immediate-release tablet (one-quarter of a 10 mg tablet of morphine).

Benzodiazepines can be very effective at reducing the anxiety associated with dyspnoea, although there is no evidence that they relieve breathlessness.[10] Lorazepam 0.5 mg (half of a 1 mg tablet), every four to six hours, as required, is an appropriate starting dose.[10]

Oxygen treatment in a consistently hypoxic patient may reduce polycythaemia, improve sleep quality, prevent cor pulmonale and reduce mortality.[4, 11] Patients with COPD who are stable but have persistent hypoxaemia, i.e. $SpO_2 < 92\%$ on pulse oximetry, should be referred to a respiratory physician to assess their need for long-term oxygen treatment.[4]

Weight loss in people with severe COPD can result in deteriorating lung and heart function.[12] Oral nutritional supplements may be required in patients with advanced disease. Pulmocare is a high-fat, reduced-carbohydrate nutritional supplement subsidised with Special Authority approval to patients with COPD and hypercapnia, i.e. $PCO_2 > 55$ mmHg.[13]

Judging the right time to initiate end-of-life discussions in patients with COPD can be difficult. Discussions about end-of-life issues should take place early to give patients sufficient time, e.g. 12 months, to plan with their family/whānau how they want their care to be managed. Discussions about end-of-life care are generally less stressful when patients are relatively well. The presence of two or more of the following is an indication that the patient's preferences for end-of-life care should be addressed:

- FEV_1 < 30% of predicted
- Age over 70 years
- Dependence on oxygen treatment
- One or more hospitalisations in the previous year for an exacerbation
- Left heart failure
- Weight loss or cachexia
- Decreased ability to function
- Increasing dependence on family or carer

Further information on end-of-life care is available from: **www.advancecareplanning.org.nz**

For further information, see: "The optimal management of patients with COPD – Part 1: The diagnosis" and "Part 2: Stepwise escalation of treatment", BPJ 66 (Feb, 2015).

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Smoking cessation – helping patients stick with it, until they quit

People who want to quit smoking should be offered both behavioural and pharmacological support. Combination nicotine replacement therapy (NRT), e.g. patches *and* gum or lozenges, is recommended as the first-line pharmacological treatment for people who smoke more than ten cigarettes a day or who smoke within an hour of waking. If a person experiences a lapse in their quit attempt, behavioural support and the continued use of NRT decreases the likelihood that they will begin smoking again. Buproprion, nortriptyline and varenicline are additional pharmacological options for smoking cessation. Varenicline is the most effective of these medicines and is approximately as effective as combination NRT. Varenicline is subsidised for patients who have previously tried to quit with other smoking cessation medicines. Before varenicline is initiated prepare patients for the possibility of adverse effects, e.g. nausea, and encourage them to persist with treatment unless these are severe.

For further information, see: "Smoking cessation: helping patients stick with it until they quit", BPJ 71 (Oct, 2015).