COPD in primary care: reminder and update

Managing COPD continues to be a major feature of primary care, particularly in practices with a high proportion of Māori and Pacific peoples.

COPDX clinical practice guidelines provide a useful framework for the diagnosis and management of COPD.[1,2] Here is a reminder of the COPDX framework and an update of recent evidence on COPD management based on a 2007 report by the Canadian Thoracic Association.[3]

Smoking cessation is still the only intervention that slows deterioration in lung function. However, the roles of other interventions, such as long acting beta-2 agonists (LABAs), aminophylline, inhaled steroids and tiotropium, are evolving as new evidence becomes available.

Key Components of the COPDX plan

- **Confirm diagnosis** and assess severity by the use of spirometry and measurements of functional impairment
- **Optimise function** by relief of symptoms, increasing wellbeing and reducing the number and severity of exacerbations and complications
- **Prevent deterioration** by smoking cessation and reduction of exposure to other harmful inhaled fumes and particles
- **Develop support network and self management plan**
- **Manage eXacerbations** promptly and appropriately

CONFIRM DIAGNOSIS AND ADDRESS SEVERITY

Spirometry remains key to confirming the diagnosis and assessing the severity of COPD. There are no evidence-based criteria on which to select people for spirometry but the Canadian Lung Association's suggestions seem reasonable (Table 1).

OPTIMISE FUNCTION

Bronchodilators are useful for people with moderate to severe COPD

Bronchodilators currently form the mainstay of pharmacological therapy for people with moderate to severe COPD. They improve expiratory flow and lung emptying thereby reducing air trapping and hyperinflation. However there is little information available on their efficacy for people with mild COPD (FEV1 > 65% of predicted).

Short acting bronchodilators

Short acting bronchodilators, both the beta-2 agonists such as salbutamol and anti-cholinergics such as ipratropium, improve pulmonary function, dyspnoea and exercise performance in moderate to severe COPD. Individual responses to different classes are variable. Using both classes together often produces a superior response.

Tiotropium

The effects of daily tiotropium on pulmonary function, chronic activity-related dyspnoea and quality of life is more sustained than four times per day ipratropium and adherence may be

better. Short-term studies have shown it to be as effective, or more effective than LABAs, but long-term comparisons are not yet available.

N.B. Patients perscribed tiotropium should have their ipratropium discontinued. Combinations such as Combivent include ipratropium.

Long acting beta-2 agonists.

LABAs produce more sustained improvements in pulmonary function, chronic dyspnoea and quality of life than short acting bronchodilators in moderate to severe COPD. Their effect on exercise performance has not yet been consistently demonstrated.

LABA / tiotropium combinations

Combination of these two classes of long acting bronchodilators may improve pulmonary function in severe COPD.

Oral theophyllines

Oral theophyllines are relatively weak bronchodilators; they may offer some additional effects when added to inhaled bronchodilators in chronic COPD management. However, theophylline has significant adverse effects and drug interactions and changes in smoking habits can alter blood concentrations of theophylline.

Inhaled corticosteroids may reduce exacerbation rates

Inhaled corticosteroids (ICS) do not reduce the decline of lung function in COPD but may reduce the severity or frequency of exacerbations.

The place of ICS in combination with LABAs is still not clear. Salmeterol plus fluticasone does not appear to reduce mortality rates compared to placebo but the combination does appear to reduce exacerbation rates and improve lung function. Addition of this combination to tiotropium does not appear to reduce exacerbation rates but may improve lung function, quality of life and exacerbation rates.

Table 1 Canadian Lung Association suggestions for selection for spirometry

Offer spirometry to current or ex-smokers who are aged over 40 years and answer yes to any of the following questions.

1. Do you cough regularly?
2. Do you cough up phlegm regularly?
3. Do even simple chores make you short of breath?
4. Do you wheeze when you exert yourself or at night?
5. Do you get frequent colds that persist longer than those of other people?

Special Authority Criteria for Tiotroprium

In New Zealand, for special authority for subsidy of tiotropium, ALL of the following criteria must be met:

1. To be used for the long-term maintenance treatment of bronchospasm and dyspnoea associated with COPD
2. In addition to standard treatment, the patient has trialled a dose of at least 40 micrograms ipratropium q.i.d for one month
3. Any of the following:

The patient's breathlessness according to the Medical Research Council (UK) dyspnoea scale is either:

   a. Grade 4 (stops for breath after walking about 100 metres or after a few minutes on the level) or;
   b. Grade 5 (too breathless to leave the house, or breathless when dressing or undressing)

4. Actual FEV1 (litres) < 0.6 × predicted FEV1 (litres)
5. Either:
   a. The patient is not a smoker (for reporting purposes only) or;
   b. The patient is a smoker and has been offered smoking cessation counselling
6. The patient has been offered annual influenza immunisation.

Opioids

Opioids may help relieve severe intractable dyspnoea and are the most effective dyspnoea relieving medication in end of life care.

Long-term oral corticosteroids not appropriate

Long-term treatment with oral corticosteroids is not appropriate for COPD as there is little evidence of benefit and substantial risk of systemic adverse effects.

Long term domiciliary oxygen therapy

Long-term continuous oxygen is beneficial for patients with stable COPD with severe hypoxaemia. However, there is no evidence to justify the widespread use of ambulatory oxygen or support the use of nocturnal oxygen to improve survival, sleep quality or quality of life for patient with isolated nocturnal desaturation.

Exercise and pulmonary rehabilitation

Pulmonary rehabilitation programmes are the most effective interventions for improving dyspnoea, exercise capacity and quality of life. These improvements are largely attributed to the exercise components of the programmes. Aerobic exercise of the lower limbs and strength training are both beneficial.

All people with COPD should be encouraged to maintain an active lifestyle and whenever possible, stable patients who remain dyspnoeic despite optimal medication, should be referred for pulmonary rehabilitation.

In 2006, Māori aged 45 years or over had a COPD hospitalisation rate four times that of non- Māori from the same age group. In addition, for this age group COPD mortality rates were over three times higher for Māori than for non-Māori. The relative risk increase was greatest for females for both hospitalisation and mortality rates. Māori females had a COPD hospitalisation rate almost five times that of non- Māori females.[4]

Māori have an increased smoking prevalence rate compared to non-Māori. See page 32.

Smoking cessation and reducing exposure to other inhaled noxious substances remain the only interventions which will slow the rate of deterioration of lung function in COPD (see page 32 for smoking cessation update).

Influenza immunisation reduces the risk of hospitalisation by approximately 40% in people with chronic respiratory disease.

The evidence for pneumococcal immunisation is less well established but is likely to be beneficial.

DEVELOP SUPPORT NETWORK AND SELF MANAGEMENT PLAN

Quality of life is improved for people with COPD who get good psychosocial support. Components of a COPD self-management plan should include:

- Reminder of day to day medications
- Nutritional advice with supplementation for some people
- Lifestyle tips to improve functional status and avoid exacerbations
- Early recognition of exacerbations
- Prompt response to exacerbations, including self-medication

Management of exacerbations

A wide range of comorbidities may confuse the diagnosis of exacerbations of COPD. Once a confident diagnosis has been made, most exacerbations can be managed at home.

Inhaled bronchodilators

Giving short acting inhaled beta2 agonists plus ipratropium is recommended in an acute exacerbation to relieve dyspnoea by improving airway function and reducing hyperinflation.

Oral corticosteroids

Oral prednisone at an individualised dose of approximately 40mg daily for seven to 14 days has good evidence of

efficacy in moderate to severe acute exacerbations of COPD. They are more effective if given early and people who have exacerbations should maintain a home supply.

Oral antibiotics

Oral antibiotics are beneficial in acute exacerbations of COPD and, as with prednisone, people who have exacerbations should maintain a home supply.

For simple exacerbations (increased cough, sputum, purulence and dyspnoea) in people without risk factors, first choice antibiotics are amoxycillin, doxycycline or erythromycin.

If the exacerbation is complicated by risk factors (see Table 2), amoxycillin/ clavulanic acid or another suitable antibiotic, such as a fluoroquinolone, are more appropriate.

Aminophylline

Aminophylline is no longer recommended for acute COPD exacerbations. It produces no clinically significant benefit and significantly increases nausea.[2]

Table 2 Risk factors in COPD exacerbation

- FEV1 <50% predicted
- Greater than four exacerbations per year
- Ischaemic heart disease
- Use of home oxygen
- Chronic oral corticosteroid use
- Antibiotic use in previous three months

CONCLUSION

COPD is likely to remain a major problem in primary care for some years to come. Tobacco smoking is the most common cause of COPD and around 23% of New Zealanders smoke tobacco. The prevalence is higher among Māori (46%) and Pacific peoples (36%).

Primary care clinicians can help by focusing on the framework of the COPDX plan, initiating therapy using Table 3 as a guide and tailoring care for individual patients based on their response to treatment, the number and severity of any exacerbations and any degree of reversibility. The evidence is often confusing and is continually evolving. However, the message that smoking cessation confers a greater health benefit than any other intervention for people with, or at risk of COPD is a message we should never tire of promoting.

References

1. McKenzie D, Frith P, Burdon J, Town G. The COPDX Plan: Australian and New Zealand guidelines for the management of chronic obstructive pulmonary disease 22003 Med J Aust 2003; 178 (6 suppl): S1-S40

2. Abramson J, Crockett A, Frith P, McDonald C. COPDX: an update of guidelines for the management of chronic pulmonary disease with a review of recent evidence. Med J Aust 2006; 184: 342-345

3. O'Donnell D, Aaron S, Bourbeau J et al. Canadian Thoracic Society recommendations for management of chronic obstructive pulmonary disease – 2007 update. Can Respir J 2007;14(Suppl B):5B-32B

4. Tatau kahukura - Māori Health Chart Book 2006. Available from http://www.maorihealth.govt.nz/moh.nsf/by+unid/CE9CA594D388BE4FCC25714600729978?Open Accessed October 2007

Table 3 Guide to initial therapy for COPD*

<table>
<tr><th>At risk</th><th>Mild</th><th>Moderate</th><th>Severe</th><th>Very Severe</th></tr>
<tr><td rowspan="4"></td><td rowspan="3"></td><td rowspan="2"></td><td></td><td>Oxygen therapy may be indicated</td></tr>
<tr><td colspan="2">Trial of inhaled steroids
Possibly theophylline</td></tr>
<tr><td colspan="3">Regular short acting beta agonist or ipratropium or both
Tiotropium if not responding to short acting bronchodilators
LABA if not responding to or intolerant of tiotropium
Pulmonary rehabilitation</td></tr>
<tr><td colspan="3">Intermittent short acting beta agonist or ipratropium
Exercise and lifestyle modification</td></tr>
<tr><td colspan="5">Smoking cessation (NRT ± support)
Regular questions about coughs, colds, sputum, dyspnoea and wheeze</td></tr>
</table>

*Tailor therapy to response and number and severity of exacerbations.