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## Managing COPD and preventing progression

Chronic obstructive pulmonary disease (COPD) caused over 5000 deaths in Australia in 2003.<sup>1</sup> About one-third of people with the disease reported severe disability in daily activities, such as self-care and mobility.<sup>1</sup> Irreversible airflow limitation is progressive and due mostly to tobacco smoking.<sup>1-3</sup>

This *NPS News* focuses on slowing the progression of COPD and optimising the use of medicines to reduce exacerbations and improve quality of life.

## Diagnose early and identify those at risk

Consider a diagnosis of COPD for any current or ex-smoker over the age of 35 years.<sup>2,3</sup> Chronic cough, sputum production or dyspnoea are usually absent in the early stages of airflow limitation.<sup>2,3</sup> Most patients seek help from a general practitioner at a stage of breathlessness when COPD may already be moderate or severe.<sup>2,3</sup>

Spirometry is needed to confirm the diagnosis (Table 1); physical examination or peak expiratory flow measurements alone are not diagnostic.<sup>2,3</sup> Airflow limitation is not fully reversible when, after administering a bronchodilator:

- FEV<sub>1</sub> (forced expiratory volume in 1 second) is < 80% predicted, and
- FEV<sub>1</sub> to FVC (forced vital capacity) ratio is < 70%.<sup>2,3</sup>

Consider asthma if airflow limitation is fully or largely reversible.<sup>2,3</sup> A clinically significant response to a bronchodilator is an increase in FEV<sub>1</sub> > 200 mL and > 12% above pre-bronchodilator level.<sup>2,3</sup> Consider referral to a respiratory physician to exclude other diagnoses or complications.<sup>3</sup>

Table 1: Diagnosis of COPD by spirometry<sup>3</sup>

Stage	FEV <sub>1</sub> % predicted	FEV <sub>1</sub> /FVC ratio
At risk	> 80%	< 70%
Mild	60–80%	< 70%
Moderate	40–59%	< 70%
Severe	< 40%	< 70%



## Smoking: the most significant preventable risk factor

The single most important intervention to prevent or slow the progression of COPD is smoking cessation: it preserves residual lung function at any stage of the disease and delays the onset of disability and death.<sup>1-3</sup>

### Which smoking cessation interventions work?

Brief counselling from a healthcare professional, such as a GP or pharmacist, increases smoking cessation rates compared with no intervention.<sup>4</sup>

Provide brief counselling using the **5As** strategy:

- **A**sk and identify smokers at every visit
- **A**dvice about the risks of smoking and benefits of quitting
- **A**ssess the motivation to quit
- **A**ssist cessation (Box 1)
- **A**rrange follow-up within a week of the quit date and 1 month after.<sup>2,3,5</sup>

### Offer nicotine replacement therapy or bupropion

Consider pharmacotherapy if patients smoke more than 10 cigarettes a day.<sup>5</sup> Nicotine replacement therapy (Nicabate, Nicorette, QuitX) or bupropion (Zyban SR), combined with counselling and support, doubles the rate of smoking cessation compared with placebo; abstinence rates in studies after 6–12 months ranged from about 5–15% with placebo and 10–30% with active treatment.<sup>4,6-8</sup>

Nicotine products (gum, tablets or lozenges, patches, or inhaler) are suitable for patients wanting to quit with minimal intervention. These can be offered over the counter in pharmacies, with brief counselling.<sup>4,7</sup> The different forms have similar effectiveness.<sup>4,7</sup> If one product is ineffective, combine with intensive intervention, another nicotine product and/or bupropion.<sup>4,6,7</sup>

### Box 1: Interventions for smoking cessation<sup>4</sup>

#### What works?

- Brief (3–5 minutes) or intensive (> 10 minutes) counselling by a healthcare professional
- Telephone counselling services, e.g. Quitline
- Individual counselling by a smoking-cessation specialist
- Group behavioural therapy
- Follow-up visits to a GP
- Repeated telephone support by nurses after initial intervention
- Pharmacotherapy: nicotine replacement therapy, bupropion

#### What has evidence to show it doesn't work?

- Generic self-help materials alone (e.g. printed leaflets)
- Aversion therapy techniques
- Acupuncture

#### What has insufficient evidence that it works?

- Hypnotherapy

**Prescribe bupropion\* only for patients undergoing an intensive counselling and support program.** Its effectiveness has only been studied in conjunction with intensive intervention.<sup>3,4,7</sup>

There is insufficient evidence to recommend bupropion in preference to nicotine replacement therapy.<sup>4,6,7</sup> Bupropion may be offered to patients who relapse while using nicotine products. One randomised controlled trial found that bupropion SR tablets increased the rate of abstinence at 6 and 12 months by about 14% compared with nicotine patches.<sup>6</sup> Patients had an average of 3 quit attempts before the study, and one-third had used a nicotine product.<sup>6</sup>

\* Refer to the *Schedule of Pharmaceutical Benefits* for restrictions on prescribing Zyban SR on the PBS (authority required).

## Step care for stable COPD

Drug treatments for COPD have not been shown to modify the decline in lung function, but they can improve symptoms and quality of life.<sup>2,3</sup> Introduce stepwise drug treatment (Table 2).<sup>2,3</sup> Monitor for improvement in symptoms, daily activities and exercise capacity: treatment response can occur without changes in FEV<sub>1</sub> and so should not be assessed by spirometry alone.<sup>2,3,9</sup> If COPD coexists with asthma, treat the patient as for asthma.<sup>3</sup>

**Table 2: Stepwise drug treatment of stable COPD\***<sup>2,3,9-12</sup>

Step 1: Intermittent bronchodilator (inhaled as needed)	Step 2: Start regular inhaled bronchodilator(s)	Step 3: Add an inhaled corticosteroid with or without a long-acting beta <sub>2</sub> agonist <sup>†</sup>
<ul style="list-style-type: none"> <li>Short-acting beta<sub>2</sub> agonist or anticholinergic               <ul style="list-style-type: none"> <li>salbutamol (e.g. Ventolin)</li> <li>terbutaline (Bricanyl)</li> <li>ipratropium (e.g. Atrovent)</li> </ul> </li> </ul> <p>If no change in symptoms, <b>Step 2</b> ▶</p>	<ul style="list-style-type: none"> <li>Short-acting anticholinergic and/or beta<sub>2</sub> agonist</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Long-acting anticholinergic and/or beta<sub>2</sub> agonist<sup>†</sup> <ul style="list-style-type: none"> <li>tiotropium (Spiriva)</li> <li>salmeterol (Serevent)</li> <li>eformoterol (Foradile, Oxis)</li> </ul> </li> </ul> <p>If no change in symptoms after 4 weeks</p> <p style="text-align: center;">▼</p> <p><b>Stop</b> treatment and <b>reassess</b> symptoms</p> <p style="text-align: center;">▼</p> <p>Trial combination therapy or another bronchodilator</p> <p style="text-align: center;">▼</p> <p>Consider <b>Step 3</b> if FEV<sub>1</sub> ≤ 50% ▶</p>	<ul style="list-style-type: none"> <li>beclomethasone (Qvar)</li> <li>budesonide (Pulmicort)</li> <li>fluticasone (Flixotide)</li> <li>budesonide/eformoterol (Symbicort)</li> <li>fluticasone/salmeterol (Seretide)</li> </ul> <p>If no change in symptoms or FEV<sub>1</sub> after 6 weeks</p> <p style="text-align: center;">▼</p> <p><b>Stop</b> inhaled corticosteroid</p> <p style="text-align: center;">▼</p> <p>Consider oral theophylline</p>
<b>Check inhaler technique regularly</b>		

\* For patients with COPD without asthma.

† Tiotropium is the only long-acting bronchodilator subsidised on the Pharmaceutical Benefits Scheme (PBS) for COPD; inhaled corticosteroids and combination long-acting beta<sub>2</sub> agonists and inhaled corticosteroids are not approved by the Therapeutic Goods Administration (TGA) for COPD (excludes fluticasone/salmeterol) and are not subsidised on the PBS for COPD.

## Step to ipratropium or tiotropium?

Ipratropium is a suitable first step for mild COPD.<sup>2,3,9-12</sup> Use tiotropium\* in moderate to severe COPD for patients with:

- symptoms despite use of short-acting bronchodilators, and/or
- frequent exacerbations (2 or more per year).<sup>9,13,14</sup>

A Cochrane review<sup>13</sup> found that tiotropium in moderate to severe COPD reduces the proportion of patients with at least 1 exacerbation, and related hospitalisations, compared with ipratropium or placebo. Treating 14 patients with tiotropium for 1 year, instead of ipratropium or placebo, prevents 1 exacerbation; treating 30 patients for 1 year prevents 1 hospitalisation.<sup>13</sup>

Tiotropium improves dyspnoea and health-related quality of life in around 10–20% more patients compared with ipratropium or placebo.<sup>13,15-18</sup> However, it may be unsuitable for those intolerant of ipratropium, as it is more likely to cause anticholinergic side effects, particularly dry mouth.<sup>13,14,16</sup>

## Stop long-acting beta<sub>2</sub> agonists if symptoms persist

There is evidence that long-acting beta<sub>2</sub> agonists\* improve exercise capacity, dyspnoea, exacerbation rates and health-related quality of life compared with ipratropium or placebo, but the effects are generally small and inconsistent between studies.<sup>17-29</sup> Patients with some reversible airflow limitation respond better to long-acting beta<sub>2</sub> agonists.<sup>19-23</sup>

Stop salmeterol or eformeterol and reassess response to salmeterol or eformeterol if there is no change in symptoms, daily activities or exercise capacity after 4 weeks.<sup>9,11,12</sup>

## Inhaled corticosteroids prevent exacerbations

Consider inhaled corticosteroids, with or without a long-acting beta<sub>2</sub> agonist\*, for patients with:

- moderate to severe COPD ( $FEV_1 \leq 50\%$ ), and
- 2 or more exacerbations per year that require treatment with antibiotics or oral corticosteroids.<sup>2,3,9-11</sup>

In patients who respond to a short course (2 weeks) of oral corticosteroids, continue treatment with an inhaled corticosteroid.<sup>3</sup> However, oral corticosteroid reversibility tests do not predict response to inhaled corticosteroids and should not be used to identify patients for treatment.<sup>9,11</sup> Stop inhaled corticosteroids if there is no improvement in symptoms and  $FEV_1$  after 6 weeks of treatment.<sup>11</sup>

In a systematic review<sup>30</sup>, inhaled corticosteroids reduced the number of exacerbations compared with placebo (relative risk reduction 30%, 95% CI 16% to 42%). This effect has been shown in both reversible and irreversible airflow limitation, but only with high doses and in moderate to severe, not mild, COPD.<sup>30-32</sup> Combining an inhaled corticosteroid and long-acting beta<sub>2</sub> agonist has been shown to significantly improve symptoms and health-related quality of life compared with inhaled corticosteroids alone.<sup>27-29,33</sup>

Health professionals, do you need information about new drugs?

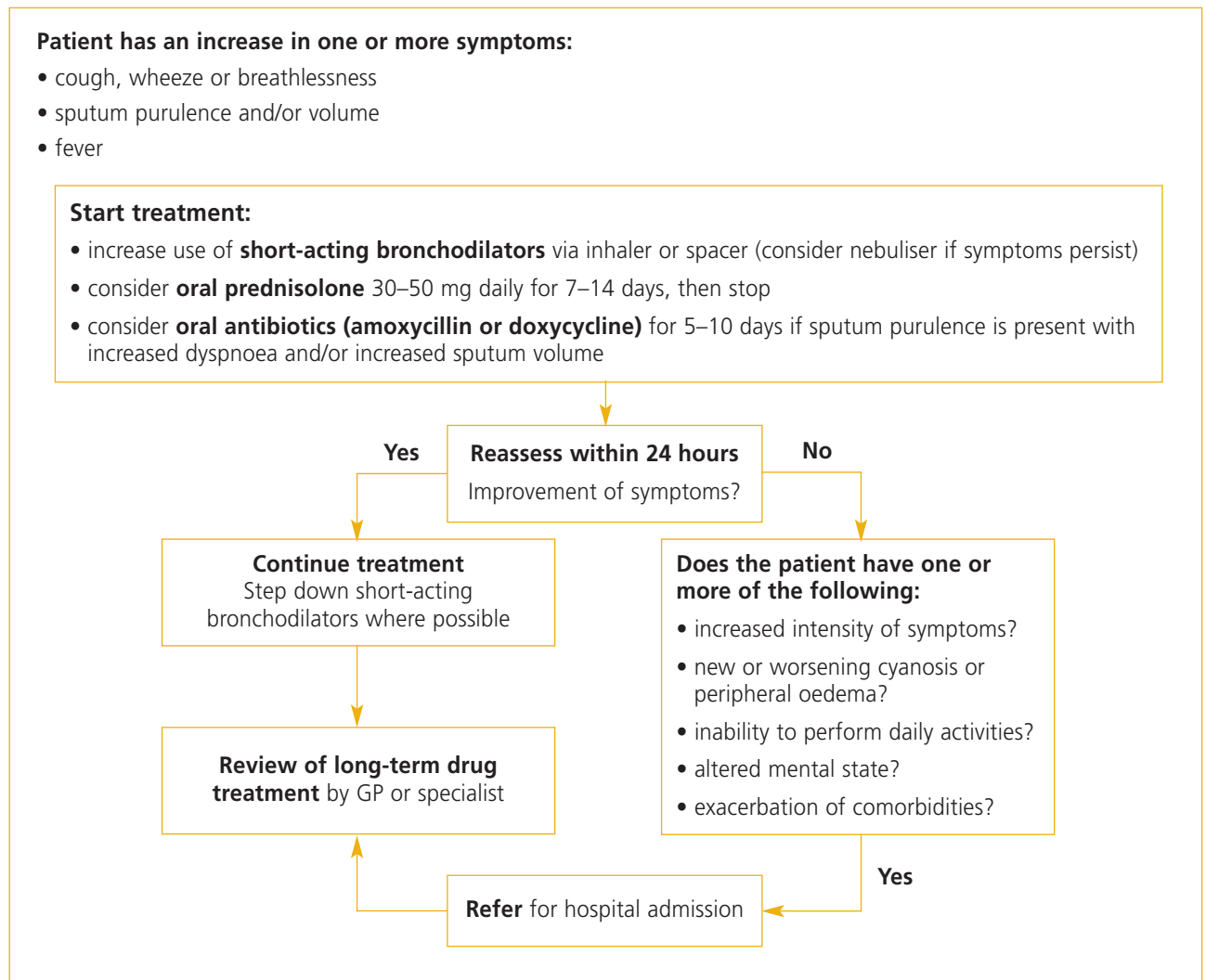
**NPS**  
National Prescribing Service Limited  
**TAiS**  
Therapeutic Advice & Information Service  
**1300 138 677**

\* Tiotropium is the only long-acting bronchodilator subsidised on the PBS for COPD; inhaled corticosteroids and combination long-acting beta<sub>2</sub> agonists and inhaled corticosteroids are not approved by the TGA for COPD (excludes fluticasone/salmeterol) and are not subsidised on the PBS for COPD.

## Action plan for acute exacerbations

Detecting and managing exacerbations early can prevent deterioration and hospital admission (Figure 1).<sup>3</sup> Complete an action plan for patients and/or carers to facilitate early treatment at home (available from the Australian Lung Foundation at [www.lungnet.org.au](http://www.lungnet.org.au), go to 'COPD' then 'COPD Action Plan').

**Figure 1: Managing acute exacerbations of COPD<sup>2,3,9,11</sup>**



### Assist early treatment: supply antibiotics and corticosteroids

When providing an action plan for patients and/or carers, consider a supply of antibiotics and/or corticosteroids to facilitate early treatment at home.

### Prescribe amoxycillin or doxycycline for 5–10 days if increased sputum purulence is present with increased sputum volume and/or dyspnoea.<sup>3,11</sup>

Treatment does not aim to eradicate colonising bacteria.<sup>11</sup> Only use macrolide antibiotics (e.g. erythromycin, roxithromycin), cephalosporins or amoxycillin plus clavulanic acid if there is no response to amoxycillin or doxycycline; they are no more

effective for exacerbations.<sup>2,3,11</sup> Macrolides are less likely to inhibit *Haemophilus influenzae* so early relapse is more likely: use only if this pathogen has been excluded.<sup>11</sup> There is no evidence to support use of prophylactic antibiotics in COPD.<sup>2,3</sup>

**Prescribe oral prednisolone for 7–14 days then stop.**<sup>3,9,11</sup> Treating 9 patients with oral corticosteroids, instead of placebo, prevents 1 treatment failure (re-admission for COPD or change in drug therapy) within 30 days of an exacerbation.<sup>34</sup> Oral corticosteroids also restore lung function and improve dyspnoea within 72 hours.<sup>34</sup>

## Follow-up and further help after an acute exacerbation

Assist patients after an acute exacerbation by:

- asking about smoking and offering cessation advice
- assessing lung function and performing spirometry
- reviewing and optimising drug treatments
- checking compliance and inhaler technique.

Ensure that all patients receive an annual influenza vaccination.<sup>3,11</sup> This can reduce the relative risk of exacerbations, hospitalisation and death by 50%.<sup>2,3</sup> Pneumococcal vaccination is also recommended.<sup>2,3,11</sup>

Pulmonary rehabilitation programs can help people restore their functional and exercise capacity, and assist with the management of medications and smoking cessation.<sup>3</sup> For more information, refer to the Australian Lung Foundation website ([www.lungnet.com.au/pat\\_support/need-copd-psg.html](http://www.lungnet.com.au/pat_support/need-copd-psg.html)).

Non-medical care agencies provide a wide range of support to people who have difficulty with activities of daily living (e.g. showering). For more information, visit the Commonwealth Carelink Centre website ([www.comcarelink.health.gov.au](http://www.comcarelink.health.gov.au)).

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*The information contained in this material is derived from a critical analysis of a wide range of authoritative evidence. Any treatment decisions based on this information should be made in the context of the clinical circumstances of each patient.*



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