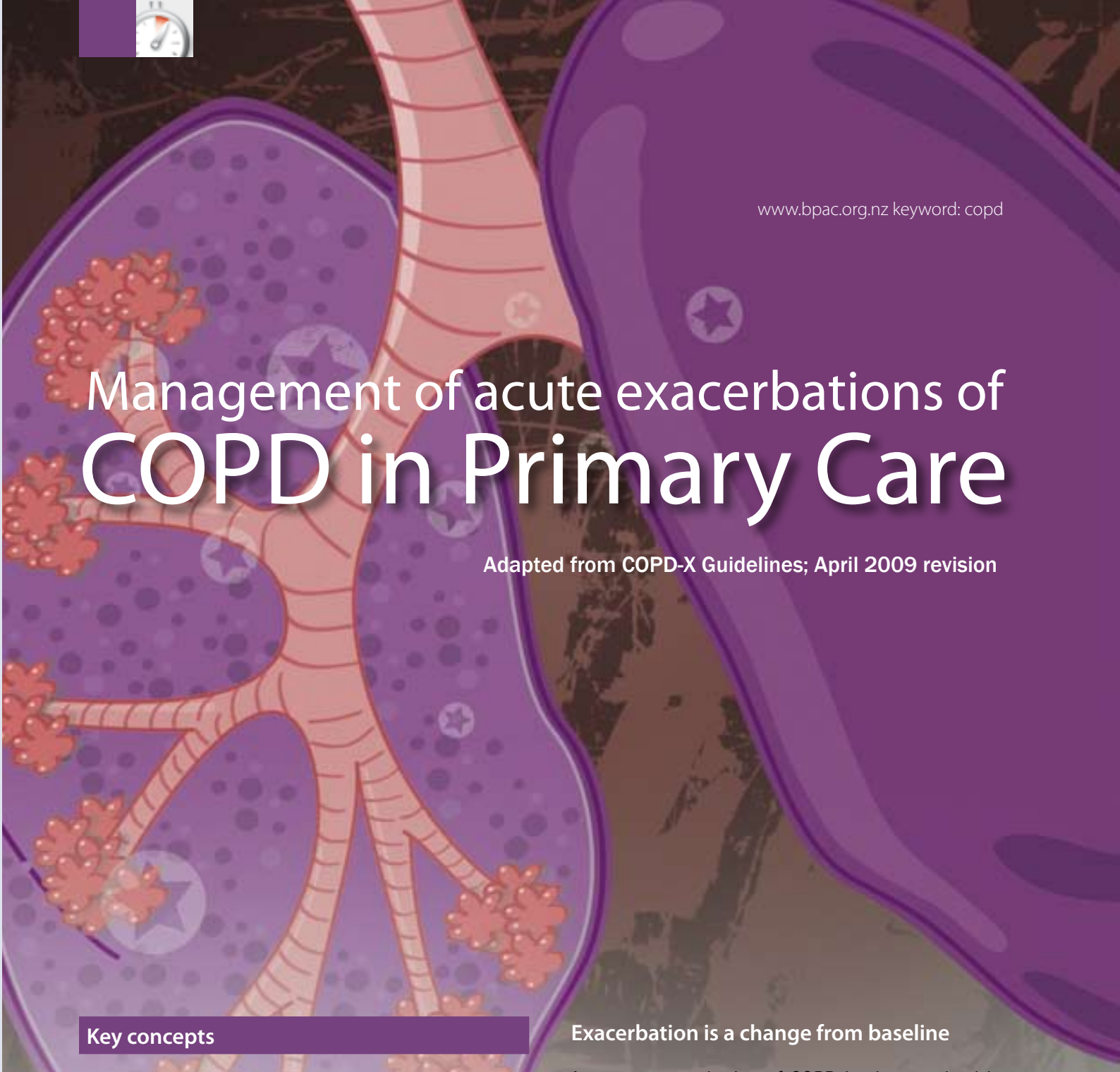
Management of acute exacerbations of COPD in Primary Care

Adapted from COPD-X Guidelines; April 2009 revision



Key concepts

- Early diagnosis and treatment may prevent hospital admission
- Inhaled bronchodilators are effective for the treatment of acute exacerbations
- Oral prednisone reduces the severity and shortens recovery time from acute exacerbations
- Antibiotics may be beneficial if there are clinical signs of infection

Exacerbation is a change from baseline

An acute exacerbation of COPD is characterised by a change in a person's baseline dyspnoea, cough and/or sputum production that is greater than day to day variation (definition from the Global Initiative for Obstructive Lung Disease – GOLD).

Lung inflammation and infection appear to play an important role in the pathogenesis of worsening symptoms. The most common triggers are viral or bacterial infections. Non-infectious causes include left ventricular failure, pulmonary embolus, environmental irritants, chest trauma and inappropriate sedative use.

Early diagnosis and prompt management may prevent progression and admission

Assessment of the severity of the exacerbation includes measurement of blood pressure, respiratory rate and oxygen saturation (if pulse oximetry is available). The need for hospital admission is based on clinical findings and social circumstances.

Educating the patient and their carers about the signs of worsening COPD may be helpful in early detection of an exacerbation. A self-management plan which describes how to step up treatment is also beneficial. The plan should include advice on bronchodilator use, when to start oral prednisone, and the indications for antibiotic use.

Optimise the dose of bronchodilator

During exacerbations of COPD the immediate effect of a bronchodilator is small, but for those with severe obstruction, there may be a significant improvement in clinical symptoms. Bronchodilators may reduce air trapping.

A short acting beta-2 agonist (salbutamol 400 – 800 mcg) or ipratropium 80 mcg can be given by pressurised metered dose inhaler (MDI) and spacer. The dose interval is titrated to response and can range from hourly to six-hourly.

If the patient is using a long acting beta-2 agonist (LABA) or tiotropium, they should be continued during the treatment of the exacerbation.

Glucocorticoids are beneficial

Oral prednisone can speed up the resolution of exacerbations and also reduce the risk of relapse. There is little evidence that IV steroids are better than oral. The optimal oral dose has not been established. Prednisone 40 mg taken as a single daily dose in the morning, for up to two weeks, is sufficient in most cases. It is traditional to do a tapering dose, but this is not necessary after such a short course. Longer courses add no further benefit and have a greater risk of adverse effects.

If the patient is already using an inhaled corticosteroid (ICS), this can be continued while taking a short course of prednisone, but it is useful to check the inhaler technique as the main benefit of ICS is reducing the frequency of exacerbations in those with severe COPD. Patients who are taking long-term, low-dose prednisone should not be using ICS at the same time.

Antibiotics have specific indications

Viral infections are a significant cause of exacerbations. Bacterial infections (predominantly *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Moraxella catarrhalis*) have a primary or secondary role in about 50% of acute exacerbations of COPD. Sputum culture is not routinely required, but may be helpful if there is no improvement with treatment.

The benefits of antibiotic use are unclear. They are only recommended if there are at least two new findings of: increased purulent sputum, increased sputum production or increased dyspnoea.

Antibiotic choice

First-line: Amoxicillin 500 mg three times a day for five days

Alternative: Doxycycline 100 mg twice daily for five days (if penicillin allergic or recent course of amoxicillin). Amoxicillin clavulanate is only indicated if there has been clinical failure with first-line antibiotics.

Ciprofloxacin does not have adequate coverage against *S. pneumoniae* and should not be used for the management of acute exacerbations of COPD.

When to refer

Mortality rates from exacerbations of COPD increase with acute carbon dioxide retention (respiratory acidosis), the presence of co-morbidities (e.g. heart failure and IHD) and complications such as pneumonia. Depending on the circumstances and severity of the exacerbation urgent

hospital admission may be required for ventilatory support and other intensive treatment.

Indications for referral to secondary care;

- Inability to walk short distances when previously mobile
- Inability to eat or sleep because of dyspnoea
- Inability to manage at home even with help
- High risk co-morbid condition
- Altered mental state suggestive of hypercapnia
- Worsening cor pulmonale or hypoxaemia
- New appearance of arrhythmia
- Inadequate response to management in primary care
- Uncertainty of diagnosis

Strategies to reduce the frequency of exacerbations

Exacerbations of COPD, especially if severe, are associated with increased mortality. Strategies to reduce the frequency of exacerbations should be considered and be part of an individual management plan. Strategies include:

- Influenza vaccination (yearly) and pneumococcal vaccination (five yearly)
- Minimising infection risk, such as avoiding contact with people with an active URTI
- Avoiding exposure to smoke and irritants
- Optimising control of co-morbidities
- Use of medication

Inhaled corticosteroids (including when combined with LABA) reduce the rate of exacerbations however they do not improve mortality and their effect on the decline in lung function remains unclear. They should be considered for patients with severe COPD and frequent exacerbations (e.g. two or more exacerbations in a year requiring treatment with an antibiotic or oral corticosteroid). Systemic absorption may occur, especially when high doses are used, therefore the benefit of ICS must be weighed against the risk of adverse effects, such as bruising, cataracts and osteoporosis.

Tiotropium decreases exacerbations as well as improving lung function, symptoms and quality of life. The number needed to treat (NNT) for one year to prevent one exacerbation is 14 and the NNT is 30 to prevent one hospitalization. Adverse effects of tiotropium include dry mouth and infrequently, urinary retention.

Bibliography

COPD-X Guidelines April 2009 revision.Available from: **www.copdx.org.au/guidelines/index.asp**

GOLD - Global initiative for obstructive lung disease. Available from: **www.goldcopd.com**

Quon B, Gan W, Sin D. Contemporary management of acute exacerbations of COPD. A systematic review and meta-analysis. Chest 2008;133:756-66.

Puhan MA, Bachmann L, Kleijnen J, et al. Inhaled drugs to reduce exacerbations in patients with chronic obstructive pulmonary disease; a network meta-analysis. BMC Medicine 2009;7:2. Available from: **www.biomedcentral.com/1741-7015/7/2**