

LOTHIAN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) GUIDELINES

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INDEX	PAGE
1. Diagnosing COPD.....	5
2. Risk factors.....	5
3. Diagnostic tests.....	5
4. Chest x-ray.....	6
5. α_1 - antitrypsin deficiency.....	6
6. Co-morbidities.....	6
7. Treatment of COPD.....	7
8. Delivery systems.....	11
9. Pulmonary rehabilitation.....	11
10. Exacerbations.....	12
11. Referral for consultant opinion.....	12
12. Discharge and follow up.....	13
13. Palliative care.....	13
14. Travelling with COPD.....	13
15. Help agencies for patients and carers.....	14
16. Patient information – websites, leaflets and helplines.....	14
17. Contacts.....	14
18. References.....	15

APPENDICES

1. Protocol for management of COPD exacerbation in primary care.....	17
2. Example of pulmonary rehabilitation referral form.....	19
3. COPD Self-Management Plan.....	21

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1. DIAGNOSING COPD

Consider any patient over the age of 40 with symptoms of:

- breathlessness
- chronic cough (expectorating > 3 months for 2 successive years)
- sputum production
- history of exposure to risk factors, especially cigarette smoking
- repeated chest infections.

Spirometry must confirm diagnosis.

2. RISK FACTORS

Exposure:

- tobacco smoking
- occupational dusts or chemicals
- indoor and outdoor air pollution/particulates
- cannabis smoking

Host:

- α_1 - antitrypsin deficiency
 - lower socio-economic status
-

3. DIAGNOSTIC TESTS

All new diagnoses of COPD require spirometry.

1. $FEV_1 < 80\%$ predicted
2. FEV_1/VC ratio < 0.7 (Note: spirometers often express this as 70%)

The above are post-bronchodilator reversibility values.

Reversibility testing is not mandatory for the diagnosis but may help distinguish between asthma and COPD. Consider asthma if the FEV_1 returns to normal or results in an increase of >400 mls.

Individuals may have both asthma and COPD. (In trying to distinguish between COPD and asthma, a careful history of childhood symptoms such as variable wheeze, bronchitis or atopy and nocturnal symptoms is essential).

There are two major guidelines, NICE (2004) and GOLD (2008). An explanation is as follows:

- NICE has three categories: mild, moderate, severe
- GOLD has four categories: mild, moderate, severe and very severe

For assessment and treatment, refer to the chart below:

FEV₁	FEV ₁ ≥80%predicted	FEV ₁ <80%predicted	FEV ₁ <50%predicted	FEV ₁ <30%predicted
FEV₁/VC	Ratio <0.7 (70%)	Ratio <0.7 (70%)	Ratio <0.7 (70%)	Ratio <0.7 (70%)
GOLD	Mild	Moderate	Severe	Very severe
NICE	-----	Mild	Moderate	Severe
	-----	Assess and treat	Assess and treat	Assess and treat

(From the *Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease*, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2008. Available from: <http://www.goldcopd.org>)

Patients with a FEV₁/VC ratio between 0.7 and 0.8 may have early COPD, but in the elderly, this can lead to an over-diagnosis of COPD.

4. CHEST X-RAY

A chest x-ray is not essential to establish the diagnosis of COPD but is often helpful when considering alternative diagnoses. A chest x-ray is part of the post-diagnosis assessment, especially with patients who smoke. Clinicians should have a low threshold for requesting a chest x-ray in any patient who smokes and has respiratory symptoms.

A chest x-ray **must** be done if:

- patient is not responding to treatment
- there is a possibility of a new or alternative diagnosis
- the patient's condition is worsening.

5. α₁-ANTITRYPSIN DEFICIENCY

α₁-antitrypsin deficiency should be suspected and the patient referred to a respiratory physician, if the patient:

- is under 45 years old
- is of Caucasian descent
- has a family history of COPD.

It is very important for the families to have genetic testing and follow-up as the consequences are significant.

6. CO-MORBIDITIES

All of the conditions listed below occur frequently with COPD because they have many risk factors in common. Consider and treat these conditions. If left untreated, poor overall outcomes can occur.

- cardiovascular disease
- depression/anxiety
- osteoporosis
- carcinoma of the lung
- weight loss and muscle dysfunction leading to cachexia

7. TREATMENT OF COPD

Treatment will:

- reduce risk factors
- relieve symptoms
- improve exercise tolerance
- prevent and treat complications
- prevent and treat exacerbations
- reduce co-morbidity
- reduce mortality
- improve health status
- maximise the patient's and carer's understanding.

Reduce risk factors by:

- stop smoking (this reduces the rate of progression of the disease)
- childhood immunisations
- flu vaccination
- pneumococcal vaccination.

Measure treatment effectiveness by:

- improvement in symptoms
- increase in activities of daily living
- improvement in exercise tolerance
- improvement in tests such as the MRC breathlessness scale.

Medical Research Council (MRC) Breathlessness Scale					
Grade	1	2	3	4	5
Degree of breathlessness related to activities	Not troubled by breathlessness except on strenuous exercise.	Short of breath when hurrying or walking up a slight hill.	Walks slower than contemporaries on level ground because of breathlessness or has to stop for breath when walking at own pace.	Stops for breath after walking about 100m or after a few minutes on level ground.	Too breathless to leave the house, or breathless when dressing or undressing.

Adapted from Fletcher CM, Elmes PC, Fairbairn MB et al. (1959) The significance of respiratory systems and the diagnosis of chronic bronchitis in a working population. British Medical Journal 2:257-66.

Questions to assess response to therapy:

- Has your treatment made any difference to you?
- Is your breathing any easier?
- Can you do things now that you could not do before?
- Can you do things now faster than before?
- Can you do the same things now but with less breathlessness?

Lothian Locality COPD Guidance: Principles for treatment at each stage of the disease

From the *Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease*, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2008. Available from: <http://www.goldcopd.org>

As well as spirometry, it is important to assess the patient's symptoms using the MRC breathlessness scale.

I: Mild	II: Moderate	III: Severe	IV: Very severe
<ul style="list-style-type: none"> • FEV₁ ≥ 80% predicted • FEV₁/VC < 70% • with or without symptoms 	<ul style="list-style-type: none"> • FEV₁ < 80% predicted • FEV₁/VC < 70% • with or without symptoms 	<ul style="list-style-type: none"> • FEV₁ < 50% predicted • FEV₁/VC < 70% • with or without symptoms 	<ul style="list-style-type: none"> • FEV₁ < 30% predicted • FEV₁/VC < 70% • presence of chronic respiratory failure or right heart failure
<p>Avoidance of risk factor(s); influenza/pneumococcal vaccination – stop smoking – offer help at every opportunity.</p>			
<p>ADD short-acting bronchodilator and/or anticholinergic when needed to help reduce breathlessness and increase exercise tolerance.</p>			
<p>ADD regular treatment with one or more long-acting bronchodilators. ADD pulmonary rehabilitation.</p>		<p>ADD inhaled glucocorticosteroids if repeated exacerbations. If still symptomatic, CONSIDER adding theophylline.</p>	
		<p>ADD long term oxygen therapy. If chronic respiratory failure, refer to secondary care. CONSIDER surgical treatments.</p>	

COPD TREATMENT CHART

From the *Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease*, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2008. Available from: <http://www.goldcopd.org>

Assess symptoms and response to treatment using MRC breathlessness scale, exercise tolerance and increase in activities of daily living.

Device options should be patient-specific, dependant upon ability to use/comply, and with thought given to product cost. General guidelines on cost and devices are available on the Lothian Joint Formulary website. www.ljf.scot.nhs.uk

<u>I: Mild</u> Bronchodilator as needed or on a regular basis to prevent or reduce worsening symptoms or improve exercise tolerance.	<u>II: Moderate</u> Add regular prescription for long-acting bronchodilators.	<u>III: Severe</u> Regular inhaled corticosteroid if FEV ₁ < 50% predicted and repeated exacerbations or breathless despite use of long-acting bronchodilator.	<u>IV: Very severe</u> FEV ₁ < 30% predicted
Short-acting anticholinergic -Ipratropium bromide dry powder device or Ipratropium bromide (CFC-free mdi +/- spacer device) Short-acting β ₂ agonist – Salbutamol (CFC free +/- spacer device)	Long-acting anticholinergic - Tiotropium (Capsules for inhalation) Long-acting β ₂ agonist - Salmeterol (mdi +/- spacer device or Accuhaler) Formoterol (Turbohaler/mdi)	High dose inhaled corticosteroid - Fluticasone 500/Salmeterol 50 (Accuhaler) OR Budesonide 400/Formeterol 12 (Turbohaler)	Consider referral for long-term oxygen therapy. PaO ₂ < 7.3 kPa when stable; raised JVP or peripheral oedema, cyanosis, polycythemia.
<ol style="list-style-type: none"> 1. Use a short-acting bronchodilator on an as needed basis initially. 2. If patient remains symptomatic, use regular dosing. 3. Then a trial of combined therapy. 	<ol style="list-style-type: none"> 1. Add tiotropium first line and assess response remembering to stop all short-acting anticholinergic therapy. 2. If no response, stop tiotropium, add long-acting β₂ agonist reinitiating short-acting anticholinergic if benefit was seen. 3. If response seen to tiotropium and patient still symptomatic, add long-acting β₂ agonist. 	<ol style="list-style-type: none"> 1. Use combination products appropriate to previous treatment remembering to stop long-acting β₂ agonist if used in previous step. 2. Warn patients of risk of osteoporosis and consider prevention of osteoporosis and falls. 3. Steroid inhalers alone do not have licence for treatment of COPD. 4. Inhaled corticosteroids may increase incidence of pneumonia especially in the elderly. 5. Consider specialist referral. 	If pulse oximetry available and O ₂ saturation O ₂ < 90% at rest, refer to secondary care.

FAQs

Can the FEV₁ be used to assess the response to treatment?

- While the FEV₁ measurement is critical to establishing COPD diagnosis, it is seldom useful when assessing the response to therapy.
- Judge clinical response by improvement of symptoms, exercise tolerance, activities of daily living.
- The MRC scale of breathlessness score may show improvements in breathlessness. However, meaningful improvements in symptoms can occur without any change in this score.

What is the place of theophylline?

This may be given for a trial period after treatment with long-acting bronchodilator/ICS combination inhaler therapy has failed or symptoms persist. Monitor response and continue treatment only if the symptoms improve. Monitor plasma levels and be aware that many drugs can modify theophylline metabolism, including smoking.

Should oral corticosteroids be used for maintenance treatment?

In COPD, it is not recommended that they be used for maintenance.

Should inhaled corticosteroids be used alone in patients with COPD?

They do not have a licence for COPD and should not be prescribed alone.

What benefit can combination inhalers provide patients with COPD?

They should be used for patients classified as Stage III- Severe COPD (FEV₁ < 50% predicted).

Combination inhalers can:

- reduce breathlessness
- improve lung function
- reduce exacerbations
- improve the quality of life.

However, they may increase the incidence of pneumonia especially in the elderly.

- Only the high dose is licensed in COPD.
- Use the seretide accuhaler or symbicort turbohaler. This will maximise cost efficiency.

Should mucolytics be used?

The Lothian Joint Formulary Committee has not approved their use and the evidence is poor. If prescribed they should be reassessed after one month for any benefits.

8. DELIVERY SYSTEMS

Inhalers

Be sure to:

- teach the technique and recheck
- be familiar with different types of inhalers
- change inhalers if a patient is having trouble coping with a certain type
- encourage the use of spacer devices when needed.

The correct delivery system is as important as the drug used.

Nebulisers

- Nebuliser trials should be done by secondary care respiratory physicians. (This gives an added benefit to the patient of having the nebuliser maintained).
- Consider a nebuliser if the patient has excessive or distressing shortness of breath despite maximum therapy.

Oxygen therapy

Long-term oxygen therapy can prolong life. It is indicated in patients with hypoxaemia ($\text{PaO}_2 < 7.3 \text{ kPa}$) when in a stable condition. Secondary care assessment is required for the provision of long-term oxygen therapy.

Consider long-term oxygen therapy in patients with:

- severe airflow obstruction ($\text{FEV}_1 < 30\%$ predicted)
- cyanosis
- polycythemia
- raised JVP or peripheral oedema
- pulmonary hypertension
- O_2 saturation of $< 92\%$ while breathing air.

Patients who continue to smoke will rarely be considered for long-term oxygen therapy.

Consider ambulatory oxygen therapy in mobile patients on long-term oxygen therapy.

9. PULMONARY REHABILITATION

Evidence has shown that pulmonary rehabilitation benefits all patients with COPD, particularly those with moderate to severe COPD or an MRC breathlessness score of three or more. Patients with mild COPD are usually still active and have fewer symptoms.

- benefits all patients with COPD
- improves exercise tolerance
- improves the quality of life
- reduces symptoms
- reduces the number of exacerbations
- available in all CHPs (In Edinburgh CHP, home-based rehabilitation is available).

For contacts, see section 17 (page 14).

10. EXACERBATIONS

Symptoms:

- increase in shortness of breath
- increase in cough
- increase in sputum volume and purulence
- decreased exercise tolerance
- drowsiness

If the patient has two or more exacerbations per year, consider prescribing a long-acting β_2 agonist/steroid combination inhaler.

Consider and select patients who may benefit from having antibiotics and steroids at home so that following a self-management plan, they can start treatment early in an exacerbation.

If the patient is drowsy they should always be admitted unless palliative care is considered.

Treatment:

- amoxicillin 500mg, 3 times a day for 5-10 days.
- clarithromycin 500mg, BD 5-10 days if penicillin sensitive
- prednisolone 30mg for 7-10 days
- patients should consult their GP

Patients in the community should have oximetry available to help assess exacerbation severity.

(See Appendix One: Protocol for management of COPD exacerbation in primary care).

11. REFERRAL FOR CONSULTANT OPINION

Consider referral if:

- diagnosis is unclear
- patient has severe COPD ($FEV_1 < 30\%$ of predicted)
- cor pulmonale (fluid retention or peripheral oedema)
- increasing shortness of breath
- haemoptysis
- rapidly decreasing FEV_1
- reduced oxygen saturation (92% or less) while breathing air
- chest x-ray shows bullae in the lung
- patient is less than 40 years old
- symptoms are disproportionate to pulmonary function
- patient has frequent infections/exacerbations.

12. DISCHARGE AND FOLLOW UP

Criteria for discharge:

- patient and carer understand use of inhalers
 - home care arrangements in place, for example, oxygen, supported home care and specialist nurse follow-up
 - family, patient, nurses, AHP, community health partnership (CHP) staff and medical staff confident that the patient will cope
 - follow up at respiratory clinic or by specialist nurse within 4-6 weeks in community respiratory team services (see CHP variation)
 - COPD self-management plan
-

13. PALLIATIVE CARE

Many patients will reach a stage in their illness where palliative care should be considered and will be of benefit. Making an exact prognosis is difficult in COPD. The 'surprise' question may help:

“Would you be surprised if this patient died in the next year?”

If the answer is “no” the patient may be in the palliative phase of their illness. Some patients may express this by saying:

“Hospital admissions make me feel worse rather than better.”

In the palliative care stage the focus should change. Discuss interventions with the patient to maximise their understanding and decision-making.

Things to consider:

- share understanding with colleagues (palliative care register)
 - concentrate on symptom reduction
 - maximise the patient's understanding of their illness
 - consider an anticipatory care plan for palliative care (symptoms, place of care, DNAR, essential treatments)
 - notify out of hours for DNAR status and special notes
 - maximise support for family
-

14. TRAVELLING WITH COPD

Patients travelling with long-term oxygen therapy need advanced planning.

For land and sea travel, the options include:

- taking the oxygen concentrator if travelling by car
- arranging for cylinder provision by making advanced contact with the local primary care organisation at the destination.

The respiratory nurse specialists may be able to help, if given sufficient time. Another district can arrange services such as concentrators. Air travel involves exposure to a relatively hypoxic environment during a flight. **The great majority of patients can and do fly without difficulty.**

Guidelines indicate:

- Patients with mild/moderate COPD and resting saturation over 95% are safe to fly without oxygen.
 - All patients on long-term oxygen therapy plus oxygen saturation below 92% on air should arrange in advance for in-flight oxygen.
 - Patients with significant COPD and oxygen saturation between 92% and 95% may benefit from a referral for a fitness-to-fly test. The degree of de-saturation in this group, during the flight, is unpredictable. (Refer to respiratory outpatient department).
-

15. HELP AGENCIES FOR PATIENTS AND CARERS

- Breatheasy groups www.lunguk.org/supporting-you/breathe-easy
 - VOCAL (Edinburgh and Midlothian) www.vocal.org.uk
 - Airways (SJH catchment area) Tom Daly, Secretary, tom-daly@blueyonder.co.uk
 - Carers of West Lothian 01506 771750 www.carers-westlothian.com
 - Carers of East Lothian 0131 665 0135 www.coel.org.uk
 - Carers Scotland www.carerscotland.org
-

16. PATIENT INFORMATION – WEBSITES, LEAFLETS AND HELPLINES

- Chest, Heart and Stroke Scotland

Website: www.chss.org.uk

Helpline: 0845 077 6000

COPD specific information and booklets: www.chss.org.uk/chest/index.php

- British Lung Foundation

Website: www.lunguk.org

Helpline: 08458 50 50 20

About COPD:

www.lunguk.org/you-and-your-lungs/conditions-and-diseases/copd.htm

- Smokeline

Website: www.canstopsmoking.com

Helpline: 0800 84 84 84

- Lothian Respiratory (COPD) Managed Clinical Network

www.lothianrespiratorymcn.scot.nhs.uk

17. CONTACTS**Respiratory nurse specialist service:**

- Royal Infirmary of Edinburgh - phone 0131 242 1878, fax 0131 242 1877
- West Lothian CHCP - phone 01506 651827
- St. John's Hospital - phone 01506 523865
- Western General Hospital - phone/fax 0131 537 1799

Pulmonary Rehabilitation:

- Edinburgh CHP 07969 334 704
- West Lothian 01506 522063
- East and Midlothian 07500 765 919
- Royal Infirmary of Edinburgh 0131 242 1904

Edinburgh Community Respiratory Team

- Phone 07826 894 067

Edinburgh IMPACT Team (IMPproved Anticipatory Care and Treatment):

- North West Edinburgh 0131 537 5077
 - North East Edinburgh 0131 536 6208
 - South West Edinburgh 0131 449 8602/8603
 - South Central Edinburgh 0131 537 9235
 - South East Edinburgh 0131 536 9677/9678
-

18. REFERENCES

All information sourced from both GOLD guidelines and NICE guidelines in addition to Lothian material.

GOLD (2008) *Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease*

Global Initiative for Chronic Obstructive Lung Disease

www.goldcopd.com

GOLD (2008) *Pocket guide to COPD diagnosis, management and prevention, a guide for health care professionals*

Global Initiative for Chronic Obstructive Lung Disease

www.goldcopd.com

NICE (2004) *Management of chronic obstructive pulmonary disease in adults in primary care*

National Institute for Clinical Excellence

www.nice.org.uk/guidance/CG12

Lothian Joint Formulary

www.ljf.scot.nhs.uk

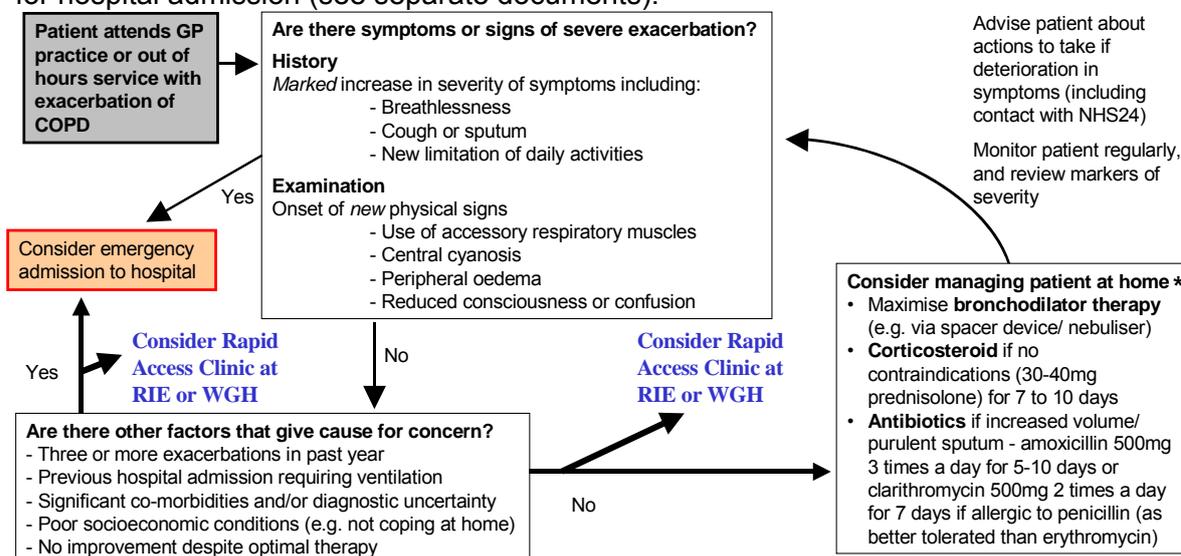
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Protocol for management of COPD exacerbation in primary care

Chronic obstructive pulmonary disease (COPD) is a common and serious condition. As the disease progresses, patients develop exacerbations (a change in the patient's baseline breathlessness, cough, and/or sputum that is beyond normal day-to-day variations, is acute in onset, and may warrant a change in regular medication in a patient with underlying COPD). Bronchodilators and corticosteroids are the mainstay of treatment of exacerbations. Antibiotics should be used for patients with an increase in breathlessness or volume of sputum and purulent sputum.

Many patients with an exacerbation of COPD can be managed successfully at home. However, there should be a low threshold for emergency admission to hospital for patients with evidence of a severe exacerbation of COPD and for those who do not respond to initial treatment. Decisions about management of a patient with an exacerbation of COPD will vary depending on the patient's individual circumstances including the severity of their underlying disease, the presence of other medical conditions, and their social situation.

The following algorithm provides guidance for the management of COPD exacerbations in primary care (for use in GP practices and out of hours service). The new rapid access clinics at the RIE and WGH allow an access point for early referral to try to avoid the need for hospital admission (see separate documents).



*If Edinburgh patient, consider referral to Community Respiratory Team

Sources/ further reading

1. Chronic obstructive pulmonary disease. Management of chronic obstructive pulmonary disease in adults in primary and secondary care. Clinical guideline 12. NICE 2004.
2. Global strategy for the diagnosis, management, and prevention of Chronic obstructive pulmonary disease. Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2008.
3. Rodríguez-Roisin R. COPD exacerbations: 5. Management. *Thorax* 2006;61;535-544

Produced by NHS Lothian's Respiratory Healthcare Group Dec 2007

Updated by Lothian Respiratory MCN March 2009

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APPENDIX THREE

COPD Self-Management Plan

Date _____

Give this to the patient to keep.

Name	
DOB/CHI	
Diagnosis/Diagnoses	
My GP practice contact number	
NHS24 contact number	08454 242424
Respiratory nurse services	

Patient's description of their usual symptoms when well

Symptom	Description
Cough	
Breathlessness	
Sputum/phlegm production	
Swollen ankles	
Poor sleep due to chest symptoms	

Usual respiratory medications

	Inhaler/Tablet Name	Preparation	Dose and Frequency
1			
2			
3			
4			
5			
6			

	Exacerbation Medication	Instructions
1		
2		

How do I keep well?

- Take daily exercise.
- Eat a good balanced diet.
- Drink plenty of liquids.
- Do not smoke and avoid smoky environments.
- Plan ahead and have things to look forward to.
- Always have enough medications. Never run out.
- Take all medication regularly as prescribed whether you think they help at the time or not.
- Make sure you get your annual 'flu' vaccination.