SOUTH EAST LONDON COPD GUIDELINE

Developed in conjunction with the South East London Responsible Respiratory Prescribing Group

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South East London Integrated Medicines Optimisation Committee (SEL IMOC). A partnership between NHS organisations in South East London Integrated Care System: NHS South East London (covering the boroughs of Bexley/Bromley/Greenwich/ Lambeth/Lewisham and Southwark) and GSTFT/KCH /SLaM/ Oxleas NHS Foundation Trusts and Lewisham & Greenwich NHS Trust

SOUTH EAST LONDON COPD GUIDELINE

A comprehensive guide to support clinicians in managing patients with COPD, from diagnosis through to severe disease

Key Messages:

- Every patient contact is an opportunity to treat tobacco dependence
- All patients who are breathless with MRC ≥2 should be offered pulmonary rehabilitation
- All patients with COPD should be prescribed dual bronchodilation (LABA/LAMA)
- Patients with raised biomarkers and/or exacerbations will benefit from ICS/LABA/LAMA
- Check inhaler technique and adherence to treatment at every patient contact
- Any patient experiencing two or more exacerbations in 12 months should be referred to a specialist COPD service

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WHY A SPOTLIGHT ON COPD IN SOUTH EAST LONDON?

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Diagnosis

There is a problem of both **under-diagnosis** and **inaccurate diagnosis** of COPD in SEL

- The prevalence of COPD in SEL is 1.3%; nationally the estimated prevalence is 3%. Therefore, there may be upwards of 30,000 people with undiagnosed COPD across our boroughs
- **Quality Assured Spirometry** is essential to confirm diagnosis of COPD, but only 76% of patients coded as COPD have had spirometry. One third of these do not have a documented FEV_1/FVC ratio < 0.7

High Value Care

- Patients with MRC ≥2 should be offered **pulmonary rehab**, but only 25% of those eligible are referred
- A third of patients coded as COPD are recorded as current **smokers**
- 31% of patients with a confirmed diagnosis of COPD are not prescribed a **LAMA**
- Nearly 3,500 patients without a confirmed diagnosis of COPD are prescribed **inhaled corticosteroids,** exposing them to potential harm and no benefit

Outcomes

- COPD accounts for the most **unplanned** Ambulatory Care Sensitive Conditions (ACSC) **admissions** across all boroughs
- SEL has higher than the national rate for **mortality** with COPD as a contributory factor

KEY TO USING THIS GUIDE

	In the contents section this icon will take you directly to the relevant page in the document
	Throughout the document this icon on the bottom left-hand corner will take you back to the contents page
Diagnosis section	Throughout the document these links will take you directly to the relevant page within the guideline or to an external site
Quit smoking - Better Health - NHS (www.nhs.uk)	Throughout the document these links will take you to an external website
Turbohaler	In the COPD Inhaler Pathway section these links will take you to the relevant page for videos on the device usage
quit@smokefreelewisham.co.uk	Throughout the document these links will start a new email to the relevant team



GLOSSARY

6MWT	6 Minute Walk Test
A&E	Accident & Emergency
ACBT	Active Cycle of Breathing Technique
ACE Inhibitors	Angiotensin-Converting Enzyme inhibitors
ACSC	Ambulatory Care Sensitive Conditions
ACT	Airway Clearance Techniques
AECOPD	Acute Exacerbation of COPD
AFB	Acid-Fast Bacilli
AOT	Ambulatory Oxygen Therapy
BLVR	Bronchoscopic Lung Volume Reduction
BMI	Body Mass Index
BTS	British Thoaracic Society
C Diff	Clostridium Difficile
CAT	COPD Assessment Test
COPD	Chronic Obstructive Plmonary Disease
CT	Computed Tomography
CVD	Cardio-Vascular Disease
CVS	Cardio-Vascular System
CXR	Chest X-Ray
DPI	Dry Powder Inhaler
DRESS	Drug Reaction with Eosinophilia and Systemic Symptoms
ECG	Electro-CardioGram
ENT	Ear, Nose and Throat
eos	Eosinophil
FBC	Full Blood Count
FeNO	Fractional Exhaled Nitric Oxide
FEV_1	Forced Expiratory Volume in 1 second
FRAX	Fracture Risk Assessment Tool
FVC	Forced Vital Capacity
GORD	Gastro-Oesophageal Reflux Disease
GP	General Practitioner
HCP	Health Care Professional
HOSAR	Home Oxygen Service - Assessment & Review
HRCT	High Resolution Computed Tomography
ICS	Inhaled Cortico-Steroids
IHD	Ischaemic Heart Disease
LABA	Long-Acting Beta Agonist
LAMA	Long-Acting Muscarinic Antagonist
LFT's	Liver Function Tests
LRTI	Lower Respiratory Tract Infection
LTOT	Long Term Oxygen Therapy
LVRS	Lung Volume Reduction Surgery
MC&S	Microscopy, Culture and Sensitivity
MDI	Metered Dose Inhaler
MI	Myocardial Infarction
mMRC	Modified Medical Research Council Scale
MRC	Medical Research Council Scale
NaCl	Sodium Chloride
NCSCT	National Centre for Smoking Cessation and Training
NOT	Nocturnal Oxygen Therapy
NRT	Nicotine Replacement Therapy
NTM	Non-Tuberculous Mycobacteria
NT-ProBNP	N-Terminal Pro Brain Natriuretic Peptide
O_2	Oxygen
OCS	Oral Cortico-Steroids
OPEP	Oscillatory Positive Expiratory Pressure
OSA	Obstructive Sleep Apnoea
OTC	Over The Counter
pMDI	Pressurised Metered Dose Inhaler
PNDS	Post Nasal Drip Syndrome
POT	Palliative Oxygen Therapy
PR	Pulmonary Rehabilitation
PRISm	Preserved Ratio Impaired Spirometry
QoL	Quality of Life
QTc	Heart rate corrected QT interval
RSV	Respiratory Syncytial Virus
SABA	Short Acting Beta Agonist
Sats	Oxygen Saturations
SMI	Soft Mist Inhaler
SPC	Summary of Product Characteristics
T2DM	Type 2 Diabetes Mellitus
TFT'S	Thyroid Function Tests
TLCO	Transfer Factor for Carbon Monoxide
U&E	Urea & Electrolytes
UACS	Upper Airway Cough Syndrome
VBA	Very Brief Advice
VQ SPECT	Ventilation Perfusion Single-Photon Emission Computerised Tomography

IDENTIFICATION AND DIAGNOSIS

The diagnosis of COPD is suspected based on risk factors and symptoms and should be confirmed with quality-assured diagnostic spirometry.

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TOP TIPS

- **Suspect COPD in:**
  - ✓ **Adult patients with exposure to appropriate risk factors**
  - **AND**
  - ✓ **Symptoms of breathlessness, cough or sputum**
- **Confirm diagnosis with quality-assured spirometry**

Diagnostic spirometry should only be performed by those assessed as competent according to Association of Respiratory Technology and Physiology (ARTP) standards

Risk factors:

GENE
- Family History (e.g. Alpha-1 antitrypsin deficiency)
- Developmental issues
- Low birth weight
- Prematurity

ENVIRONMENT
- Ex/current smokers
- Tobacco exposure including passive smoking, and smoking of illicit drugs
- Toxic particles from indoor/outdoor gases & pollution
- Occupational dust, vapours, fumes gases & chemicals

Occurring over the lifetime

Symptoms are largely persistent, recurrent and progressive:

Chronic cough – may be intermittent and non-productive
(Exertional) Breathlessness
Sputum production
Wheeze
Frequent/recurrent bronchitis, Lower Respiratory Tract Infections (LRTIs)

Red flags to ask about:

*** Lung cancer and COPD share common risk factors*
Unintended weight Loss
Nocturnal breathlessness
Fatigue
Chest pain
Haemoptysis

Initial Investigations

- FBC (eosinophil count – this can guide whether an ICS should be used)
- Peak flow diary-if asthma is suspected
- CXR – may identify features of other pathologies (e.g. consolidation, mass, pleural effusion, pulmonary oedema, cardio-thoracic ratio)
- Check BMI

Further Investigations – if clinically appropriate

- Direct access CT chest if malignancy is suspected
- ECG, NT-proBNP +/- echocardiogram to assess:
  - cardiac function, structural integrity
  - for pulmonary hypertension if history of CVD, hypertension, hypoxia or suggestive clinical signs present (tachycardia, oedema, cyanosis)
- Serum alpha-1 antitrypsin deficiency if early onset, minimal tobacco or other drug exposure, or family history of COPD
- Sputum culture if recurrent infection or persistently purulent sputum

Refer for quality assured diagnostic spirometry

Testing should include:
- Quality assured spirometry - A low FEV1 and post-bronchodilator FEV_1/FVC ratio of <0.7 (70%) confirms a diagnosis of COPD. The Lower limit of normal (LLN) for age and height should be used to prevent over or under-diagnosis
- Exhaled CO – A measure of tobacco dependence
- FeNO – to assess the degree of eosinophilic airway inflammation
- Resting O2 saturations

Report should include:
- Symptoms that contributed to the diagnosis of COPD (cough, sputum and breathlessness)
- Exacerbation frequency, BMI and the relevance of this to spirometry results
- The above test results and flow volume loop interpretation

IDENTIFICATION AND DIAGNOSIS

TOP TIPS

- ✓ **Interpret spirometry in the context of history and symptoms**
- ✓ **Consider other causes of breathlessness and cough which may co-exist with COPD**
- ✓ **Seek specialist advice if there is diagnostic uncertainty**

Diagnostic challenges: Physiology

Diagnosing COPD is often straight forward with obstruction clearly demonstrated (FEV_1/FVC ratio of <0.7). However, some individuals have respiratory symptoms and/or structural lung disease (emphysema on CT) and/or other physiological abnormalities (low FEV_1, gas trapping, hyperinflation, reduced TLCO (lung diffusing capacity) without airflow obstruction. These patients are labelled as **pre-COPD** or **PRISm** (preserved ratio Impaired Spirometry). If they have symptoms they should be treated as COPD but **please seek specialist advice.**

Diagnostic challenges: COPD or asthma or both?

In many cases it is possible to differentiate asthma and COPD based on history. However, in some patients there remains uncertainty.
Use the following findings to help identify asthma:

- Large response to bronchodilators (>400ml)
- Serial peak flow measurements >20% day to day or diurnal variation
- Raised FeNO >50ppbn

For diagnosis and treatment of asthma see: CESEL Asthma in Adults Guidance

Do not diagnose COPD in a patient if the FEV_1 and FEV_1/FVC ratio return to normal with bronchodilation (either in lung function testing or following treatment).

Patients can also have dual diagnoses. For example, a patient with childhood atopic asthma who smokes may then develop COPD. If in doubt about the predominant diagnosis, or about which treatments to prescribe **please seek specialist advice.**

Differential Diagnosis of COPD

COPD	• Progressive symptoms, particularly breathlessness • History of tobacco smoking or other risk factors
Asthma	• Variable airflow obstruction • Symptoms vary widely from day to day • Symptoms worse at night/early morning • Allergy, rhinitis, and/or eczema also present • Often occurs in children • Family history of asthma
Congestive Heart Failure	• Chest X-Ray shows dilated heart, pulmonary oedema • Pulmonary function tests indicate volume restriction, not airflow obstruction
Bronchiectasis	• Large volumes of purulent sputum • Commonly associated with bacterial infections • Chest X-Ray/HRCT shows bronchial dilation

Other Causes of Chronic Cough

INTRATHORACIC

- Asthma
- Lung Cancer
- Tuberculosis
- Bronchiectasis
- Left Heart Failure
- Interstitial Lung Disease
- Cystic Fibrosis
- Idiopathic Cough

EXTRATHORACIC

- Chronic Allergic Rhinitis
- Post Nasal Drip Syndrome (PNDS)
- Upper Airway Cough Syndrome (UACS)
- Gastroesophageal Reflux
- Medication (e.g., ACE Inhibitors)

REFERRAL PATHWAYS FOR QUALITY-ASSURED DIAGNOSTIC SPIROMETRY

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Inclusion Criteria:

- Aged ≥16
- Has had a CXR in the past 6 months

Absolute contraindications:

- Aneurysm aortic or cerebral >6cm or bulging
- Active or suspected transmissible respiratory or systemic infection including Tuberculosis (TB)

Exclusion Criteria – Spirometry *cannot* be performed if the patient has any of the following within the last 4 weeks.

- Haemoptysis
- Heart attack or unstable angina
- Pulmonary embolism
- Pneumothorax
- Eye surgery, sinus surgery or middle ear infection
- Thoracic or abdominal surgery
- Brain surgery or recent concussion
- Late term pregnancy > 40 weeks

BEXLEY

- SEL Quality Assured Diagnostic Spirometry & FeNO Referral Form
- Located on DXS
- Send completed form to bexleycare.spc@nhs.net

BROMLEY

- SEL Quality Assured Diagnostic Spirometry & FeNO Referral Form
- Located on Bromley ROP
- e-RS:
  Specialty- Diagnostic Physiological Measurement
  Clinic Type- Respiratory – Full Lung Function
  Service- Community Lung Function Test - Referral Assessment Service @ PRUH for Kings College Hospital RJZ30

GREENWICH

- SEL Quality Assured Diagnostic Spirometry & FeNO Referral Form
- Located on DXS
- Send completed form to oxl-tr.greenwich-singlepointofaccess@nhs.net

LAMBETH & SOUTHWARK

- SEL Quality Assured Diagnostic Spirometry & FeNO Referral Form
- Located on DXS
- e-RS:
  Specialty- Diagnostic Physiological Measurement
  Clinic Type- Respiratory – Full Lung Function
  Service- Community Lung Function Service- (location options available)

LEWISHAM

- SEL Quality Assured Diagnostic Spirometry & FeNO Referral Form
- Located on DXS
- Send completed form to LG.respiratorynursingteam@nhs.net

ANNUAL REVIEW FOR PATIENTS WITH COPD

A good annual review falls into three distinct parts:



TOP TIPS

- ✓ **Ensure your patient has a quality-assured diagnosis of COPD**
- ✓ **Assess symptom burden**
- ✓ **Ensure your patient is prescribed and correctly using the appropriate medication**
- ✓ **Develop a self-management plan in collaboration with the patient**

The aim of a COPD annual review is to optimise health-related quality of life by decreasing symptom burden, reducing frequency of exacerbations and managing co-morbidities in a holistic and patient centred manner.

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Annual reviews should take place in person

1. Assess disease control and severity

i. Review diagnosis of COPD: ensure the patient has had quality-assured respiratory diagnostic testing. See diagnosis section for more details
ii. Assess symptom burden using a validated tool: assess breathlessness using MRC dyspnoea scale and overall symptom burden using CAT score
iii. Record the number and severity of exacerbations in the last 12 months Where the patient is prescribed a rescue pack, confirm how many they have used in the last 12 months. Consider seeking advice and guidance for patients who have experienced 2 or more exacerbations in the last 12 months despite good adherence to treatment and good inhaler technique
iv. Record oxygen saturations. If saturations are persistently ≤92%, refer to Specialist Oxygen Assessment team
v. Record BMI: low BMI is associated with poorer COPD outcomes. The goal is to optimise weight and nutrition. Refer to dieticians if BMI <20kg/m2
vi. Consider alternative or exacerbating causes of breathlessness: consider checking* NT-ProBNP, TFTs, FBC, U&E, LFTs, albumin/creatinine ratio, ECG, CXR (*list not exhaustive)

2. Review

i. Confirm smoking status, offer very brief advice (VBA) and signpost current smokers to local tobacco dependence services (see tobacco dependence treatment section)
ii. Offer pulmonary rehab to all patients who are MRC ≥2 or if they have had an exacerbation in the last 3 months requiring hospitalisation (see PR section)
iii. Ensure patient is up to date with their immunisations: annual influenza vaccine and COVID booster, plus one-off pneumococcal vaccine
iv. Review and optimise inhaled treatment (See Inhaler Pathway):
  a. Ensure treatment is in line with local guidelines
  b. Ensure all patients are prescribed dual bronchodilation (LABA/LAMA)
  c. Review appropriateness of inhaled corticosteroids (ICS): exacerbation history and eosinophil counts will guide ICS use. Stop ICS in those patients who do not fulfil the criteria
v. Check and correct inhaler technique
  a. Where possible, ensure all inhaler devices prescribed require similar inhalation technique
  b. Where the patient uses a pMDI, ensure a spacer device is prescribed
vi. Review adherence to treatment: confirm using two sources for example, with the patient directly, prescription refill data or through use of a validated tool
vii. Remind patient to take used inhalers to a pharmacy and not to put them in household rubbish/recycling. See Sustainability section
viii. Where the patient is prescribed a mucolytic, review ongoing benefit and stop if no improvement in sputum clearance
ix. Where the patient is prescribed nebulised medication, ensure this was initiated by a specialist clinician, if not consider cessation
x. Review co-morbidities and optimise management where appropriate, and in particular:
  a. Anxiety and depression: associated with poorer prognosis and can contribute to poorer adherence to treatment
  b. Cardiovascular disease (CVD) and risk of CVD: CVD is a risk factor for acute exacerbations, and there is increased risk of MI and stroke in the 30 days post exacerbation. QRISK3 calculation should be part of an annual review
  c. Osteoporosis: COPD is a risk factor for development of osteoporosis which is often underdiagnosed in COPD, and is a long-term side-effect of ICS/OCS use
  d. Review polypharmacy and take this into consideration when discussing respiratory treatment regimens

xi. Consider the wider determinants of health, including housing, finances and social situation – see **Section 3 "Collaborate with Patient"** on next page

ANNUAL REVIEW FOR PATIENTS WITH COPD

A good annual review falls into three distinct parts:



The OPTIMISE structure can be utilised within an annual COPD review to provide holistic and evidence-based care

3. Collaborate with the patient - every patient should leave their annual review with a good understanding of their disease and feeling empowered to manage their condition in line with their co-created self-management plan.

i. Utilise a Shared Decision-Making approach: consider the patient's needs, beliefs, lifestyle and preferences when discussing management of their condition. Ask "what matters to you"?

ii. Give appropriate support around wider determinants of health:
   a. Damp and mould- There is evidence that the presence of mould in the home significantly increases the risk of COPD exacerbations. Information to support the patient can be found at Know your rights - what to do if you have damp and mould in a rented home — Asthma + Lung UK Blog (asthmaandlung.org.uk). Clinicians can also write a letter of support.
   b. The prevalence of COPD is greater in areas of social deprivation. Patients may need support with benefits, prescription and heating costs, and information can be found at Financial support | Asthma + Lung UK (asthmaandlung.org.uk). Consider referral to social prescriber.
   c. COPD primarily affects older adults who are at increased risk of loneliness. Information and support can be found at The Silver Line Helpline which is run by AgeUK.
   d. Check the patient's understanding of their disease and how it is treated.

iii. Develop a self-management plan together with the patient to include information on:
   a. What to do when symptoms worsen
   b. Offer a rescue pack where appropriate and ensure patient understands how to recognise when to start their rescue pack

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O — **Optimal Treatment**
Review medicines; optimise inhaled and oral therapy
Review adherence. Consider referral for other interventions e.g. oxygen, biologics

P — **Pulmonary Rehabilitation**
Assess for eligibility, provide information and refer as appropriate

T — **Tobacco Dependence Treatment**
Ask, Advise, Act

I — **Inhaler Technique**
Always assess and train patient to optimise technique.
Ensure all inhalers are the same device type

M — **Maximising vaccination coverage**
Offer the following:
- Pneumococcal vaccine
- Annual flu vaccine
- COVID- 19 vaccine

I — **Increasing physical activity**
Advise that a lack of physical activity increases their risk of exacerbating

S — **Support for psychosocial wellbeing**
Assess levels of anxiety and depression and consider onward referral
Consider referral to social prescribing services, health and wellbeing coaches and Improving Access to Psychological Therapies (IAPT)

E — **Education and self-management**
Support and educate patients and their carers to develop knowledge, skills and confidence to manage their condition.
Develop personalised care plans including an exacerbation action plan

TOBACCO DEPENDENCE TREATMENT

TOP TIPS

As a minimum, very brief advice (VBA) should be provided at every opportunity. NCSCT e-learning training and tools are available online

- ✓ **Ask: "do you smoke?"**
- ✓ **Advise: the best treatment for COPD is stopping smoking**
- ✓ **Act: refer to a tobacco dependence service**

Resources:

Stop Smoking London - We're Here to Help You Quit Smoking has information on self-help material.

Quit smoking - Better Health - NHS (www.nhs.uk)

Call the free Smokefree National Helpline on 0300 123 1044

Why is treating tobacco dependence important?

Tobacco dependence treatment is one of the highest value interventions in COPD, shown to prevent disease progression and improve symptom control, however data shows that evidence-based treatment is not consistently offered.

- About half of all cigarette smokers will develop airflow obstruction in their lifetime, with approximately 10-20% going on to develop clinically significant COPD This risk increases with number of years smoked
- Smoking is associated with accelerated decline in lung function, increased severity of symptoms and increased hospitalisation in patients with COPD
- 80% of COPD deaths are caused by smoking

Your role as a clinician:

ASK

And record smoking status

"Do you smoke?"

"How do you feel about your smoking?"

ADVISE

On the most effective way of quitting

"Did you know that the best way of stopping smoking is with a combination of specialist support and medication or e-cigarettes."

"I can refer you to our local stop smoking service many patients have found useful."

ACT

On patient's response

READY FOR CHANGE	NOT READY FOR CHANGE
• Build confidence • Give information • Refer to a local service • **Follow up** next time you see the patient	• "It's your choice of course, help will always be available" • **Reassess** – Repeat VBA at future visits and at least once a year

Accessing Tobacco Dependence Services across SEL: clinician or self-referral

(includes information on community pharmacies that provide this service)

Lambeth - 0800 856 3409 or 020 3049 5791 or email gst-tr.stopsmokinglambeth@nhs.net

Southwark - 0333 005 0159 or email: Southwark.referrals@nhs.net

Lewisham: 0800 0820 388 or email quit@smokefreelewisham.co.uk

Greenwich: 0800 470 4831 or email lg.smokefreegreenwich2030@nhs.net

Bromley - 0800 999 1072 or email: smokefree.bromley@nhs.net

Bexley - 0800 783 2514 or sign up for support via website www.smokefreebexley.co.uk

Services and treatments available across SEL

All patients in SEL have access to a free stop smoking service that offers treatment courses lasting up to 12 weeks and include a combination of behavioural support therapy and pharmacotherapy (and/or vapes). A patient will have the greatest chance of quitting if they have behavioural support combined with medication and/or a vape.

1. **Behavioural support therapy:** may include motivational interviewing and behaviour change techniques.

2. Medication to treat tobacco dependence includes:

a. **Nicotine Replacement Therapy (NRT):** nicotine drives dependency to tobacco but is not the cause of harms of smoking. NRT works by providing a controlled dose of nicotine without the harmful toxins found in tobacco and helping to reduce withdrawal symptoms and cravings. NRT options include long-acting transdermal patches, and short acting products like inhalation cartridges, lozenges, gum and spray. Combination NRT (patch plus other product) is more effective than single agent NRT, and higher dose NRT is more effective than lower strength products. The most serious risk of relapsing back to smoking is prescribing an insufficient dose of NRT.

b. **Oral medications (to be started whilst still smoking):**

Cytisine: One of the most effective treatments for tobacco dependency. It is a naturally-occurring plant-based chemical. Side-effects include increased appetite, mood changes, sleep disturbance, headaches and GI upset, but these are uncommon and often mild. See SPC and SEL formulary recommendation and SEL adult formulary

Varenicline: Acts on nicotine receptors in the brain which reduces withdrawal and decreases the rewarding effects of smoking by blocking downstream dopamine. It has no drug interactions and very few contraindications. It is safe and effective for patients with mental ill health. Can cause nausea, sleep disturbance and vivid/colourful dreams. See SPC

3. Nicotine containing vapes (e-cigarettes) are much less harmful than smoking, are NICE recommended and highly effective at helping adult patients quit smoking. They are not medications, but are regulated products, and are available from borough smoking cessation services or over the counter. Nicotine vapes can be used in addition to NRT or other smoking cessation medication. Single use disposable vapes have a higher environmental impact and are therefore not recommended. Refillable devices are preferred.

PULMONARY REHABILITATION

Pulmonary rehabilitation (PR) is a high value intervention, that improves exercise tolerance and health related quality of life and reduces exacerbations and hospital admissions in patients with COPD.
It is a twice weekly face to face programme for 6-8 weeks, but for those patients who are unable or unwilling to attend face to face there are remote options available.

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TOP TIPS

When discussing a PR referral include the following:

- ✓ PR is a fundamental component of care for COPD
- ✓ PR is holistic – it's not just about exercise, it's about breathing better
- ✓ PR improves health-related QoL
- ✓ PR reduces exacerbation frequency and risk of hospital admission
- ✓ PR is tailored to the individual

Confirmed COPD
MRC ≥ 2

Patients should be motivated to attend a 6-8 week course, face to face, or via phone or video conferencing

Check Exclusion Criteria
Severe limitation to mobility[1]
Unstable cardiac disease[2]
Unstable diabetes[3]
Severe mental health or cognitive impairment[4]
Frequent or unexplained falls[5]

Refer

Referral should be **made at the point of diagnosis** if appropriate and can be **repeated yearly** if functional deterioration[6]

1 Usually need to be able to walk >10m; not an absolute contraindication – liaise with local service if eligibility uncertain
2 Unstable arrythmia's, acute cardiac event or admission within last 6 weeks, severe aortic stenosis, severe hypertension >180/110
3 Regular hypoglycaemic events or wildly fluctuating HbA1c
4 Preventing participation in a group
5 Falls suspicious of medical cause awaiting investigation or >2 mechanical falls in the past year without prior falls clinic involvement
6 Can be referred post exacerbation by specialist services

1. Ask

What is the functional and psycho-social impact of their breathlessness?
"How is your breathing affecting your everyday life?"

2. Introduce

"Pulmonary Rehabilitation can help you. Would it be OK if I told you more about it and support you to decide if you would like to attend"

3. Shared Decision

Provide with information (see below) to support the patient to make an informed decision that is right for them. **"What have you heard about Pulmonary Rehabilitation"**

4. Action

If the patient is open to a referral explain local processes and next steps
Information on referral process in each borough is available on DXS

Information about pulmonary rehabilitation for patients and referrers

We recommend all patients are provided with additional information at the point of referral.
Please consider the use of the following resources:

- SEL Pulmonary Rehabilitation for referrers information leaflet - available on DXS
- SEL Pulmonary rehabilitation videos (3-6 minutes each):
  - What is pulmonary rehab all about?
  - Who is suitable for pulmonary rehab?
  - What happens after pulmonary rehab?
  - Pulmonary rehab – physical benefits
  - Pulmonary rehab – mental health benefits
  - What patients say about pulmonary rehab

SCAN ME

Videos and contact info are available by scanning QR code or at
Pulmonary Rehabilitation - South East London ICS (selondonics.org)

PHYSICAL ACTIVITY









Pulmonary rehabilitation (PR) is recommended for patients with COPD with the relevant symptoms and/or risk of exacerbation as it is a highly effective intervention. However, not every patient is able or willing to attend PR. It is important to also give these patients advice on the benefits of physical activity and to signpost to resources.

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Not eligible for Pulmonary Rehabilitation as MRC <2

Everyone can benefit from an increase in physical activity, including those who are not breathless, and those already doing some activity.

The Chief Medical Officer recommends adults are active for at least:

- **150 minutes** of **moderate intensity** exercise a week (able to talk but not sing whilst active)
- **75 minutes** **vigorous intensity** a week (fast breathing, difficulty talking)

or a combination of both

- Build strength on at least 2 days per week e.g. yoga, weights at the gym, carrying heavy bags
- Minimise sedentary time and break up periods of inactivity
- Older adults should also improve balance 2 days a week to reduce risk of falls and frailty
  e.g. tai chi, bowls, dancing

Consider utilising the NHS Exercise Referral Scheme or contact your Social Prescribing Link Worker for information on other options for exercise in the community

Not ready to commit to Pulmonary Rehabilitation

Living life with a long-term condition commonly affects an individual's physical activity, beliefs, and behaviours. Most people are **ambivalent** about, rather than **resistant** to, increasing their physical activity levels.

Your challenge:

- help an individual to consider and share their own 'pros' for increasing their physical activity levels
- help them to develop these ideas into a workable plan that fits into their life

Try to understand their perspective, agenda and priorities, and any barriers to attending PR and problem solve together

Misconceptions about physical activity and Pulmonary Rehabilitation:

I am so breathless I can't exercise	Exercise in PR is tailored to the individual and you go at your own pace
I am too old for exercise	Most patients attending PR are 60-70 years old, and some older
I can't do PR as I can't attend in person.	There are remote options available where it is safe and appropriate to do so
Isn't PR just breathing exercises?	It is a programme of exercise training, education and self-management techniques. Patients often learn more about their disease
Where can I find more information about physical activity in COPD?	Keeping active with a lung condition | Asthma + Lung UK (asthmaandlung.org.uk)

COPD INHALER PATHWAY

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This pathway is intended to be advisory rather than mandatory. Its purpose is to support consistency and equity in care for people with COPD
It has been adapted from the London COPD Inhaler Pathway which was developed by the London Respiratory Clinical Network and is aligned to the South East London adult formulary.
It is an interactive document with links to other relevant resources

Please note that ICS/LABA inhalers such as Fostair are no longer recommended for the management of COPD. This includes AIR and MART regimes.

Use the CESEL Asthma in Adults Guidance if the patient has:

- An active diagnosis of asthma, or
- A past diagnosis of asthma (even with a significant smoking history), or
- Fixed airflow obstruction likely secondary to chronically under-treated asthma

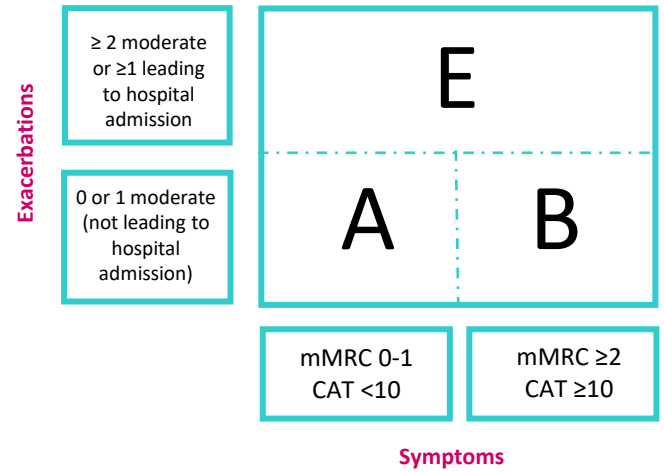
TOP TIPS

- ✓ **Choose inhaled therapies based on exacerbation rate and blood eosinophil count**
- ✓ **Deprescribe ICS where indicated**
- ✓ **When choosing device consider:**
  - **SMI/DPI are preferable to MDIs for all patients who can use them effectively**
  - **Ensure all devices are the same type**
- ✓ **Where a patient uses an MDI always prescribe a spacer**

GOLD Classification:

Once an assessment of airflow obstruction and symptoms severity has been completed, then the patient can be classified as GOLD **A, B or E**. This, alongside eosinophil count, helps determine which treatment the patient is initiated on*. Of course, fundamental aspects of care such as treatment of tobacco dependence, physical activity including pulmonary rehabilitation, and vaccination must be addressed in parallel. Treatment is targeted at the key issue for the individual patient:

- **A and B**
  - bronchodilation with LABA/LAMA
  - +/- comorbidity management
- **E**
  - if raised eosinophils add ICS
  - if due to infection consider mucolytics and antimicrobials



Key: Low carbon footprint inhaler

This list of inhalers is not exhaustive but offers an evidence-based selection of devices suitable for most patients (SEL-approved inhalers can be found on the SEL Joint Formulary). All inhalers are RAG rated GREEN. If none of these devices are suitable for your patient, please consider seeking specialist advice.

COPD INHALER PATHWAY

Initial therapy is chosen based on: frequency and severity[1] of COPD exacerbations in the last year, and the highest recorded eosinophil count (eos). A specialist can be contacted for advice via Advice and Guidance at any stage

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KEY:

1 A moderate exacerbation is one that required a course of systemic steroids; a severe exacerbation requires hospitalisation

2 Peak eos count taken within the last year; in some circumstances peak lifetime eos count may be more appropriate

3 There may be situations where a single bronchodilator is more appropriate

4 Off-label as initial treatment but may be clinically appropriate

⇢ Assess each patient's likely benefit/risk from an ICS. It may be appropriate to use a LABA/LAMA if they have a history of mycobacterial infection or recurrent pneumonia (two or more episodes of pneumonia in adulthood).

Always check inhaler technique and adherence, discuss co-morbidities, refer to Pulmonary Rehabilitation where appropriate and treat tobacco dependence before considering a change to inhaler treatment (see GOLD 2025 Report for more information)

The RightBreathe website provides inhaler prescribing information and inhaler technique videos

≤1 moderate exacerbation[1] in last year and/or experiences exertional breathlessness

Blood eos count <0.1 10^9 cells/L [2]

≥2 moderate exacerbations[1] or ≥1 severe exacerbation[1] in last year

Blood eos count ≥0.1 10^9 cells/L [2]

LABA/LAMA[3]

Choose device most appropriate to patient capability and preference
LABA/LAMA may also be appropriate in those with eos >0.1 but have not exacerbated



Anoro Ellipta
One dose
once daily



Spiolto Respimat
(Re-usable device)
Two doses once daily



Duaklir Genuair
One dose
twice daily



Ultibro Breezhaler
One dose
once daily

ICS/LABA & LAMA****

Choose device most appropriate to patient capability and preference



Trelegy Ellipta
92/55/22
One dose daily



Trimbow NEXThaler 88/5/9
Two doses twice daily



Trixeo pMDI
5/7.2/160
Two doses twice daily
Via spacer device



Trimbow pMDI
87/5/9
Two doses twice daily
Via spacer device

A further exacerbation

Consider seeking advice from a specialist via Advice and Guidance, or consider referral

Refer to specialist anyone with 2 moderate or 1 severe exacerbations in the last 12 months despite optimised inhaled therapy. Consider biologics in those with blood eos ≥0.3 (p19) or long-term antibiotics in those with low eos (p20)

Prescribe as required SABA. Choose one, preferably same device type to reduce risk of inhalation technique errors e.g. both as dry powder:



Salbutamol Easyhaler
100mcg

OR



Ventolin Accuhaler
200mcg



Bricanyl Turbohaler
500 mcg

OR



Salamol Easi-breathe
100mcg

OR

All pMDIs should be used with a compatible spacer device.



Airomir
or
Salamol pMDI 100mcg
via a spacer device:
Single breath & hold
Or
Tidal breathing





EasyChamber
with adult mask



EasyChamber
(mouthpiece)



AeroChamber Plus
with adult mask



AeroChamber Plus
(mouthpiece)

RESCUE PACKS FOR EXACERBATIONS

TOP TIPS

- ✓ Treating AECOPD early is key to preventing morbidity & mortality
- ✓ Rescue Packs facilitate this for suitable patients
- ✓ Rescue packs should not be issued without a self-management plan
- ✓ Patients must be educated on their use

Rescue pack contains:

- Prednisolone 30mg daily for 5 days

PLUS

- Doxycycline 200mg on Day 1 followed by 100mg daily on days 2-5

OR

- Amoxicillin 500mg three times daily for 5 days

Definition of Acute Exacerbation COPD (AECOPD): an acute worsening of breathlessness, cough and sputum over a period of less than 14 days.

Common causes: include bacterial or viral airway infections, air pollution or other insult to the lungs.

AECOPD are a concern as they are associated with:

- Poorer patient outcomes: decline in health status, greater morbidity, hospitalisation and significant risk of readmission, disease progression, greater risk of further exacerbations, cardiovascular events and mortality
- Economic cost: the annual cost of exacerbations in the UK is £1.5 billion

How to treat an exacerbation

- All exacerbations should be treated with as needed inhaled short-acting beta agonist (SABA) via inhaler device or nebuliser as appropriate
- Systemic oral corticosteroids (OCS) for moderate or severe exacerbations:
  - Prednisolone 30mg for 5 days (minimal evidence to support duration longer than 5 days) Take with or after food
  - Start when breathlessness not controlled by increased SABA use and where there is evidence of airways inflammation
  - May not be required where there is no evidence of airways inflammation
- Antibiotics where appropriate (there is limited evidence to support duration longer than 5 days)
  - **FIRST LINE:** Doxycycline 200mg on day 1 followed by 100mg daily on day 2-5
  - **SECOND LINE:** Amoxicillin 500mg three times daily for 5 days
  - Not all exacerbations are precipitated by bacteria so not all will respond to antibiotics. Antibiotics are indicated where there is increased dyspnoea together with increased sputum volume & purulence
  - Review allergies and previous sputum cultures (if available) to assess need/appropriateness of antibiotic choice. Consider a sputum sample if patient continues to be productive. Consider referral to allergy services where a patient has multiple allergies to antibiotics

What is a rescue pack?

A rescue pack is a short course of treatment, issued in advance, containing the following:

- Prednisolone 30mg daily for 5 days
- Doxycycline 200mg stat followed by 100mg daily on days 2-5 OR amoxicillin 500mg three times daily for 5 days

The patient keeps this at home and will commence in the event they develop the symptoms of an acute exacerbation. Their self-management plan should support them to make this decision.

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BENEFITS

1. Facilitates early access to medication
2. Early initiation of OCS improves clinical outcomes, including reduced need for hospitalisation & earlier recovery
3. Empowers patient to make choices regarding their own care

POTENTIAL HARMS

1. Misuse/overuse
2. Possible lack of engagement with healthcare
3. Long-term complications associated with OCS use: adrenal suppression, osteoporosis, T2DM, pneumonia, cataracts, psychosis and skin thinning
4. Antimicrobial resistance

SEE PATIENT EDUCATION POINTS BELOW

Who is suitable for a rescue pack?

Not everyone is suitable for a rescue pack. Suitable patients must fulfil the following criteria:

- At risk of repeated exacerbations (2 or more exacerbations in last 12 months). Patients who have not exacerbated previously are unlikely to recognise the symptoms and are at lower risk of future events
- All treatments, pharmacological and non-pharmacological, have been optimised
- Understand how and when to use a rescue pack
- Willing and able to use the rescue pack as prescribed

Patient Education Points:

- How to recognise the start of an exacerbation
- Benefits of having a rescue pack
- Common side-effects of the medication(s) and risks of repeated use.
- Red flag symptoms e.g. chest pain, haemoptysis, unexplained weight loss and new pedal oedema
- Importance of contacting their Health-Care Professional (HCP) if they have started their rescue treatment, and if symptoms do not improve
- Importance of a review with HCP post-exacerbation
- Importance of taking the medication exactly as prescribed for the full duration
- Safety-netting: if symptoms feel different to their usual exacerbation symptoms, taking a rescue pack may not be the right thing to do. Patients should contact their GP or breathing specialist for advice.

MUCOLYTICS AND SPUTUM CLEARANCE

TOP TIPS

- ✓ Pharmacological and non-pharmacological treatment options are available
- ✓ In optimised patients with significant sputum burden consider seeking advice from a respiratory specialist.
- ✓ In those patients with recurrent exacerbations consider:
- Referral for specialist investigations
- Sending sputum specimen prior to antibiotic initiation

Introduction

- Regular sputum production is a common feature of COPD, but symptom burden varies and not all patients who produce sputum will require intervention.
- Mucolytic treatment should be considered in patients with a chronic productive cough and only continued if clinically effective after a **4-week trial period**, e.g. reduction in frequency of cough and sputum production.

Optimise the following prior to considering pharmacological treatment:

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- Smoking cessation should be first line. This improves cilia function and decreases the number of mucus producing goblet cells.
- Always check that patients are maintaining adequate hydration
- Optimise inhaled therapy and ensure there is good adherence
- Encourage the patient to remain active

Pharmacological Treatment Options

Mucolytics can be initiated in Primary care after a recommendation from an appropriate specialist

Carbocisteine (First line)

Available formulations:
Capsules (375mg) Oral solution (250mg/5ml) and sachets (750mg/10ml)

Dose:
Initial dose is 750 mg orally 3 times per day. Reduce to 750mg orally twice a day once a satisfactory response is obtained

Contraindications:
- Hypersensitivity to the active substance(s) or to any of the excipients
- Use in patients with active peptic ulceration

Cautions:
- History of peptic ulceration
- Taking concomitant medication known to cause GI bleeding
- Galactose intolerance, total lactase deficiency or glucose-galactose malabsorption
- Pregnancy or breastfeeding

Drug interactions:
No known drug interactions

Side effects: not common- please refer to SPC for further information

N-Acetylcysteine (acetylcysteine) (Second line)

Available formulations:
Effervescent tablet (600mg)

Dose:
600mg once daily

Contraindications:
- Hypersensitivity to the active substance(s) or to any of the excipients
- Pregnant women with phenylketonuria

Cautions:
- History of peptic ulceration
- Taking concomitant medication known to cause GI bleeding

Drug interaction:
- Oral antibiotics- to take these 2 hours before or after acetylcysteine
- Antitussives
- Glyceryl Trinitrate-may increase vasodilatory effect. Monitor blood pressure

Side effects: not common- please refer to SPC for further information

Treatment Goals

- Reduce excessive mucus production
- Reduce inflammation and hypersecretion
- Increase ciliary transport and improve mucus clearance
- Reduce mucus viscosity
- Optimise cough mechanisms

Non-Pharmacological Treatment Options

Physiotherapy

Patients with excessive sputum production, particularly those that are frequent exacerbators, should be taught the active cycle of breathing technique (ACBT) in the first instance. Resource to support this can be found on YouTube.

If your patient continues to have a **significant** sputum burden, consider referral to a physiotherapy service for review.

Oscillating positive expiratory pressure (OPEP) therapy

Mucus clearance treatments that promote mechanical movement through the airway such as OPEP therapy may improve mucus mobilisation, symptoms and quality of life in people with COPD who produce sputum daily or most days. **These are initiated on advice of a respiratory specialist only, but can be prescribed in primary care**

Respiratory Physiotherapy Airway Clearance Techniques (ACT) clinics run in the following boroughs:

Bexley	GP or Specialist referral to QEH lg.respphysioclinic@nhs.net.
Bromley	GP or Specialist referral to bromh.cccpod2refs@nhs.net
Greenwich	GP or Specialist referral to QEH lg.respphysioclinic@nhs.net.
L&S GSTT	Specialist referral to gst-tr.integratedrespiratoryteamgstt@nhs.net
Lewisham	GP or Specialist referral to UHL lg.respphysioclinic@nhs.net.
L&S KCH	Specialist referral to kch-tr.IntegratedRespiratoryTeam@nhs.net

Nebulised Treatments Nebulised Hypertonic saline (3% or 7% NaCl) requires a challenge test prior to initiation and supply of equipment – **only to be initiated by a specialist.**

BIOLOGICS
(hospital only)

TOP TIPS

- ✓ **Biologics for COPD include Dupilumab (Dupixent®) NICE TA1142 which targets IL-4 and IL-13, and Mepolizumab (Nucala®) NICE TA 1166 which blocks IL-5**
- ✓ **Dupilumab is administered by subcutaneous injection every 2 weeks, Mepolizumab every 4 weeks**

Consider biologics for patients who have all of the following:

- ✓ **1 severe (hospital admission) or 2 moderate exacerbations, requiring steroids and/or antibiotics in the last 12 months**
- ✓ **Blood eosinophil count ≥ 0.3 10^9 cells/L in the last 12 months**
- ✓ **Adherence to inhaled medication ≥75% (ICS/LABA/LAMA or LABA/LAMA if ICS not appropriate)**

***mepolizumab is not licensed for patients on LABA/LAMA without ICS**

- ✓ **OPTIMISE care provided** ▶

NRAP: National Respiratory Audit Programme

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IDENTIFY

Identify patients who meet minimum (NICE) criteria for COPD biologics (see top tips section)

- Hospital admission (severe exacerbation)
- Outpatient clinic reviews
- Targeted search of electronic patient records
- OPTIMISE reviews in the community

ASSESS

Local COPD team review patient face to face

Confirm COPD diagnosis and OPTIMISE care, including ensuring adherence to inhaled medications of **≥75%**

Provide patient information on biologics

APPROVE? at SEL COPD MDT review

Case presentation by clinician from local COPD team. MDT decision to offer biologic (or alternative outcome)

Favouring Dupilumab:
Patients with high T2 biomarkers (FeNO and/or blood eos)
Patients with very low FEV1 and/or chronic bronchitis

Favouring Mepolizumab:
Lower cost, lower administration frequency

NRAP data

If not approved: local COPD team communicate to patient and primary care team and initiate any alternative treatment recommendations.

If biologic approved

Please refer to SPC for:
1. Dupixent 300mg solution for injection
2. Nucala 100mg solution for injection

- Biologic prescribed by local COPD team clinician and verified by pharmacist
- 1st dose administered by clinician or by patient/carer
- 2nd dose administered by patient/carer, supervised by clinician
- Appropriateness for home care administration assessed, provider agreed (local arrangement)
- Tailored support (home visit, education) arranged
- Ongoing local support via telephone advice line, ad hoc / hot clinic reviews, outpatient clinic reviews and/or home visits
- **6-month review (remote or face to face)**
- **12-month face to face review** – followed by re-discussion at MDT to determine whether to continue prescription. Treatment will be stopped if, compared to the 12 months before starting, the number of severe exacerbations is higher, or if the same, and the number of moderate exacerbations is higher.
- Any adverse reactions or side effects to be reported to COPD team and via the MHRA Yellow Card system

NRAP data

MHRA alert – Risk of ocular adverse reactions and need for prompt management

Primary care ask:
- Please refer appropriate patients to local specialist Respiratory/COPD services via e-RS.
- For patients prescribed a biologic for COPD in secondary care, please mark this as a hospital issued medication on the patient record.

LONG-TERM ANTIBIOTIC PROPHYLAXIS FOR EXACERBATIONS OF COPD

This is a specialist pathway.
Initial prescription is provided by the specialist team, with ongoing prescriptions provided by primary care.
The specialist team are responsible for treatment monitoring.

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Aims, Diagnosis and Initial Treatment

- Consider long-term prophylactic antibiotic therapy to reduce exacerbation rates in patients with COPD who have experienced **3 or more** acute exacerbations, requiring steroids and/or antibiotics, in the last 12 months
- BTS guidance states that **1 or more** of these exacerbations must have required hospital admission. However, patients who frequently exacerbate but are managed in the community, hospital at home or via a Virtual Ward, without need for hospital admission, are not excluded from prophylactic antibiotic therapy in SEL
- **Azithromycin** is the first line antibiotic choice; **doxycycline** is second line
- Treatment with prophylactic antibiotics should continue for a minimum of 6 months to assess efficacy
- Please refer to the British Thoracic Society guideline for the use of long-term macrolides in adults with respiratory disease for further information

Considerations for prescribing long-term antimicrobial prophylaxis

Consider for the following patients:

- ✓ 3 or more acute exacerbations, requiring steroids and/or antibiotics in the last 12 months
- ✓ Not currently smoking
- ✓ Other causes for frequent exacerbations have been fully investigated
- ✓ No known contra-indications to azithromycin or doxycycline

Baseline Investigations

- CT chest is recommended to exclude a diagnosis of bronchiectasis
- Ensure potential causes for frequent exacerbations have been fully investigated
- Exclude conditions that may mimic COPD exacerbations, such as heart failure
- Liver function (LFTs): ideally within the last 3 months or sooner if hepatotoxic medications have been initiated since last LFTs
- Full blood count (FBC): prophylactic antibiotics have been associated with blood dyscrasias
- Sputum culture (MC&S and AFB) to exclude active untreated infection and screen for non-tuberculosis mycobacteria (NTM). Referral for induced sputum may be necessary
- **Specific to azithromycin:** ECG to measure QTc (ideally within the last 3 months unless new medications that prolong QTc have been initiated since the last ECG)
    - Azithromycin contraindicated in QTc >450ms for men and >470ms for women

Confirm with the patient:

- Allergy status
- Medication history
- Smoking status: smoking is a contributing factor for exacerbations. Azithromycin is less effective at reducing exacerbation rates in active smokers. Offer smoking cessation advice in the first instance.

It is the responsibility of the prescribing clinician to:

- Ensure non-pharmacological and pharmacological therapies are optimised prior to initiation of prophylaxis
- Check potential drug interactions and the appropriate management of such interactions **Specific to azithromycin:** Check for other current medications the patient is taking that can prolong QTc (review ECG as above). See SPC
- Ensure initiation of long-term antibiotic prophylaxis is a joint decision between patient and respiratory specialist
- Ensure the risks and benefits of long-term antibiotic prophylaxis are explained (see patient counselling points)

Ensure the following is documented in the patient notes and communicated to primary care:

- Baseline bloods have been reviewed
- Sputum cultures have been reviewed
- Exacerbation rate over the last 12 months (information sources to include: GP records, hospital records and patient self-reporting)
- Indication is long-term antibiotic prophylaxis
- **Specific to azithromycin:** Baseline ECG and where possible document QTc
- **Specific to doxycycline**: Future treatment for acute exacerbations should contain an alternative to doxycycline e.g., amoxicillin. Where the patient is penicillin allergic clarithromycin may be considered but input from microbiology may be required.

Patient counselling points:

- Explanation that the use of these medicines is off-label for this indication
    - Provide written information where possible regarding use of medicines for this purpose and drug/condition specific information
- Potential side effects: see drug information on next page. Counsel patients on use of sunscreen secondary to photosensitivity associated with doxycycline
- How to recognise and escalate potential side-effects such as:
    - Liver toxicity (jaundice, dark urine, confusion, mood changes, prolonged bleeding) – stop treatment and inform respiratory team/GP/attend A&E
    - Hearing or balance deterioration – stop treatment and inform respiratory team who will consider referral to audiology/ENT
- Risk of antibiotic resistance. Potential increased risk of candida infections (doxycycline) and emergence of NTM infection (azithromycin).
- Monitoring requirements at baseline and follow up (at 1 month then agreed intervals)
- Discuss the use of acute antibiotics when on long-term prophylactic antibiotics: Do not stop prophylactic azithromycin during an acute exacerbation of COPD unless another antibiotic with potential to affect the QTc interval has been prescribed.

LONG-TERM ANTIBIOTIC PROPHYLAXIS FOR EXACERBATIONS OF COPD

Stop Azithromycin/Doxycycline if:

- X No clinical benefit has been demonstrated
- X Deranged LFTs
- X Abnormal FBC
- X Evidence of QTc prolongation (Azithromycin only)
- X Patient develops tinnitus or hearing impairment
- X Sputum MC&S shows emergent NTM

First Line

Azithromycin (Off-label Indication)

At Initiation

Dose: 500mg orally three times weekly. A lower dose of 250mg orally three times weekly may be considered if concerns about side effects, particularly gastrointestinal upset.

Potential Side Effects: This is a non-exhaustive list, please refer to SPC:

- **Very common ≥ 1/10**: gastrointestinal side effects (most often transient, more common at higher doses so may warrant dose reduction)
- **Common ≥ 1/100 to < 1/10:** deafness, visual disturbance, headache, dizziness, taste disorder, rash, arthralgia
- **Uncommon ≥ 1/1,000 to < 1/100:** vertigo, hearing impairment, tinnitus, leukopenia, neutropenia, eosinophilia, deranged LFTs, hepatitis, palpitations, photosensitivity reaction
- **Rare ≥ 1/10,000 to <1/1,000**: Hepatic function abnormal, jaundice
- **Unknown:** May exacerbate symptoms of myasthenia gravis or precipitate new onset of myasthenia syndrome

Prior to prescribing, ensure baseline investigations have been carried out (see previous page)

Second Line

Doxycycline (Off-label Indication)

All evidence for use of long-term antibiotics in COPD is for azithromycin. Doxycycline is the 2nd line option but is NOT equivalent (no anti-inflammatory/immunomodulatory action).

Doxycycline should only be prescribed where azithromycin is contra-indicated or is unsuitable.

At initiation:

Dose: 100mg orally daily

Potential Side Effects: This is a non-exhaustive list, please refer to SPC

- **Common ≥ 1/100 to < 1/10:** Hypersensitivity reactions, headache, nausea and vomiting, photosensitivity reaction, rash
- **Uncommon ≥ 1/1,000 to < 1/100:** vaginal infections, dyspepsia
- **Rare ≥ 1/10,000 to <1/1,000**: candida infections, haemolytic anaemia, neutropenia, thrombocytopenia, eosinophilia, DRESS, porphyria, anxiety, benign intracranial hypertension, tinnitus, flushing, pancreatitis, C Diff colitis, hepatotoxicity, jaundice, Stevens-Johnson Syndrome, erythema multiforme, arthralgia, myalgia.
- **Caution:** Patients with myasthenia gravis, systemic lupus erythematosus

Prior to prescribing, ensure baseline investigations have been carried out (see previous page)

Ongoing Review by Specialist

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One month

- Review tolerance to prescribed drug, including review of any side effects
- Repeat LFTs and FBC
- Confirm exacerbation rate over the last 12 months has been documented at baseline
- Confirm if patient has exacerbated since initiation
- Confirm smoking status
- Confirm if any new medicines, including over-the-counter (OTC) or alternative medications, that may interact have been started since initiation
  Specific to azithromycin: in particular, consider new medicines that may prolong QTc)
- If prescribed drug is well-tolerated and one-month investigations are in acceptable range, continue with treatment for a minimum of 6 months
- Confirm primary care has taken over prescribing
- Repeat ECG to rule out new QTc prolongation

6-month

- Confirm number of exacerbations since initiation
- **Review efficacy of treatment and consider stopping if no clinical benefit**
- Repeat LFTs and FBC
- Confirm smoking status
- Confirm if any new medicines, including OTC or alternative medications, that may interact have been started since initiation
  Specific to azithromycin: in particular, consider new medicines that may prolong QTc. Repeat ECG where necessary

One year/Ongoing Monitoring

- Confirm number of exacerbations since initiation
- **Review efficacy of treatment and consider stopping if no clinical benefit**
- Repeat LFTs and FBC
- Confirm if any new medicines, including OTC or alternative medications, that may interact have been started since initiation
  Specific to azithromycin: in particular, consider new medicines that may prolong QTc. Repeat ECG where necessary
- Confirm smoking status: if patient has recommenced smoking or has significantly increased amount smoked consider ongoing treatment benefit
- Sputum (MC&S and AFB) in event of clinical decline or exacerbation where possible
- If the patient is prescribed the higher dose of azithromycin (500mg three times weekly) and gastrointestinal side effects occur, a dose reduction to 250 mg three times weekly could be considered if macrolide therapy has been of clinical benefit

Refer to the azithromycin SPC or doxycycline SPC for more information

OXYGEN THERAPY

Role of Oxygen in COPD

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TOP TIPS

- ✓ **Oxygen is not a treatment for breathlessness**
- ✓ **Patients with resting sats on air of ≤92% should be referred to specialist respiratory services**
- ✓ **Current smokers are not eligible for home oxygen.**
- ✓ **If not appropriate for home oxygen, patients may still benefit from referral to a specialist COPD team**
- ✓ **Oxygen is a drug and must be prescribed**
- ✓ **The oxygen prescription is managed by the local HOSAR**

Long Term Oxygen Therapy (LTOT) is a treatment for patients with COPD and hypoxia. Refer patients with:

- Resting sats ≤92%
- Resting sats ≤94% AND pulmonary hypertension, polycythaemia and/or peripheral oedema

Survival benefits occur when LTOT is used for at least 15 hours per day.

Ambulatory Oxygen therapy (AOT) benefits some patients who desaturate on exertion. To be suitable for AOT patients should:

- Be able to mobilise independently outside of their properties
- Be able to complete a six-minute walk test (6MWT)
- Demonstrate a desaturation to below 90% and a drop of 4% from baseline or more
- Demonstrate an increase in exercise tolerance on oxygen compared to air
- AOT has no survival benefit but can enhance quality of life (QoL)

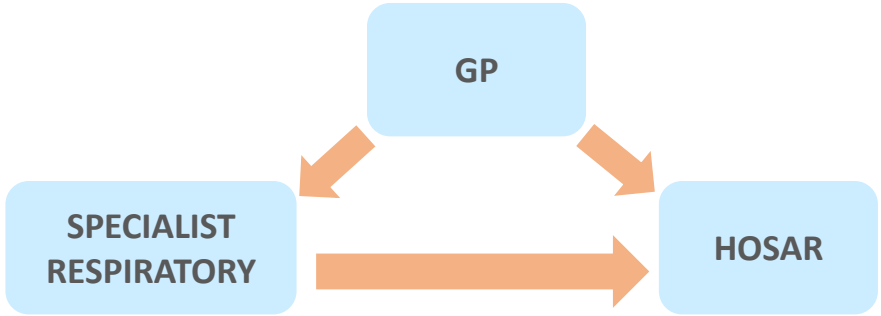
Nocturnal oxygen therapy (NOT) is not recommended for patients with COPD who do not meet the criteria for LTOT even if they suffer from nocturnal desaturation. Alternative investigations, such as sleep studies or assessment for non-invasive ventilation, should be considered.

Palliative Oxygen Therapy (POT) may be considered in some patients if hypoxic. Non-pharmacological interventions for breathlessness should be optimised first, and pharmacological treatments considered, in conjunction with a palliative care referral. See Breathlessness and Palliative Care Section

Eligibility:

- Home oxygen is not indicated for current smokers or vapers. Smoking risk from family members or visitors to the home will also be considered
- An ex-smoker is defined as abstinent for three months within the community. This can be measured using carbon monoxide readings
- Patients must be able to safely manage their own oxygen equipment or have a carer to support them
- Environmental risks such as a cluttered environment or lack of working smoke detector must be considered. An online Home Fire Safety Checker is available on the London Fire Brigade website

Across SEL there is a Home Oxygen Service - Assessment & Review (HOSAR) in each borough. Referral can be directly to the HOSAR or to a Respiratory Consultant if further investigations are required



Referral Details

Bromley	Referral Form on ROP bromh.ucrtherapiesreferrals@nhs.net Tel: 0300 330 5777
Greenwich	Referral Form on DXS oxl-tr.greenwich-singlepointofaccess@nhs.net
Lambeth & Southwark GSTT	Referral Form on DXS, refer vis e-RS gst-tr.intergratedrespiratoryteamgstt@nhs.net Tel: 0207 1888 636
Lewisham	Referral Form on DXS lg.respiratorynursingteam@nhs.net 0208 333 3210
Bexley	Referral Form on DXS oxl-bexleyCOPDteam@nhs.net
Lambeth & Southwark KCH	Referral Form on DXS, refer via e-RS kch-tr.oxygen@nhs.net 0203 299 7186

Air Liquide (Oxygen Supplier) 24/7 Patient Helpline: 0808 143 9991

BREATHLESSNESS MANAGEMENT & PALLIATIVE CARE

TOP TIPS

- **Breathlessness is often frightening, and patients and carers need information and support.**
- **Breathlessness is a complex symptom, and a holistic approach is required**
- **Non-pharmacological strategies are effective and should be optimised first line.**

Below are links to UK websites with further helpful information for healthcare professionals and patients and families/carers.

Welcome to the Breathing Thinking Functioning Website - Breathing Thinking Functioning (cam.ac.uk)

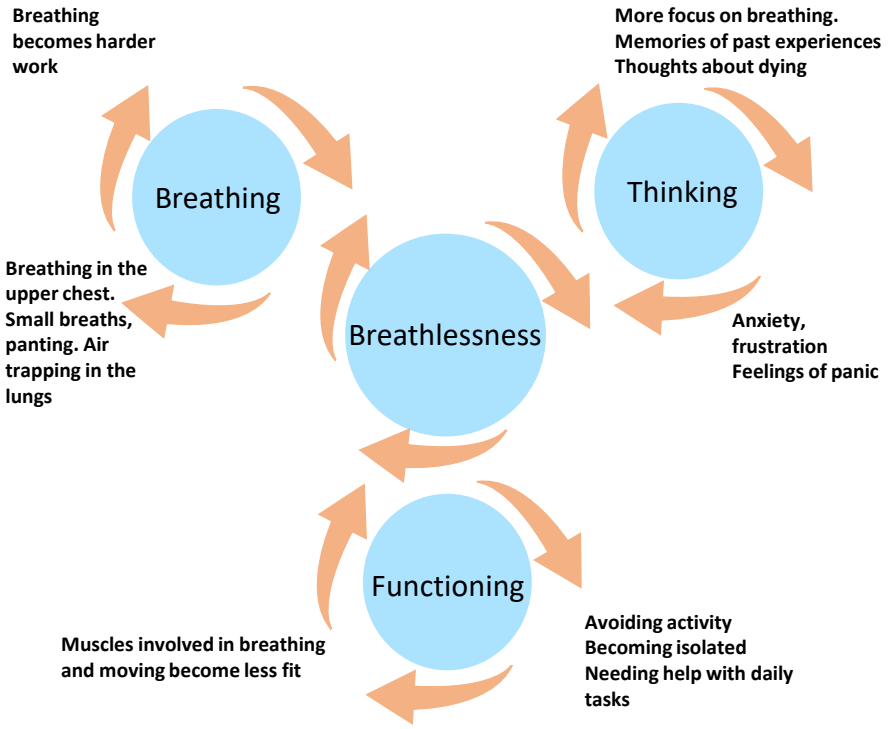
Breathlessness management - St Christopher's Hospice (stchristophers.org.uk)

How can I manage my breathlessness? | Asthma + Lung UK (asthmaandlung.org.uk)

Breathlessness Management

Breathlessness is the most common symptom in COPD. It can be distressing both for the patient and their family/carers and can contribute to frequent but often avoidable hospital admissions. Non-pharmacological and pharmacological treatment options exist, and management requires a holistic and personalised approach.

The Breathing, Thinking, Functioning (BTF) Model is a tool used by healthcare professionals to support their breathless patients. It is a collaborative assessment of breathing pattern and technique, impact of breathlessness on daily activities and exercise, and thoughts and feelings associated with breathlessness.



Reproduced from the Breathing Thinking Functioning Website (cam.ac.uk)

On initial assessment ensure:

- Inhaled therapies and inhaler technique are optimised
- Good adherence to inhaled therapies
- For those with high sputum loads optimise airway clearance – see Mucolytics and Sputum Clearance section
- Other comorbidities that could contribute to breathlessness are optimised

Non-Pharmacological management

- Managing patient expectations including normalising breathlessness on exertion
- Use of a handheld fan reduces the sensation of breathlessness
- Positions to support with breathlessness
- Breathing techniques such as pursed lip breathing
- Distraction techniques to prevent breathlessness leading to panic
- Encouraging physical activity and engagement in tailored exercise programmes including referral to local Pulmonary Rehabilitation services or hospice groups
- Planning and pacing activities and energy conservation
- Emotional support and anxiety management techniques including CBT and mindfulness
- Support for carers

Pharmacological management

In patients with refractory breathlessness despite optimised inhaled therapy and optimised non-pharmacological interventions, pharmacological treatments as outlined below may be considered **(only be initiated on advice of a respiratory specialist):**

- Morphine sulphate 10mg/5ml oral solution (or oxycodone 5mg/5ml oral solution where the patient has severe renal impairment)
- Lorazepam tablets (particularly where anxiety is a factor)

These treatments for this indication are Amber 2, however, where morphine sulphate is prescribed for breathlessness by palliative care, it is Amber 1. See the SEL Adult Formulary

Palliative Care

- Palliative care is a holistic approach which can be helpful for people with incurable and life-limiting illness, including those with COPD
- A palliative or supportive approach should be offered at any stage in the illness concurrently with optimal, disease-directed care
- Focus on what matters to the person: optimise quality of life, support them to live well, and address both their needs and the needs of their family
- The palliative approach should be provided by the usual treating team, or Primary Care clinician, together with specialist palliative care services if required
- Advanced care planning should also be considered, with individuals supported to discuss their beliefs, values, future treatment wishes and goals of care early in their illness. This includes discussing treatment limitations regarding resuscitation and ventilation

For patients with complex and unmet needs including poorly controlled physical symptoms, psychological or spiritual issues and who are thought to be in the last year of their life, a referral to local community palliative care services may be beneficial. This should be done using the Pan-London Palliative Care Referral Form.

LUNG VOLUME REDUCTION & TRANSPLANTATION

Patients with emphysema and severe, persistent breathlessness may benefit from interventional or surgical therapies. Treatment is dependent on the specific pattern of emphysema on CT imaging, the likelihood that emphysema is the predominant cause of breathlessness assessed by respiratory physiological assessments and echocardiogram, the presence of comorbidities, and balancing risks and benefits in shared decision making with the patient.

TOP TIPS

- ✓ **Lung volume reduction (LVR) is only beneficial for a small group of patients with COPD. In well selected patients LVR make a significant improvement in symptoms and QOL and may even prolong life.**
- ✓ **Patients must be optimised before being considered for LVR:**
  - **Ex smoker**
  - **Completed PR**
  - **Optimised pharmacological therapy**
- ✓ **Any patient with mMRC ≥3 at the end of PR and otherwise optimised should be considered for review in a specialist COPD multidisciplinary team meeting**
- ✓ **Lung transplantation is suitable for a minority of patients but is important to consider those with severe disease**
- ✓ **Consideration of LVR or transplant should prompt a conversation about patient values and documentation of advance care planning**

Bullectomy

- Considered in patients with giant bulla occupying >1/3 of the hemithorax, a rapidly enlarging bulla or the presence of pain with a large bulla
- Surgical resection may improve breathlessness and exercise tolerance

Lung Volume Reduction Surgery and Bronchoscopic Lung Volume Reduction

- Hyperinflation changes respiratory muscle and cardiac function, increasing the sensation of breathlessness, and reducing exercise tolerance
- Removal or deflation of the worst affected emphysematous sections of lung can reduce hyperinflation, reduce symptoms and increase quality of life. In some patients it can also reduce mortality
- Advanced assessment using quantitative CT or VQ SPECT, and assessment of fissural integrity and collateral ventilation is required
- Patients with heterogenous, upper lobe predominant emphysema, hyperinflation, fissural integrity >90% and minimal collateral ventilation are most likely to benefit from LVRS/BLVR
- LVRS is performed by mini-thoracotomy under general anaesthetic
- BLVR with valves placed bronchoscopically is also performed under general anaesthetic but can be offered to patients not fit for an operation

Lung Transplantation

- Patients with COPD should be considered for lung transplantation if they have:
  - progressive disease despite maximal medical therapy
  - BODE index of 5+
  - Respiratory failure (pCO2 >6.6 and/or pO2 <8)
  - FEV1<25% predicted
- Patients will not generally be listed until they have pulmonary hypertension, require long term oxygen therapy or have FEV1 <25% but the assessment process takes time, and optimal timing of transplantation is key. Early referral for potential patients is critical
- Few patients are eligible due to exclusions such as comorbidities, poor nutritional status, chronic infection and cardiovascular disease. Those over 65 are less likely to be considered

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The BODE score is relevant to Lung transplant assessment but also helps to estimate prognosis.

	+1	+2	+3
Body Mass Index	>=21kg/m^3		
Obstruction (FEV1)	50-64%	36-49%	<=35%
Dyspnoea (mMRC)	2	3	4
Exercise capacity (6minute walk test)	250-349m	150-249m	<=149m

All patients with COPD should be offered the opportunity to explore and share their values, and document advance care planning, but a BODE score >5 should be an additional prompt. Estimated 4-year survival is 0-2 80%, 3-4 67%, 5-6 57%, 7-10 18%.

Other interventional techniques

Other techniques include airway bypass stents, sealants, vapor ablation, cryotherapy, lung denervation and nitinol coils. These are not recommended outside a clinical trial.

Referring patients for assessment

- Ensure patients have had an annual review and have been optimised as far as possible
- Refer to your local specialist COPD clinic with a specific question regarding LVR/BLVR in the referral. This helps streamline investigations at the point of triage
- Manage the patient's expectations since not all patients will be eligible, and for those that are there will be a wait for specialist review and investigations

Patient Education Points:

- Only around 1 to 2 in 100 people with emphysema are likely to be suitable for LVR
- You need to have completed a course of Pulmonary Rehabilitation, be an ex-smoker and to have had a treatment review before being considered.
- Some patients find their breathlessness improves so much during PR that they no longer wish to consider LVR.
- You may not be suitable if you have other long-term conditions
- There are other ways to treat breathlessness for those who do not wish to consider, or are not appropriate for interventional or surgical therapies

Non-invasive ventilation (NIV)

TOP TIPS

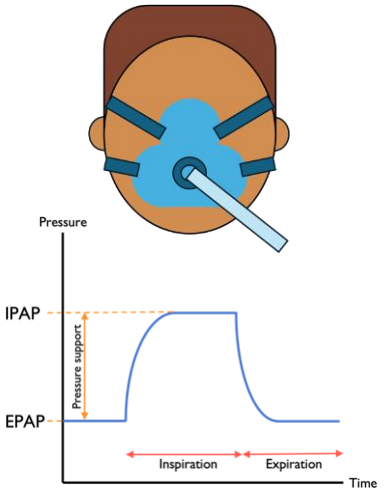
✓ **Chronic hypercapnic respiratory failure is defined as daytime arterial pressure of carbon dioxide (PaCO2) ≥ 6 kPa**

✓ **It is associated with high symptom burden and risk of exacerbation, hospitalisation and death**

✓ **Consider referral for NIV assessment in patients with chronic hypercapnia**

✓ **NIV is a physical therapy and can be difficult for some patients. Consistent messaging on the positive benefits of treatment supports patient adherence**

What is non-invasive ventilation (NIV)?



NIV involves wearing a tight fitting mask that covers the nose and mouth, which is connected to a small ventilator device.

The ventilator pushes air into the upper airway and lungs to support patients' breathing.

Oxygen can be entrained into the ventilator.

COPD patients should use home NIV whenever they are sleeping, for 6-8 hours overnight and during daytime naps

Who can benefit from home NIV?

Research shows that long-term home NIV reduces the risk of hospitalisation or death in COPD patients with chronic hypercapnia ($PaCO_2$ ≥ 7 kPa) and should be considered in patients who:

- Are clinically stable on Long-Term Oxygen Therapy (no exacerbation for 4 weeks)
- Have persistent hypercapnia 2-4 weeks after receiving in-hospital NIV for an acute exacerbation of COPD
- Milder hypercapnia ($PaCO_2$ ≥ 6 kPa) with obesity, obstructive sleep apnoea (OSA) or symptoms of sleep disordered breathing

Who should refer and how?

Chronic hypercapnic respiratory failure is diagnosed on arterial blood gas (ABG). Therefore, referrals to ventilation services are usually sent by hospitals who have identified hypercapnia during acute hospitalisations, in respiratory outpatient clinics or during home oxygen assessment/follow-up.

For COPD patients who have received in-hospital acute NIV there should be follow-up in secondary care including an arterial blood gas in those at high risk of chronic hypercapnia. Suitable patients should be referred to a ventilation service if there is persistent hypercapnia and the patient agrees to try NIV.

Referrals should include all comorbidities, ABGs, smoking status, LTOT prescription and whether the patient consents to using NIV and attend regular follow-up.

Services supporting NIV setup in COPD patients in SEL

The Lane Fox Respiratory Service is a regional unit that is part of Guy's & St Thomas' NHS Foundation Trust who support patients with chronic respiratory failure in South East England. Around one third of patients they support with mechanical ventilation have COPD.

Email outpatient referrals to: **gstt.lfureferrals@nhs.net**

Other ventilation services in SEL are:

- King's College Hospital NHS Foundation Trust
- Queen Elizabeth Hospital, Woolwich

What patients can expect after being referred for home NIV: The ventilation service may arrange for an overnight sleep study that can be performed at home prior to the ventilation clinic appointment. This will measure peripheral oxygen saturation and heart rate to detect sleep-disordered breathing. Patients may be offered multiple appointments and should attend all of these as they serve different purposes. For patients provided with a ventilator, they must bring this to each appointment for servicing and to troubleshoot issues relating to the settings and mask.

SUSTAINABLE RESPIRATORY CARE FOR PEOPLE LIVING WITH COPD

Patients with COPD are more vulnerable to the effects of climate change, particularly from worsening air quality and extreme heat which increase the risk of exacerbations, hospitalisation and mortality.
Some inhalers used to treat COPD contribute to climate change, as the propellants in metered dose inhalers (MDIs) are greenhouse gases.
Transformation to an environmentally sustainable health system offers an opportunity to improve the quality and affordability of respiratory care, while preventing respiratory disease and safeguarding services for the future.

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TOP TIPS

- ✓ Patients with respiratory disease are at risk from climate change
- ✓ Optimise inhaler technique at every opportunity
- ✓ Choose DPIs and SMIs over MDIs whenever clinically appropriate
- ✓ Support patients to return inhalers to local pharmacies for disposal or recycling
- ✓ Utilise all opportunities to incorporate sustainability into routine care

Prevention is the best way to invest in the health of our patients and the environment

- Treat tobacco dependence
- Promote physical activity including pulmonary rehab
- Encourage vaccinations
- Advise on reducing exposure to indoor and outdoor pollution
- Optimise inhaler regimes
- Advocate for improved air quality both locally and nationally
- Champion antibiotic stewardship
- Address common co-morbidities eg: cardiovascular risk reduction and bone protection

Empowered patients have greater confidence & wellbeing, & can identify exacerbations & take action, therefore being better able to avoid admissions

- Educate on COPD and co-produce personalised action plan
- Support self-management strategies
- Utilise shared decision making when choosing medication
- Encourage effective use of rescue packs
- Inform patients of the need to return all inhalers to local pharmacies

Lean clinical pathways are efficient, low carbon and improve the patient experience and safety. Examples in COPD care include:

- Integration of care across primary/ community/ secondary care boundaries
- Early discharge pathways and at home treatment of exacerbations
- A structured approach to identify high value intervention opportunities
  - Annual review checklist
  - COPD discharge bundle
- Deprescribing ICS in those who have few exacerbations and low eosinophil count and reviewing need for high dose ICS. See Inhaler Pathway
- The use of virtual clinics and virtual wards

3% of the NHS carbon footprint comes from inhalers.
The UK is an outlier compared to international comparators for SABA overuse and MDI:DPI ratio.

- The most environmentally friendly inhaler is the one that the patient can, and will take reliably
- Optimising inhaler technique is essential to maximise effect:
  MDI: inhale slow and steady and use a spacer
  DPI: inhale quick and deep
- There are opportunities to reduce the carbon footprint of care even in those who need to remain on MDIs, especially as there are now low carbon propellants
- Salamol is recommended over Ventolin as it has a much lower carbon footprint
- Low carbon options should always be offered if the patient can use them
- Most patients would prefer a low carbon inhaler if given the option
- Include environmental impact as part of the shared decision-making process
- Support patients to adopt non-pharmacological interventions for breathlessness: breathing control techniques; pacing; handheld fans and mindfulness techniques

REFERENCES AND USEFUL RESOURCES

2024 GOLD Report: Global Strategy for Prevention, Diagnosis and Management of COPD: 2024 Report 2024 GOLD Report - Global Initiative for Chronic Obstructive Lung Disease - GOLD (goldcopd.org)

Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline 2018 Chronic obstructive pulmonary disease in over 16s: diagnosis and management (nice.org.uk)

Medical Research Council Dyspnoea Scale img mrc dyspnoea scale146.pdf (generalpracticemedicine.org)

Primary Care Respiratory Society: The Building Blocks of a Good Asthma or COPD Review in Adults Layout 1 (pcrs-uk.org)

The COPD Assessment Test (CAT) Clinical Practice (catestonline.org)

Asthma + Lung UK – Financial Support Financial support | Asthma + Lung UK (asthmaandlung.org.uk)

Asthma + Lung UK Blog – Know your Rights Asthma + Lung UK Blog (asthmaandlung.org.uk)

The Silver Line – Helpline foe Older People The Silver Line Helpline

NHE England: Shared Decision-Making Summary Guide NHS England » Shared Decision-Making: Summary Guide

National Centre for Smoking Cessation and Training: Very Brief Advice on Smoking VBA plus v8.fh11 (ncsct.co.uk)

Rightbreathe.com: https://www.rightbreathe.com

Asthma and Lung UK How to use your Inhaler: How to use your inhaler | Asthma + Lung UK (asthmaandlung.org.uk)

NICE Guideline NG 114: Chronic obstructive pulmonary disease (acute exacerbation): antimicrobial prescribing
Overview | Chronic obstructive pulmonary disease (acute exacerbation): antimicrobial prescribing | Guidance | NICE

Primary Care Respiratory Society: The Appropriate Use of Rescue Packs
Layout 1 (pcrs-uk.org)

NICE TA 1142 Dupilumab for maintenance treatment of uncontrolled chronic obstructive pulmonary disease with raised blood eosinophils

Summary of Product Characteristics

Carbocisteine: Carbocisteine 375 mg Capsules - Summary of Product Characteristics (SmPC) - (emc)

Acetylcysteine: NACSYS 600mg Effervescent Tablets - SmPC - (emc)

Azithromycin: Azithromycin 250mg film-coated tablets - SmPC - (emc)

Doxycycline: Doxycycline 100mg Capsules - SmPC - (emc)

Dupilumab: Dupixent 300mg solution for injection in pre-filled pen – SmPC (emc)

Mepoluzimab: Nucala 100mg solution for injection in pre-filled pen – SmPC (emc)

British Thoracic Society Guideline for Long Term Macrolide Use (2020)
Long Term Macrolide Use | British Thoracic Society | Better lung health for all (brit-thoracic.org.uk)

University of Cambridge: Breathing Thinking Functioning
Welcome to the Breathing Thinking Functioning Website - Breathing Thinking Functioning (cam.ac.uk)

Association of Chartered Physiotherapists in Respiratory Care: How to Cope With Being Short Of Breath – Positions
GL-01HowtocopewithbeingSOB-positions(1).pdf (acprc.org.uk)

Cambridge University Hospitals NHS Foundation Trust: Breathing Techniques to Ease Breathlessness
Leaflet 3: Breathing techniques to ease breathlessness | CUH

Asthma and Lung UK: How Can I Manage My Breathlessness?
How can I manage my breathlessness? | Asthma + Lung UK (asthmaandlung.org.uk)

Greener Practice: Greener Practice – Greener Practice – UK's primary care sustainability network

Green Inhaler: Green Inhaler – Making your inhaler more environmentally friendly

Vartiainen, V. *et al* (2023). 'High inhaler resistance does not limit successful inspiratory maneuver among patients with asthma or COPD,' *Expert Opinion on Drug Delivery*, 20(3), pp. 385-393. doi: https://doi.org/10.1080/17425247.2023.2179984

NICE Patient Decision Aid on Asthma and Climate Change (2022): NG80 Patient decision aid on asthma inhalers and climate change (nice.org.uk)