Humber and North Yorkshire Guideline for the Diagnosis and Management of COPD

Diagnosis of COPD

Approved by HNY APC: 02/07/2025
Version 1 (review date 02/07/27)

Suspect COPD if:

- Age ≥ 35 years
- Current or former smoker with ≥ 10 pack-year smoking history
- Recurrent chest infections
- Any of
  - Exertional dyspnoea
  - Cough and/or sputum
  - Frequent winter bronchitis
- Incidental finding of emphysema on CT scan

What is COPD and how is it diagnosed?

COPD is a heterogenous disease that is caused by exposure to noxious inhaled particles (most commonly tobacco smoke) in susceptible individuals over time.

COPD is confirmed in the context of **an appropriate clinical history, relevant exposure, and evidence of airflow limitation** on post-bronchodilator spirometry **(FEV1/FVC <0.7).**

What to do if you suspect COPD

Undertake a Clinical Assessment

- History: respiratory symptoms, chest infections, relevant exposure, co-morbidities.
- Examination: to assess for features of hyperinflation, wheeze.
- Consider alternative diagnoses (e.g. asthma, chronic cough or heart failure).

Investigations

Spirometry

COPD diagnosis requires confirmation of airflow limitation on **post-bronchodilator spirometry**. This is **defined as an FEV1/FVC ratio <0.7**. Using a fixed ratio of <0.7 can lead to under-diagnosis in young adults and over-diagnosis in the elderly. In such patients, use clinical judgement with reference to the lower limit of normal (LLN) for FEV1/FVC (or Z-score <-1.64) to confirm or refute a diagnosis.

Chest X-ray

All patients presenting with new and/or unexplained respiratory symptoms should have a chest x-ray performed to assess for features of COPD and to exclude alternative diagnoses.

Blood Tests

All patients:
- FBC

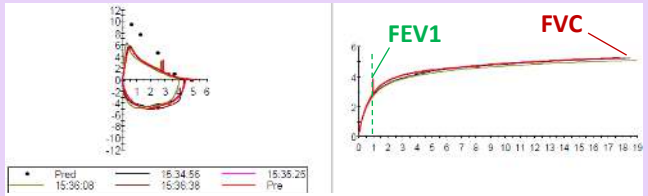
Young patients with emphysema:
- alpha-1 antitrypsin level

Other blood tests (e.g., nt pro-BNP) guided by clinical suspicion and planned treatment.

*Additional investigations may be indicated, based on clinical judgement, to investigate for COPD complications and common comorbidities (e.g. CT Thorax, echo, CT coronary angiogram, bone densitometry).

Interpreting Spirometry

- **FEV1** is the volume of air expelled in the 1st second during forced exhalation.
- **FVC** is the total volume of air expelled during forced exhalation.
- **FEV1/FVC** is the proportion of the total volume of air expelled (**FVC**) that is expelled in the first second (**FEV1**).
- **FEV1/FVC** is normally ≥0.7 and tends to be higher when young and reduce with age.



	Pred	LLN	Actual	ULN	%Pred	Z Score
SPIROMETRY ---						
FVC (L)	4.89	3.73	5.27	6.05	107	+0.55
FEV1 (L)	3.77	2.85	2.90	4.64	76	-1.58
FEV1/FVC (%)	77.42	65.55	54.94	87.73	70	-2.90
FEV1/SVC (%)	77.18		54.06		70	
FEF Max (L/sec)	9.58	7.17	6.27	11.99	65	-2.27
SVC (L)	4.89	3.73	5.36	6.05	109	+0.67
IC (L)	3.31		4.21		127	

Figure. Example of post-bronchodilator spirometry and a flow volume loop in someone with newly diagnosed moderate COPD

Pre-COPD and PRISM

Both pre-COPD and PRISM are associated with increased risk of progression to COPD.

- ***What is pre-COPD?***

Pre-COPD is used to describe people with respiratory symptoms and/or structural lung lesions (e.g. emphysema) and/or physiological abnormalities (e.g. low or rapidly declining FEV1, gas trapping, hyperinflation) but FEV1/FVC ratio ≥0.7 post- bronchodilator.

- ***What is PRISM?***

PRISM stands for preserved ratio impaired spirometry and describes people with FEV-1 <80% predicted but FEV1/FVC ≥ 0.7.

When to consider asthma in someone with suspected COPD

- Marked symptom variability (day-to-day and/or diurnal)
- Dramatic response to bronchodilators (>400mls & 15% increase) **(note COPD patients can also exhibit significant reversibility).**
- Dramatic response to oral corticosteroids (symptoms and/or lung function)
- People can have both asthma and COPD features and should be treated with single inhaler triple therapy with the approach tailored to the dominant condition.

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Treatment of COPD

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General Management for all people with COPD: assess and optimise COPD care during every COPD review (at least annually).

- Specialist stop smoking support
- Pneumoccocal, RSV (age 75-79 only), COVID, influenza vaccinations
- Assess and teach inhaler technique
- Assess and encourage medication adherence
- Refer all patients with exercise limitation (mMRC ≥2) for pulmonary rehabilitation and encourage physical activity.
- Assess symptom burden using mMRC and CAT scores.
- Measure BMI and offer advice if BMI <20 or >30.
- Assess exacerbation risk
- Assess and modify cardiovascular risk
- Assess and optimise bone health
- Assess mental health and treat as appropriate.

Pharmacological Management for people with COPD: treatment should be reviewed at least annually and following every exacerbation to ensure treatment is optimised to minimise risk.

Step 1: Assess risk and likelihood of ICS response

Step 2: assess and teach inhaler technique and start treatment with an appropriate device

Step 3: assess response and optimise treatment. Reassess after all exacerbations, clinical change and/or annually

Step 4: reassess

Low

- Eos < 0.3x10⁹/L **OR**
- Absence of features indicating high risk and ICS response

High

- Blood Eos ≥ 0.3x10⁹/L **AND**
- 2 or more 'chest infections' treated in the community **OR** 1 or more hospitalisation with a COPD exacerbation in the past year
- Evidence of co-morbid asthma

LABA-LAMA (dual bronchodilation)

Bevespi Aerosphere #	Spiolto Respimat	Ultibro Breezhaler	Anoro Ellipta
7.2/5	2.5/2.5	85/43	55/22
2 puffs BD	2 puffs BD	1 puffs OD	1 puff OD

Plus PRN Salbutamol (Salamol pMDI # or Salbutamol Easyhaler)

Uncontrolled breathlessness

Exacerbations and Eos ≥ 0.3x10⁹/L*

LABA-LAMA-ICS (single inhaler triple therapy/SITT)

Trixeo Aerosphere #	Trimbow pMDI #	Trimbow Nexthaler	Trelegy Ellipta
5/7.2/160	87/5/9	88/5/9	92/55/22
2 puffs BD	2 puffs BD	2 puffs BD	1 puff OD

Plus PRN Salbutamol (Salamol pMDI # or Salbutamol Easyhaler)

Exacerbations and Eos <0.3x10⁹/L*

Exacerbations

Optimise General Management (see above)

AND

- Teach non-pharmacological breathlessness management
  - Hand-held fan
  - Breathing square
  - Pacing and positions for recovery
- Consider low-dose opiates if distressing breathlessness persists
  - Modified Release Morphine Sulphate 5-10mg BD

Add on oral therapy (consider seeking specialist advice through advice and guidance or community MDT)

- **Mucolytics:** If chronic bronchitis and difficulty expectorating sputum, consider 3 month trial and review response
  - **Carbocisteine 750mg tds** (Reduce to BD when stable) OR
  - **NACSYS 600mg OD** (N-acetylcysteine)
- **Macrolides:** (See full guideline document for more information) Azithromycin reduces exacerbations in COPD patients that continue to exacerbate despite optimal inhaled therapy. Review response to treatment after 3-6 months.
  - **Azithromycin 250mg once daily** (can give 250mg three times weekly if GI side effects)
- **Roflumilast:** Roflumilast should only be initiated in secondary care for COPD patients with chronic bronchitis and FEV-1 <50% predicted.
  - **Roflumilast 250mg OD** for 1-month then 500mg OD after 4 weeks (if tolerated).

Uncontrolled breathlessness

If remains uncontrolled despite optimal therapy and optimisation of all elements of general COPD management, refer for review by local specialist COPD services.

Consider:

1. **Advanced care planning**
2. **Indications for oxygen assessment**
3. **Indications for specialist therapies**

Spacers should be prescribed for all patients using pMDI inhalers.

* See Page 4 for additional information about assessing and modifying exacerbation risk.

Abbreviations: BMI – Body Mass Index, CAT – COPD Assessment Test, LABA – long-acting beta agonist, LAMA – long-acting muscarinic antagonist, ICS – inhaled corticosteroid, MDT – multidisciplinary team, mMRC – modified medial research council dyspnoea score, RSV – respiratory syncytial virus

Frequent SABA-use (≥6 inhalers per year) in COPD can indicate uncontrolled symptoms and is associated with adverse outcomes. Consider prescribing SABA as acute prescriptions to aid identification of frequent-use, which should prompt review and treatment optimisation (as above).

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Management of COPD

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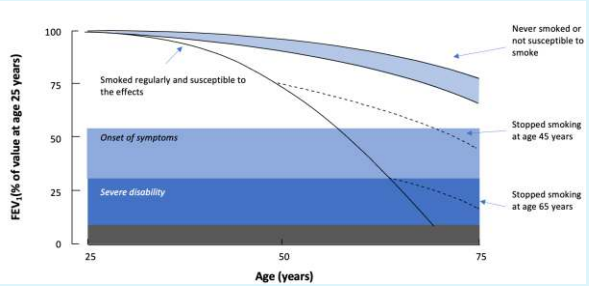
Smoking Cessation



- **Supporting people with COPD to stop smoking is the most impactful intervention you can do** to improve their long -term outcomes.
- All COPD patients that smoke should be offered Very Brief Advice (VBA) during every clinical contact. VBA includes:
  - **Ask** – ask and record smoking status
  - **Advise** – the most effective way to stop smoking is with a combination of medication and specialist support
  - **Act** – refer to their local specialist stop smoking service for advice and support.
- Smokers that get expert support are 3 times more likely to successfully stop smoking.

Pulmonary Rehabilitation

What is pulmonary rehabilitation (PR)

Pulmonary rehabilitation is an individually tailored multidisciplinary programme comprising both education and exercise. It is effective at improving people's symptoms, increasing their exercise capacity and quality of life, and reducing risk of exacerbations.

Who should be referred for PR

PR should be offered to all people with COPD who are functionally disabled by their symptoms (typically mMRC >= 2).

How to increase engagement with pulmonary rehabilitation

PR is a highly effective treatment for COPD, with proven benefits (described above). Additionally, PR improves patients emotional functioning and sense of control. Despite this, uptake and completion is low. It is important to clearly communicate the benefits of PR to patients, to explain that the programme will be tailored to their individual needs, and patients not wanting to attend classes, will be able to discuss this with the PR team following referral and consider alternative options.

When not to refer for PR

PR is unsuitable for people that:

- Are unable to walk
- Who have unstable angina or have had a recent myocardial infarction

Oxygen Therapy

Types of oxygen therapy used in COPD

- ***Long Term Oxygen Therapy (LTOT)***

LTOT is indicated for people with COPD who have persistent hypoxia when stable. LTOT aims to improve long-term prognosis and requires >15 hours use per day to provide the desired benefit.

- ***Ambulatory Oxygen Therapy (AOT)***

AOT may be indicated for people using LTOT that require AOT to enable 15 hours use per day. It may also indicated for people where LTOT is not indicated but have been shown on formal exercise testing to desaturate on exertion and benefit from AOT.

- ***Palliative Oxygen Therapy (POT)***

POT can be trialed for people receiving end-of-life care that have refractory breathlessness and hypoxia and have not responded to opioids and non-pharmacological measures.

There is no indication for short burst oxygen therapy for the management of COPD.

When to consider oxygen assessment for people with COPD

- FEV1 < 30% predicted
- Cyanosis
- Polycythaemia
- Peripheral oedema
- Raised JVP
- SpO2 <= 92% on air

Oxygen therapy should only be offered following formal assessment of eligibility and safety.

Specialist Referral

When to refer for specialist advice?

Consider secondary care referral in the following situations:

- **Diagnostic uncertainty**.
- **Persistent, disabling symptoms** despite optimal pharmacological and non-pharmacological treatments (see page 2).
- **Persistent exacerbations** despite guideline recommended treatment.
- **Co-morbidities:** breathing pattern disorder or gastroesophageal reflux impacting respiratory symptoms.
- All **patients under 40 years old**.
- Patients with **alpha-1 antitrypsin deficiency** (personal or family history).
- Patients being considered for **nebuliser therapy** (not routinely recommended for patients who are able to use inhalers. Optimise pharmacological and non-pharmacological breathlessness management prior to considering a nebuliser).
- Patients being considered for **lung volume reduction or transplantation**.
- Patients being considered for **domiciliary NIV** (see section 3.4 of guideline document).
- Patients interested in taking part in **research** studies relating to COPD and its treatment.

For information about who provides the above services in your area and how to make a referral, click here or scan this QR code

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Management of Common COPD Co-Morbidities

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Assess and Modify Exacerbation Risk

COPD exacerbations are defined as **episodes of acute symptom worsening** and are **often associated** with local/systemic **inflammation.**

Exacerbations significantly **impact symptom burden, quality of life,** rate of **lung function decline**, risk of important **comorbidities**, and **mortality**.

The **risk of exacerbations is** significantly **increased** among people with:

- **High symptom burden** (dyspnoea, chronic bronchitis).
- **Raised blood eosinophils**
- **History of past exacerbations**
- Certain **comorbidities** (e.g. GORD and CV disease).

Reducing exacerbation risk is a key goal of COPD treatment.

- Single inhaled triple therapy (SITT) is recommended for people with past history of exacerbations and blood eosinophils ≥ 0.3 x 10^9/L (page 2).
- People with blood eosinophils between 0.1 and 0.3 x 10^9/L are likely to benefit from SITT but decision to treat should be balanced against pneumonia risk (e.g. increased with frailty, history of recurrent pneumonia, mycobacterial infection).

Assess and Modify Cardiovascular Risk

People with COPD have an elevated risk of cardiovascular (CV) disease compared with people without COPD.

The **risk of CV events** is **significantly increased during and after exacerbations** of COPD. A UK study revealed that the risk of a CV event was almost 15 x higher in the first 14 days post exacerbation.

Existing CV risk scores (e.g. QRISK3) **underestimate the CV risk in people with COPD,** particularly in younger and female patients, and all COPD patients should therefore be considered high risk.

Recommendation

All patients with COPD should be assessed for conventional CV risk factors (see NICE Guideline 238). Assess for:

- Diabetes
- Hypertension
- Hyperlipidemia
- Smoking

Modify risk in accordance with relevant guidelines.

COPD should be considered an independent risk factor and treatment should be optimised in accordance with this guideline (page 2).

Assess and Maintain Bone Health

Patients with COPD are at increased risk of osteoporosis. Both disease and treatment related factors contribute to osteoporosis risk. **Measures to reduce the risk of osteoporosis include smoking cessation, promoting physical activity / weight bearing exercise, and minimising OCS exposure**, among others.

Recommendation

Assess bone health for all patients with COPD using FRAX.

and follow National Osteoporosis Guideline Group (NOGG) guidelines.

***NB. 3 or more short courses of prednisolone 30mg od has the same cumulative oral corticosteroid dose as 3 months treatment at 5mg daily.**

If:

- Receiving maintenance prednisolone 5mg od or more for 3 months (or equivalent)*, arrange a DEXA scan and treat as per guidelines.
- If a history of vertebral or other major osteoporotic fracture, consider treatment with Alendronate 70mg or Risedronate 35mg once weekly along with Calcium 1-1.2 grams and Colecalciferol 800 units daily.

Assess and Maintain Mental Health

People with COPD have a high prevalence of anxiety and depression which can contribute to their symptom burden.

Anxiety and depression are often under-recognised and diagnosed in people with COPD.

Symptom questionnaires such as the Hospital Anxiety and Depression Scale (HADS**) can aid** identification

Recommendation

Potential co-morbid anxiety and depression should be considered in all patients with COPD. HADS or PHQ-9 and GAD-7 can be considered to aid identification.

Anxiety and depression in COPD should be treated the same as for people without COPD. **Consider:**

- **Psychological interventions: refer to IAPT**
- **Drug treatment**
- **Pulmonary rehabilitation**

For more information about diagnosing and treating depression and anxiety in adults with COPD, see NICE Guideline 91 and 113 respectively.

For information about assessing for and/or managing common comorbidities observed in COPD , click here or scan this QR code