North Central London Integrated Care System

Treatment Guidelines for the acute and chronic management of COPD

Interim guidance

Authored by the NCL Inhaler Sustainability Group

This guideline was approved by NCL Joint Formulary Committee in September 2023.

Please send any queries or feedback to admin.ncl-mon@nhs.net

Background & rationale for update

- This document is designed to support clinicians in primary and secondary care with diagnosis, non-pharmacological management and pharmacological treatment choices for the management of COPD in adult patients in NCL.
- NCL ICS have made a commitment to improve COPD care whilst reducing carbon emissions in accordance with the NCL Green Plan and national Greener NHS plans.[1] Therefore, this document also highlights the environmental impact of inhalers on formulary in NCL and aims to guide clinicians to choosing sustainable options where clinically suitable. The recommendations in this guideline can be used to inform clinical decisions to meet targets outlined in the IIF to improve patient care and reduce carbon emissions.

Key updates reflected in this guideline:

- Updated treatment pathways based on NICE guideline NG115 (Pathway A) and new GOLD standards document in COPD recommendations(Pathway B).
- Updated SNOMED codes.
- Updated inhaler choices on formulary based on NCL JFC decisions.
- Information on sustainability provided, as well as carbon footprint of formulary inhalers.
- Updated information on steroid cards available and when to use.

Objectives for NCL

- **To optimise COPD care according to national and international guidelines.**

- **To promote safe and effective use of inhaled medicines and inhaler devices.**
  1) Focus on finding the right medication and device for each individual in consultation with them and their carers, through shared decision making.
  2) Assess and optimise inhaler technique at every opportunity.
  3) Follow patients up to ensure suitability of device and disease control.
  4) Do not undertake empirical switching of inhaled medicines or inhaler devices across the population.

- **To reduce the carbon footprint of inhaler prescribing.**
  1) Offer DPIs or SMIs as first choice when clinically appropriate (e.g., if they have good inspiratory effort, or have better inhaler technique with a DPI than other devices).
  2) If pMDIs are needed for an individual then choose brand and regime with care to minimise the carbon footprint.
  3) Ask patients to return all used or unwanted inhalers to community pharmacies or dispensaries for appropriate disposal.

Sustainability

- In recent years there has been growing awareness and concern from healthcare professionals and patients alike about the impact of respiratory inhalers on our environment, particularly pressurised Metered Dose Inhalers (pMDIs) which account for 3.5% of the entire NHS carbon footprint.[3]
- The majority of inhalers prescribed in the UK (around 70%) are pMDIs - comparatively Sweden use only 13%. pMDIs contain propellants called hydrofluorocarbons which are potent greenhouse gases, thousands of times more powerful than carbon. Dry powder inhalers (DPIs) do NOT use these propellants and have substantially lower global warming potential.[4]
- The image below demonstrates the equivalent tailpipe carbon emissions between a Ventolin pMDI and Ventolin DPI (image credit: www.greenerinhaler.org).[5]

- In England the majority of inhalers prescribed are short acting beta agonist inhalers (SABA) such as Ventolin. It's estimated that salbutamol pMDIs produce 8,724 tonnes of CO_2 per annum. That's the equivalent of driving an average diesel car for 31.4 million miles – equivalent to 65 trips to the moon and back!

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Diagnosing COPD in adults

Diagnosing COPD

Diagnosis of COPD should be considered if

- **Age** over 35 years
- **Exposure**: Tobacco >10 pack years smoking history, cannabis or smoking other drugs, biofuels in patients from overseas countries such as Asian subcontinent.
- **Symptoms**:
  - exertional breathlessness
  - chronic cough
  - regular sputum production
  - frequent winter 'bronchitis'
  - wheeze

Consider alpha-1-antitrypsin deficiency (which can be present in non-smokers).

Also **consider an asthma component/steroid responsiveness** (see below).

Exclude other causes of breathlessness.

- **Physical examination** (heart failure, obesity)
- **Chest X-Ray** (lung cancer, TB)
- **Consider serial peak flow** if history suggests asthma
- **Bloods** (FBC, CRP, U&E's, TFT, BNP, A1AT)

Consider bronchiectasis if producing large amounts of sputum daily, frequent infections or basal crackles (may also indicate pulmonary fibrosis).

Refer to Responsible Respiratory Prescribing Group bronchiectasis diagnosis and management guidelines.

Perform case finding spirometry: if abnormal or shows obstruction, do post spirometry bronchodilator

Spirometry should be carried out by a healthcare professional competent in its performance.

Airflow obstruction is defined as: FEV1/FVC ratio is <0.7

NB Obesity reduces FVC so airway obstruction may be masked in presence of raised BMI

Bronchodilator reversibility: Spirometry should be measured before and after an adequate dose of inhaled bronchodilator (either nebulised salbutamol 2.5 mg or high dose inhaled salbutamol 4 puffs x 100 micrograms via a spacer device). Reversibility testing is used to exclude asthma, not diagnose COPD.

Diagnosing COPD

Diagnose asthma when:

- serial peak flow measurements show at least 20% diurnal or day to day variability **or**
- spirometry returns back to normal after treatment
- > 400ml response to bronchodilators
- refer to BTS Asthma guidance

SNOMED CT code 195967001
READ CODE as ASTHMA H33

Diagnose COPD when:

- symptoms in keeping with diagnosis
- patient has proven airways obstruction **and**
- there is a < 400ml response to bronchodilators
- Clinician has excluded asthma

SNOMED CT code 13645005
READ CODE as COPD H3

NB Patients can have Asthma and COPD

Asthmatic features/features suggesting steroid responsiveness include any of:

- any previous secure diagnosis of asthma or atopy
- a higher blood eosinophil count
- substantial variation in FEV1 over time (> 200 - 400 ml)
- Substantial diurnal variation in peak expiratory flow (> 20%).

Apply all SNOMED CT codes 195967001, 136450005 and 10692761000119107
Use both Asthma and COPD READ CODE H33 AND H3

Other considerations:

- If under age of 50, measure alpha 1 anti-trypsin and consider passive smoke exposure; cigarettes, tobacco, shisha, cannabis, other smoked drugs.
- Older people without typical symptoms of COPD where the FEV1/FVC ratio is <0.7

Determine and EMIS Read code disease severity (see page 8)

⇩

Start appropriate treatment (see pages 14-19)

⇩

Reassess clinical status in view of response to treatment

After diagnosis is made, please ensure the appropriate SNOMED codes are applied to the patient's record.

Diagnosing COPD

MRC Breathlessness Score	Code
5 Too breathless to leave house, or breathless when dressing or undressing	SNOMED CT 1485150018 READ 173L
4 Stops for breath after walking about 100m or after a few minutes on level ground	SNOMED CT 1485149018 READ 173K
3 Walks slower than contemporaries on level ground because of breathlessness, or has to stop for breath when walking at own pace	SNOMED CT 1485148014 READ 173J
2 Short of breath when hurrying or walking up a slight hill	SNOMED CT 1485148014READ 173J
1 Not troubled by breathlessness except on strenuous exertion	SNOMED CT 1485144011 READ 173H

Grading of airflow obstruction			
Post-bronchodilator FEV1/FVC ratio	**FEV1 % predicted**	**Stage of COPD**	**Code**
<0.7	≥ 80%	Stage 1 - Mild*	SNOMED CT 457168017 READ H36
<0.7	50-79%	Stage 2 - Moderate	SNOMED CT 457169013 READ H37
<0.7	30-49%	Stage 3 - Severe	SNOMED CT 457171013 READ H38
<0.7	<30%	Stage 4 - Very Severe	SNOMED CT 516801000000112 READ H39
**Symptoms should be present to diagnose COPD in people with mild airway obstruction*			

Pulse oximetry: Measure oxygen saturations (SaO2) using a reliable oximeter (e.g., *ChoiceMMed MD300-D Finger Pulse Oximeter MD300C26*) or similar in any patient with acute or worsening breathlessness to identify:

- new or worsening respiratory failure, and the need or not for admission;
- and to assess the need for referral for Long Term Oxygen Therapy (criteria for referral: SaO2 < 92% on air in stable patient with severe disease (FEV1 < 50%) or new ankle swelling) who is ex- or non-smoker.

During acute exacerbations, if using oxygen therapy, aim for target saturation range of not higher than 88-92%.

Diagnosing COPD

Referral indications for Respiratory Specialist Team review include:	
• Disease onset at < 40 years old • Family history of alpha 1 antitrypsin deficiency • Consideration of lung volume reduction procedures • Diagnostic uncertainty • New symptoms not explained by COPD e.g. haemoptysis • 'Milder' patients with declining FEV1 despite optimised treatment • Frequent exacerbations (e.g. 2 or more/year) • One or more hospital admissions in the last year and not known to a supporting respiratory team • Breathlessness disproportionate to airway obstruction • Disabling and or frightening breathlessness • Consideration of trial of nebulised bronchodilator	• New or worsening respiratory failure • Onset of cor pulmonale/new ankle oedema • Assessment for Long Term Oxygen Therapy (SpO2 < 92%) NB only eligible if Carbon Monoxide (CO) reading confirms ex-smoker for at least 3 months • Rapidly progressive or advanced disease using prognostic indicators: FEV1, smoking status, breathlessness (MRC scale), exercise capacity & symptom burden (CAT score), chronic hypoxia, low BMI, admissions & exacerbations - frequency & severity, multi-morbidity & frailty • Consideration of non-invasive ventilation and management of chronic respiratory failure • Identified need for advanced care planning conversations • Concern about prolonged oral steroid/high dose inhaled

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Treatment options for COPD in adults

Fundamentals of COPD care

Treating tobacco dependence

Identify and treat tobacco dependence at every review, and apply a relevant SNOMED code for smoking status in EMIS.

- Smoking is a chronic condition prone to relapse, encourage patients who have relapsed to engage with specialist support.
- On each visit, ask about current and past tobacco, cannabis, other smoked drugs and shisha use, as well as passive smoking, vaping and e-cigarettes.
- Provide Very Brief Advice (VBA) yourself - online module available at National Centre for Smoking Cessation and Training (NCSCT)
- Measure and record exhaled CO routinely at every review of a current or recently quit smoker. Use the reading as a motivational tool, commend abstinence or assess motivation to quit.
- Offer full range of **COMBINATION** nicotine replacement therapies (NRT) and / or varenicline (if available) by trained HCPs in line with local guidance and referral to quit smoking services for behavioural and psychological support. Ensure follow-up of tobacco dependence treatment arranged.
- Useful resources are: London Clinical Senate - Helping Smokers Quit and PCRS Tobacco Dependency Guide.

Stop Smoking Services:
HARINGEY at **One You Haringey** or 020 8885 9095.
CAMDEN AND **ISLINGTON** at **Breathe** (via **breathe.team@nhs.net** or 020 3633 2609).
BARNET (via **smokingcessation@barnet.gov.uk** or 0300 123 1044).
ENFIELD (via **Stop Smoking London** or 0300 123 1044).

Fundamentals of COPD care

Offer pneumococcal, annual influenza and COVID vaccinations and promote influenza vaccination for health care providers and carers to protect patients.

Perform Spirometry:

- If post bronchodilator spirometry $FEV_1/FVC < 0.7$, this is consistent with a diagnosis of COPD, asthma or both diagnoses.
- Check pre- and post-bronchodilator spirometry or PEFR diary if asthma component suspected.
- Review patients with mild & moderate COPD on spirometry ($FEV_1 < 80\%$) once a year and severe COPD ($FEV_1 < 50\%$) twice a year.

Calculate BMI as raised BMI may mask obstructive spirometry but obesity is also a common contributing cause of breathlessness.

- If BMI >30 kg/m^2, excessive sleepiness and/or low O_2 saturation, then measure venous bicarbonate & consider referral for respiratory assessment +/- sleep studies.
- Discuss and address concerns and impact of raised BMI and low BMI as for all patients.

Ask if their breathlessness is frightening: identify and address anxiety / depression if present. Recommend pulmonary rehab.

Few patients derive benefit from nebulised bronchodilator but they may have a role in patients unable to coordinate with handheld inhalers. Patients should not be asked to buy compressors themselves. Nebules should only be prescribed following assessment, and compressor provision, by a respiratory team with on-going patient support and compressor servicing.

Fundamentals of COPD care

Consider Comorbidities: assess for co-existing ischaemic heart disease, heart failure, diabetes and osteoporosis risk and treat as appropriate.
COPD is not a contraindication to β_1 blockers, and β_1 blockers should be prescribed in COPD as for any patient according to cardiac or other indications.

Self-Management: offer personalised information on COPD e.g. "First steps to living with COPD" or a Care plan, ALUK website - **BLF - COPD information** as part of developing a care plan.

- Explore and develop patient confidence in self-management, including appropriateness of exacerbation pack.
- Signpost to local patient support groups e.g. Breathe Easy - **Breathe Easy support groups**

Offer personalised physical activity advice to all patients e.g. Long-term exercise groups, singing, dance groups.

Pulmonary Rehabilitation: the "Breath Better Do More" programme
Explain, offer and refer to pulmonary rehabilitation (PR) every patient with breathlessness MRC ≥3 (or hospital admission for COPD or frequent exacerbations irrespective of MRC score, provided COPD diagnosis confirmed)
Useful Pulmonary Rehabilitation resource is a 2 minute film: **Pulmonary rehabilitation**
Refer to:
HARINGEY or **ISLINGTON** (**CORE Team** via **email** or 0207 288 5474).
CAMDEN (CNWL team via **email** or 020 3317 5355)
BARNET (Community Respiratory Team via **email** or 020 8349 7359)
ENFIELD (via **referral form** or 020 8702 5860)

After confirmed diagnosis of COPD

Offer high value interventions in COPD care:

- Treatment and ongoing support for tobacco dependence;
- Pneumococcal, annual influenza and COVID vaccinations;
- Pulmonary rehabilitation (if not contraindicated);
- Co-developed personalised self-management plan;
- Optimise treatment for comorbidities.

Revisit and enable these interventions at each review at least annually and before each step up

Start inhaled therapies if:

- High value interventions have been offered **and**
- Patient is suffering with exacerbations **and/or**
- Inhaled therapies are needed to relieve breathlessness and/or exercise limitation, **and**
- Principles and choices in inhaled therapy and **devices** discussed with patient **and**
- Patient has been trained to use specific devices and can demonstrate satisfactory technique

Review inhaler technique and adherence regularly

Pathways for inhaled therapies for COPD

Clinicians can follow either Pathway A or B.*

Step 1

After diagnosis, offer SABA or SAMA (DPI or MDI with Spacer) if required for breathlessness

If the patient is limited by symptoms, i.e., breathlessness or has exacerbations despite treatment with SABA or SAMA, proceed to maintenance therapy

Step A2

NO asthmatic features

LABA/LAMA

Step A3

Ongoing symptoms OR exacerbations

ICS/LABA/LAMA

Step B2

Asthmatic features/steroid responsiveness*

ICS/LABA/LAMA | **OR** | **ICS/LABA**

Step B3

Ongoing symptoms OR exacerbations

ICS/LABA/LAMA

IF CONCERN AROUND DIAGNOSIS OR PATIENT CONTINUES TO EXACERBATE DESPITE TRIPLE THERAPY, CONSIDER REFERRAL FOR SPECIALIST REVIEW

- *There is a lack of consistency amongst definitions for COPD patients who may demonstrate "steroid responsiveness". NICE defines asthmatic features/features suggesting steroid responsiveness as "any previous secure diagnosis of asthma or atopy, a higher blood eosinophil count, substantial variation in FEV1 over time (at least 400ml) or substantial diurnal variation in peak expiratory flow (at least 20%)". GOLD criteria of steroid responsiveness is defined by those who have eosinophils ≥300 cells/microlitre. Further research into the exact features of inhaled corticosteroid responsiveness is required.*
- *NCL JFC understood the role of LAMA regardless of their eosinophil count and hence should be available for all COPD patients. NICE guidance suggests ICS/LABA as an initial maintenance therapy in the same setting (i.e., without LAMA). NCL respiratory specialists would normally opt for ICS/LABA/LAMA as the preferred initial maintenance for patients with a confirmed diagnosis of COPD and asthmatic features or features suggesting steroid responsiveness. Patients stabilised on ICS/LABAs should not be switched to a different inhaler unless a clinical benefit is identified.*

Inhaled reliever therapy options (SABA or SAMA as required)

- After confirmation of diagnosis, offer a short-acting bronchodilator as required to relieve breathlessness and exercise limitation. This can either be a short-acting beta$_2$ agonist (SABA) or a short-acting muscarinic antagonist (SAMA), both as DPI or MDI with spacer.
- **Ventolin® Evohaler should NOT be prescribed in NCL.** Although Salamol® CFC-Free inhaler is defined as having a 'high' carbon footprint, it has half the carbon footprint of Ventolin® Evohaler. Please ensure salbutamol is always prescribed by brand name, using the brands listed below.
- Note: Salamol contains a small amount of ethanol which may be unsuitable for some patients due to religious, cultural or personal reasons; clinicians are encouraged to discuss with their patient to determine a suitable alternative formulary option. If a pMDI is required, it would be appropriate to use a non-formulary pMDI as an exceptional circumstance.
- Inform the patient that if inspiratory force is impaired to the extent where they cannot use their inhaler device, they should seek immediate medical attention (alternatives to DPIs include salbutamol pMDI plus spacer or salbutamol via nebuliser).
- Inform patients that if symptoms persist, they should return to their GP for further evaluation and possibly a change in therapy.

Ventolin Accuhaler 200mcg/dose
Salbutamol 200micrograms/dose dry powder inhaler

1 dose as required (max 1 dose QDS)

Carbon footprint: LOW **DPI**

Easyhaler Salbutamol 100mcg/dose
Salbutamol 100micrograms/dose dry powder inhaler

2 doses QDS as required

Carbon footprint: LOW **DPI**

Salamol CFC-Free inhaler 100mcg/dose
Salbutamol 100micrograms/dose inhaler CFC free

2 doses QDS as required

Carbon footprint: HIGH **pMDI**

Salamol Easi-Breathe 100mcg/dose
Salbutamol 100micrograms/dose breath actuated inhaler CFC free

2 doses QDS as required

Carbon footprint: HIGH **BAI**

Atrovent pMDI
Ipratropium bromide 20micrograms/dose inhaler

2 doses QDS as required

Carbon footprint: HIGH **pMDI**

LABA/LAMA maintenance treatment (steps A2 and B2)

- In patients who continue to be breathless or have exacerbations, offer a long-acting beta2 agonist (LABA) and a long-acting muscarinic antagonist (LAMA). Discontinue SAMA treatment if a LAMA is given. Treatment with a SABA as required may be continued in all stages of COPD.

- Studies have shown that combining different classes of long-acting bronchodilators can lead to improvements in lung function and clinical outcomes compared to using just one type of bronchodilator. These benefits have been observed in studies involving combinations of LABAs and LAMAs. LABA/LAMA combination inhalers have also been found to be effective in improving lung function, reducing breathlessness, alleviating symptoms, enhancing health status, and decreasing exacerbations and the use of rescue medication, with similar safety profiles and lower incidence of pneumonia compared to using an inhaled corticosteroid/LABA combination. (1)

- LABA/LAMA combination inhalers used as maintenance treatment are recommended by both NICE and GOLD.

Option 1		Option 2	
Anoro Ellipta Umeclidinium / Vilanterol dry powder inhaler 55/22 micrograms device: 1 dose OD		**Bevespi Aerosphere** Glycopyrronium / Formoterol inhaler 7.2/5 micrograms device: 2 doses BD	
Carbon footprint: LOW DPI		Carbon footprint: HIGH pMDI	

(1) Ficker JH, Rabe KF, Welte T. Role of dual bronchodilators in COPD: A review of the current evidence for indacaterol/glycopyrronium. Pulm Pharmacol Ther. 2017 Aug;45:19-33. doi: 10.1016/j.pupt.2017.04.002. Epub 2017 Apr 4. PMID: 28389258.

ICS/LABA maintenance treatment (steps B2)

- Inhaled corticosteroids (ICS)/LABA combination inhalers used as maintenance treatment are recommended in NICE guidance but no longer recommended in GOLD guidance.
- NCL clinicians usually opt for LABA/LAMA as initial maintenance treatment in patients without signs of steroid responsiveness.
- Patients should not be routinely commenced on ICS/LABA inhaled therapy.
- ICS/LABA combination inhalers have been historically used in NCL primary care. Patients stable on maintenance therapy with ICS/LABA should remain on this treatment. If a patient is receiving an ICS/LABA in a pMDI format, clinicians may wish to discuss the inhaler choice with their patient to consider switching to a DPI if suitable and clinically appropriate.
- ICS/LABA combination inhalers will still be available for patients with known intolerance or hypersensitivity to LAMAs.
- Always offer both a steroid treatment card AND a steroid emergency card.

Option 1				**Option 2**	
Relvar Ellipta **Fluticasone furoate/ Vilanterol dry powder inhaler** 92/22 micrograms device: 1 dose OD		**Fostair NEXThaler** **Beclometasone/ Formoterol inhaler** 100/6 micrograms device: 2 doses BD		**Fostair pMDI** **Beclometasone/ Formoterol inhaler** 100/6 micrograms device: 2 doses BD	
Carbon footprint: LOW **DPI**		**Carbon footprint: LOW** **DPI**		**Carbon footprint: HIGH** **pMDI**	

ICS/LABA/LAMA (triple therapy) maintenance treatment (steps B2, A3 and B3)

- The following treatment options are recommended in both NICE and GOLD guidance.
- **<u>In patients with a confirmed COPD diagnosis who have features suggesting steroid responsiveness and continue to be breathless or have exacerbations, and have previously received a SABA or SAMA only</u> (step B2) - as reviewed and agreed by NCL JFC:**
  - Offer a triple therapy combination inhaler as an initial maintenance treatment option.
- **<u>In patients established on a LABA/LAMA or ICS/LABA combination inhaler</u> (steps A3 and B3)**
  - Escalate to triple therapy in patients who have a severe exacerbation (requiring hospitalisation) or at least two moderate exacerbations (requiring systemic corticosteroids and/or antibacterial treatment) within a year
  - Escalate to triple therapy in patients whose day-to-day symptoms continue to adversely impact their quality of life:
    - If previously using an ICS/LABA, escalate to triple therapy.
    - If previously using a LABA/LAMA, consider a 3-month trial of triple therapy. If symptoms have improved, continue triple therapy. If there has been no improvement, step back down to a LAMA and LABA combination.
- Review at least annually and document the reason for continuation.
- Discontinue SAMA treatment if a LAMA is given. Treatment with a SABA as required may be continued in all stages of COPD.
- Always offer both a steroid treatment card AND a steroid emergency card.
- If the patient remains unstable or experiences further exacerbations whilst on triple therapy, consider a referral to a COPD specialist clinic for assessment of further treatment options (e.g., roflumilast as per NICE TA461, oral morphine for breathlessness, regular antibiotic prophylaxis as per national guidance, etc.)

<u>Option 1</u>				**<u>Option 2</u>**	
Trelegy Ellipta **Fluticasone / Vilanterol / Umeclidinium dry powder inhaler** **Triple therapy:** 92/22/55 micrograms device: 1 dose OD		**Trimbow NEXThaler** **Beclometasone dipropionate/ Formoterol fumarate dihydrate/ Glycopyrronium bromide dry powder inhaler** **Triple therapy:** 87/5/9 micrograms device: 2 doses BD		**Trimbow** **Beclometasone dipropionate/ Formoterol fumarate dihydrate/ Glycopyrronium bromide inhaler** **Triple therapy:** 87/5/9 micrograms device: 2 doses BD	
Carbon footprint: LOW **DPI**		**Carbon footprint: LOW** **DPI**		**Carbon footprint: HIGH** **pMDI**	

Inhaled therapy prescribing advice

- **PRESCRIBE ALL INHALERS BY BRAND NAME AND DEVICE INCLUDING SALBUTAMOL pMDI (preferred pMDI brand: SALAMOL®)**
- **PATIENTS SHOULD ONLY BE SWITCHED BETWEEN INHALER DEVICES IF CLINICALLY APPROPRIATE AND FOLLOWING A FACE-TO-FACE CONSULTATION AND WITH COUNSELLING.**

Choose the inhaler device most appropriate for the patient based on:

- **Patient willingness and ability to use a particular device;**
- **Assessed adequate inhaler technique including inspiratory flow and review regularly;**
- **Patient preference;**
- **Patient's inhaler knowledge, beliefs and use – address any inaccuracies;**
- **Carbon footprint of the inhaler.**

MDIs:

- MDIs generally have the highest carbon footprint of all inhaler devices;
- Are still an appropriate inhaler choice if a dry powder or soft mist inhaler are not appropriate or if a patient prefers this device;
- Should always be used with a spacer (except salbutamol). Spacers should be replaced every 6 months.

Inhaled corticosteroids (ICS):

- Do NOT use single component ICS inhalers in COPD.
- ICS should only be started, or restarted, if the patient meets criteria highlighted in slides 18 and 20.
- If ICS has been stopped, risk/benefits should be assessed before restarting.

Stepping up treatment:

Only step-up inhaled therapy after:

- Addressing or readdressing tobacco dependence.
- After review and optimisation of inhaler technique and pattern of inhaler use.

Stepping down treatment:

- Consider stepping down treatment as actively as stepping up.
- Titrate ICS to the lowest effective dose to prevent airways exacerbations and/or asthma symptoms.
- Withdrawal of ICS may be indicated for patients with NO features suggesting steroid responsiveness or where ICS not beneficial.

Refer to Primary Care Respiratory Society (PCRS) Stepping Down ICS guidance

Patients requiring further support to optimise inhaler use and technique can be referred to their community pharmacy

Acute exacerbation on COPD (AECOPD) Treatment Guidelines

Exacerbations are associated with: ↑breathlessness, ↑sputum purulence, ↑sputum volume, ↑cough.
Consider other causes of worsening COPD as an alternative diagnosis.
Educate patients regarding symptoms of exacerbation, how to distinguish from 'bad days' and what action to take early for proactive treatment. Agree a personalised action plan on responding to symptoms.

Treatment exacerbations with

Increasing frequency of bronchodilator (i.e., SABA) use

Oral prednisolone (non-enteric coated) 5mg tablets: 30mg OM for 5 days (unless contraindicated)

Patients having more than 3 courses of prednisolone / 12 months need review to minimise cumulative dose, risk of adrenal insufficiency and risk of osteoporosis

Consider 5-day course of oral antibiotics (if purulent sputum):

- **Amoxicillin 500mg TDS OR**
- **Doxycycline 200mg day 1, then 100mg OD for 4 days OR**
- **Clarithromycin 500mg BD**

Consider alternative antibiotic e.g. co-amoxiclav 625mg TDS if higher risk of treatment failure

- All patients should be reviewed face to face (or via video consultation if appropriate) after an exacerbation to code (SNOMED) the episode, discuss next steps e.g., association with tobacco smoking, pulmonary rehabilitation referral, review of oxygen saturation and medication and need for specialist respiratory review

'Exacerbation medication packs', a.k.a. 'Rescue packs'

- An 'exacerbation' or 'rescue pack' is a course of corticosteroid tablets and antibiotics for a patient to keep at home. Instructions for use include contacting a healthcare professional if a pack is used or if their symptoms do not improve within 24 hours of starting the treatment.
- Establish understanding of, and confidence in, managing exacerbations before prescribing an 'exacerbation' or 'rescue pack'.
- Review the need for and use of this exacerbation medication regularly.
- Do not issue as a repeat prescription, only via acute prescription.
- Consider appropriateness of issuing a pack e.g., where a patient has cognitive impairment; communication is made more difficult by language barriers and any other situation where you do not feel confident that instructions have been understood.
- If a second 'exacerbation' or 'rescue pack' is used within 8 weeks, consider:

➢ sending sputum sample for MC & S (microscopy, culture, and sensitivity) **and**
➢ an alternative first choice antibiotic (from a different class of doxycycline, amoxicillin, clarithromycin)

References and additional resources

References:

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5. Erskine D, Simpson H. Adrenal insufficiency and adrenal crisis - who is at risk and how should they be managed safely. Published March 10, 2021. Accessed September 19, 2022. https://www.endocrinology.org/media/4091/spssfe_supporting_sec_-final_10032021-1.pdf
6. Simpson H, Tomlinson J, Wass J, Dean J, Arlt W. Guidance for the prevention and emergency management of adult patients with adrenal insufficiency. Clinical Medicine. 2020;20(4):371-378. doi:10.7861/clinmed.2019-0324
7. Royal College of General Practitioners, Royal College of Physicians, Society for Endocrinology. National Patient Safety Alert: Steroid Emergency Card to support early recognition and treatment of adrenal crisis in adults. Accessed September 19, 2022. https://www.england.nhs.uk/wp-content/uploads/2020/08/NPSA-Emergency-Steroid-Card-FINAL-2.3.pdf

Additional resources:

- NICE guideline, “Chronic obstructive pulmonary disease in over 16s: diagnosis and management”, [NG115], Published: 05 December 2018, Last updated: 26 July 2019, https://www.nice.org.uk/guidance/ng115/resources/chronic-obstructive-pulmonary-disease-in-over-16s-diagnosis-and-management-pdf-66141600098245
- 2023 Gold Report - Global Initiative for Chronic Obstructive Lung Disease (2022) GOLD. Available at: https://goldcopd.org/2023-gold-report-2/ (Accessed: April 27, 2023).
- Greener Practice: How to reduce the carbon footprint of inhaler prescribing - https://s40639.pcdn.co/wp-content/uploads/Reducing-Carbon-Footprint-of-Inhaler-Prescribing-v3.3.2.pdf

Appendix 1: Inhalers on the NCL Joint Formulary

Step 1

After diagnosis, offer SABA or SAMA (DPI or MDI with Spacer) if required for breathlessness

Ventolin Accuhaler	Easyhaler Salbutamol	Salamol CFC-Free inhaler	Salamol Easi-Breathe	Atrovent pMDI
Salbutamol – **NOTE: 200micrograms/dose**	Salbutamol – **6 month expiry once opened**	Salbutamol – **contains ethanol**	Salbutamol	Ipratropium
1 dose as required (max 1 dose QDS)	2 doses QDS as required	2 doses QDS as required	2 doses QDS as required	2 doses QDS as required
CO_2: LOW DPI	CO_2: LOW DPI	CO_2: HIGH pMDI	CO_2: HIGH BAI	CO_2: HIGH BAI

If the patient is limited by symptoms, i.e. breathlessness or has exacerbations despite treatment with SABA or SAMA, proceed to maintenance therapy

Step A2 — NO features of steroid responsiveness

LABA & LAMA

Anoro Ellipta	Bevespi Aerosphere
Umeclidinium / Vilanterol	Glycopyrronium / Formoterol
55/22 mcg device, 1 dose OD	7.2/5 mcg device, 2 doses BD
CO_2: LOW DPI	CO_2: HIGH pMDI

Step A3 — Ongoing symptoms OR exacerbations

ICS/LABA/LAMA

Step B2 — Asthmatic features or signs of steroid responsiveness

ICS/LABA/LAMA OR **ICS/LABA**

Trelegy Ellipta
Fluticasone / Vilanterol / Umeclidinium
92/22/55 mcg device, 1 dose OD
CO_2: LOW DPI

Trimbow Nexthaler	Trimbow pMDI
Beclometasone/Formoterol/Glycopyrronium	Beclometasone/Formoterol/Glycopyrronium
87/5/9 mcg device, 2 doses BD	87/5/9 mcg device, 2 doses BD
CO_2: LOW DPI	CO_2: HIGH pMDI

Fostair Nexthaler	Fostair pMDI
Beclometasone/ Formoterol	Beclometasone/ Formoterol
100/6 mcg device, 2 doses BD	100/6 mcg device, 2 doses BD
CO_2: LOW DPI	CO_2: HIGH pMDI

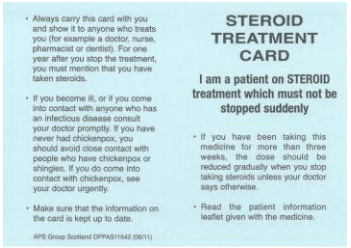
Relvar Ellipta
Fluticasone furoate/ Vilanterol
92/22 mcg device, 1 dose OD
CO_2: LOW DPI

Step B3 — Ongoing symptoms OR exacerbations

ICS/LABA/LAMA

IF CONCERN AROUND DIAGNOSIS OR PATIENT CONTINUES TO EXACERBATE DESPITE TRIPLE THERAPY, CONSIDER REFERRAL FOR SPECIALIST REVIEW

Appendix 2: Steroid safety cards in adults with COPD prescribed ICS or systemic steroids[6–8]

	Steroid TREATMENT card	Steroid EMERGENCY card
		
Purpose	To make patients aware of the risks involved with high-dose or prolonged courses of corticosteroids and to record details of the prescriber, drug, dosage, and duration This should be provided by the initiating clinician/centre, but check on every patient contact that the patient has a treatment card	For patients with or at risk of developing adrenal insufficiency from exogenous steroids for whom missed doses, illness or surgery put them at risk of adrenal crisis This should be provided by the prescribing clinician and the dispensing pharmacist should check that the patient has an emergency card
When to provide a steroid safety card	**Supply** a steroid treatment card to patients on: • High dose ICS (≥1000micrograms BDP/day equivalence) • Oral corticosteroids for >3 weeks or >4 short courses in one year **Consider** supplying a steroid treatment card to patients on medium dose ICS (≥ 400micrograms to <1000micrograms BDP equivalence). Risks increase with concomitant use of intranasal and/or topical corticosteroids, or with medicines that inhibit metabolism of corticosteroids (cytochrome p450 inhibitors, such as ritonavir, itraconazole or ketoconazole)	**Supply** a steroid emergency card to patients: • On high dose ICS (≥1000micrograms BDP/day equivalence) • On prednisolone 5mg/day or equivalent for ≥4 weeks across all administration routes (oral, inhaled, topical or intranasal) • Patients taking >40mg prednisolone or equivalent for >1 week or repeated courses of short oral doses • Patients taking an oral glucocorticoid within 1 year of stopping long-term therapy • Patients with established or suspected primary adrenal insufficiency (e.g., Addison's disease, congenital adrenal hyperplasia etc) • Patients with established or suspected diagnosis of adrenal insufficiency due to hypothalamo-pituitary disease who are on permanent glucocorticoid replacement therapy or require glucocorticoids during illness or stress such as surgery See more information via the NPSA alert and advice from SPS/Society for Endocrinology
How to obtain	Primary care: PCSE online portal Secondary care can order from the Xerox online portal	Primary care: PCSE online portal Secondary care can order from the Xerox online portal Online printable PDF

Appendix 3: How to use this guide

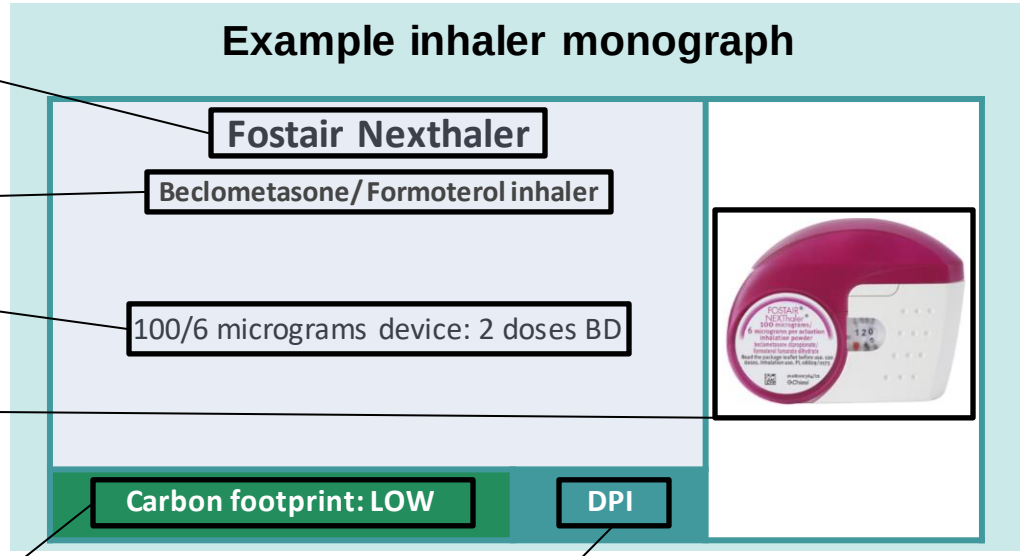
Brand name
Note: ALWAYS prescribe by brand name AND inhaler type

Generic name

Device strength and dose

Photo of device

Example inhaler monograph



Carbon footprint:
Labelled as either LOW or HIGH

LOW carbon footprint items are preferred choices in NCL where it is clinically appropriate to use.

HIGH carbon footprint pMDIs contain a propellant which carry a higher carbon footprint relative to dry powder inhalers. These are suitable for use where patients are more suited to a pMDI (e.g., if they have poor inspiratory effort, or have better inhaler technique with a pMDI than other devices)

Type of device:

pMDI = pressurised metered dose inhaler, which uses a propellant
BAI = breath-actuated inhaler, which also contains a propellant
SMI = soft mist inhaler, which contains a liquid but no propellant
DPI = dry powder inhaler, which contains no propellant

Scope of inhaled therapies included in this guideline

- This guide includes inhaler options currently on the NCL Joint Formulary which are recommended for use in NCL. It will be updated following pan-London recommendations; therefore, options are subject to change following NCL JFC or pan-London recommendations.
- Ventolin® has been removed from the NCL Joint Formulary and should not be initiated in new patients.
- Although a greener option compared to pMDIs, Spiolto Respimat® has not been included in this guideline. The decision has been based on both the lack of a direct escalation to triple inhaled therapy and the reported practicality issues with using the device itself. It has been removed from this guideline following overall review of treatment options and escalation therapies. However, patients currently on Spiolto Respimat® should not be switched to a different inhaler unless a clinical benefit is identified.
- MDI is chosen over DPI where inspiratory capacity is too low for effective use of DPI itself. An InCheck Dial device may be use to determine inspiratory capacity.

Abbreviations:
SABA = Short acting beta agonist
LABA = Long acting beta agonist
SAMA = Short acting muscarinic antagonist
LAMA = Long acting muscarinic antagonist
ICS = Inhaled corticosteroid
mcg = Microgram
BDP = Beclometasone Dipropionate (where used, this denotes the equivalent BDP dose relative to the steroid administered in the dose advised)
OD: Once daily; **BD**: Twice daily; **QDS**: Four times daily