



A summary of prescribing recommendations from NICE guidance

Chronic obstructive pulmonary disease

[NICE NG115: 2018](#)

This guideline covers diagnosis and management of COPD in people aged ≥ 16 years, which includes emphysema and chronic bronchitis. It covers stable COPD and exacerbations. It replaces NICE CG101 (June 2010) summarised in NICE Bites No.19.

Definition of terms

COPD	chronic obstructive pulmonary disease
FEV1	forced expiratory volume in 1 second
FVC	forced vital capacity
ICS	inhaled corticosteroids
LABA	long-acting beta2 agonists
LAMA	long-acting muscarinic antagonists
LFTs	liver function tests
NRT	nicotine replacement therapy
PEF	peak expiratory flow
SABA	short-acting beta2 agonists
SAMA	short-acting muscarinic antagonists

Diagnosis

- ◆ The diagnosis of COPD depends on thinking of it as a cause of breathlessness or cough.
- ◆ The diagnosis is suspected on the basis of symptoms and signs, and is supported by spirometry.

Symptoms

- ◆ Suspect a diagnosis of COPD in people >35 years who have a risk factor (generally smoking or a history of smoking) and who present with ≥ 1 of the following:
 - exertional breathlessness,
 - chronic cough,
 - regular sputum production,
 - frequent winter 'bronchitis',
 - wheeze.
- ◆ Ask the person if they have:
 - weight loss,
 - reduced exercise tolerance,
 - waking at night with breathlessness,
 - ankle swelling,
 - fatigue,
 - occupational hazards,
 - chest pain,
 - haemoptysis (coughing up blood).

These last 2 symptoms are uncommon in COPD and raise the possibility of alternative diagnoses.

- ◆ Use the Medical Research Council dyspnoea scale (see [NICE pathway](#)) to grade breathlessness according to the level of exertion needed to cause it.

Identifying early disease

- ◆ Perform spirometry in people who are >35 years, current or ex-smokers, and have a chronic cough.
- ◆ Consider spirometry in people with chronic bronchitis. A significant proportion of these people will go on to develop airflow limitation.

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Spirometry

- ◆ Perform spirometry:
 - at diagnosis,
 - to reconsider the diagnosis, for people who show an exceptionally good response to treatment,
 - to monitor disease progression.
- ◆ Measure post-bronchodilator spirometry to confirm the diagnosis of COPD.
- ◆ Think about alternative diagnoses or investigations for older people who have an FEV1/FVC ratio <0.7 but do not have typical symptoms of COPD.
- ◆ Think about a diagnosis of COPD in younger people who have symptoms of COPD, even when their FEV1/FVC ratio is >0.7 .
- ◆ All health care professionals who care for people with COPD should have access to spirometry and be competent in interpreting the results.
- ◆ Spirometry can be performed by any healthcare worker who has had appropriate training and has up-to-date skills.
- ◆ Spirometry services should be supported by quality-control processes.
- ◆ It is recommended that [Global Lung Function Initiative 2012 reference values](#) are used, but it is recognised that these values are not applicable for all ethnic groups.

Incidental findings on chest X-rays or CT scans – see [NICE pathway](#)

Additional investigations – see [NICE pathway](#)

Reversibility testing

- ◆ For most people, routine spirometric reversibility testing is not necessary as part of the diagnostic process or to plan initial therapy with bronchodilators or corticosteroids. It may be unhelpful or misleading because:
 - repeated FEV1 measurements can show small spontaneous fluctuations,
 - results of a reversibility test performed on different occasions can be inconsistent and not reproducible,
 - over-reliance on a single reversibility test may be misleading unless the change in FEV1 is >400 ml,
 - the definition of the magnitude of a significant change is purely arbitrary,
 - response to long-term therapy is not predicted by acute reversibility testing.

Prognosis and severity assessment – see [NICE pathway](#)

Differentiating between COPD and asthma

- ◆ Untreated COPD and asthma are frequently distinguishable on the basis of history (and examination) in people presenting for the first time. Whenever possible, use features from the history and examination to differentiate COPD from asthma - see [NICE pathway](#) and [NICE guideline on asthma](#)

Referral for specialist advice

- ◆ Referral may be appropriate at all stages of the disease and not solely in the most severely disabled people – see [NICE pathway](#)

COPD.....continued

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Stable COPD

Treatment and management

- ◆ See also the NICE 1-page [visual summary](#) of non-pharmacological management and use of inhaled therapies.
- ◆ For information on **self-management** - see Box 3 (next page)

Smoking cessation

- ◆ Document an up-to-date smoking history, including pack years smoked (number of cigarettes smoked per day, divided by 20, multiplied by the number of years smoked).
- ◆ At every opportunity, advise and encourage every person with COPD who is still smoking (regardless of their age) to stop, and offer them help to do so.
- ◆ Unless contraindicated, offer NRT, varenicline or bupropion as appropriate to people who want to stop smoking, combined with an appropriate support programme – see NICE guidance on [stop smoking interventions and services](#) and on [varenicline](#).

Vaccination and anti-viral therapy

- ◆ Offer pneumococcal vaccination and an annual flu vaccination.
- ◆ See NICE guidance on influenza [prophylaxis](#) and [treatment](#).

Inhaled therapy

SABA and SAMA

- ◆ Use short-acting bronchodilators, as necessary, as initial empirical treatment to relieve breathlessness and exercise limitation.

ICS

- ◆ Do not use oral corticosteroid reversibility tests to identify which people should be prescribed ICS, because they do not predict response to ICS therapy.
- ◆ Be aware of, and be prepared to discuss with the person, risk of side effects (including pneumonia) in people who take ICS.

Inhaled combination therapy

- ◆ Inhaled combination therapy refers to combinations of LAMA, LABA and ICS.
- ◆ Offer inhaled combination therapy to people who:
 - have spirometrically confirmed COPD, **AND**
 - remain breathless or have exacerbations despite:
 - ❖ having used or been offered treatment for tobacco dependence if they smoke **AND**
 - ❖ optimised non-pharmacological management and relevant vaccinations **AND**
 - ❖ using a short-acting bronchodilator.
- ◆ Offer **LAMA*+LABA** to people who **DO NOT** have asthmatic features/features suggesting steroid responsiveness (see **Box 1**).
- ◆ Consider **LABA+ICS** for people who **DO** have asthmatic features/features suggesting steroid responsiveness (see **Box 1**).
- ◆ For people using long-acting bronchodilators outside of these recommendations before this guideline was published (December 2018), explain to them that they can continue with their current treatment until both they and their NHS healthcare professional agree it is appropriate to change.
- ◆ Offer **LAMA*+LABA+ICS** to people who **DO** have asthmatic features/features suggesting steroid responsiveness (**Box 1**) who remain breathless have exacerbations despite taking LABA+ICS.
- ◆ The evidence on triple therapy (LAMA+LABA+ICS) is being reviewed as part of the [2019 update](#) to this guideline.

Recommendations – wording used such as ‘offer’ and ‘consider’ denote the [strength of the recommendation](#).

Drug recommendations – the guideline assumes that prescribers will use a drug’s [Summary of Product Characteristics \(SPC\)](#) to inform treatment decisions.

* See [MHRA advice](#) on risk for patients with certain cardiac conditions when taking tiotropium delivered via Respimat or Handihaler.

Box 1: Asthmatic features/features suggesting steroid responsiveness

Includes any previous, secure diagnosis of asthma or of atopy, a higher blood eosinophil count, substantial variation in FEV1 over time (at least 400 ml) or substantial diurnal variation in PEF (at least 20%).

Box 2: Delivery systems used to treat stable COPD

Use a pragmatic approach guided by individual patient assessment when choosing a device.

Inhalers

- ◆ In most cases bronchodilator therapy is best administered using a hand-held inhaler (including a spacer if appropriate).
- ◆ Provide an alternative inhaler if a person cannot use a particular one correctly or it is not suitable for them.
- ◆ Only prescribe inhalers after people have been trained to use them and can demonstrate satisfactory technique.
- ◆ People with COPD should have their ability to use an inhaler regularly assessed and corrected if necessary by a healthcare professional competent to do so.

Spacers

- ◆ Provide a spacer that is compatible with the person's metered-dose inhaler.
- ◆ Advise people to use a spacer with a metered-dose inhaler in the following way:
 - administer the drug by single actuations of the metered-dose inhaler into the spacer, inhaling after each actuation,
 - there should be minimal delay between inhaler actuation and inhalation,
 - normal tidal breathing can be used as it is as effective as single breaths,
 - repeat if a second dose is required.
- ◆ Advise people on spacer cleaning. Tell them:
 - not to clean the spacer more than monthly, because more frequent cleaning affects their performance (because of a build-up of static),
 - to hand wash using warm water and washing-up liquid, and allow the spacer to air dry.

Nebulisers

- ◆ Think about nebuliser therapy for people with distressing or disabling breathlessness despite maximal therapy using inhalers.
- ◆ Do not prescribe nebulised therapy without an assessment of the person's and/or carer's ability to use it.
- ◆ Do not continue nebulised therapy without assessing and confirming that ≥1 of the following occurs:
 - a reduction in symptoms,
 - an increase in the ability to undertake activities of daily living,
 - an increase in exercise capacity,
 - an improvement in lung function.
- ◆ Use a nebuliser system that is known to be efficient.**
- ◆ Offer people a choice between a facemask and a mouthpiece to administer their nebulised therapy, unless the drug specifically requires a mouthpiece (e.g. anticholinergic drugs).
- ◆ If nebuliser therapy is prescribed, provide the person with equipment, servicing, and ongoing advice and support.

** See [MHRA alert](#) about non-CE marked nebulisers for COPD.

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COPD.....continued

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Stable COPD continued...

- ◆ Do not assess the effectiveness of bronchodilator therapy using lung function alone. Include a variety of other measures such as improvement in symptoms, activities of daily living, exercise capacity, and rapidity of symptom relief.
- ◆ Base the choice of drugs and inhalers on:
 - how much they improve symptoms,
 - the person's preferences and ability to use the inhalers,
 - the drugs' potential to reduce exacerbations,
 - their side effects,
 - their cost.
 Minimise the number of inhalers and the number of different types of inhaler used by each person as far as possible.
- ◆ When prescribing long-acting drugs, ensure people receive inhalers they have been trained to use (e.g. by specifying the brand and inhaler in prescriptions).

Oral therapy

Corticosteroids

- ◆ Long-term oral corticosteroid therapy in COPD is not normally recommended. Some people with advanced COPD may need long-term oral corticosteroids when these cannot be withdrawn following an exacerbation. In these cases, the dose of oral corticosteroids should be kept as low as possible.
- ◆ Monitor people who are having long-term oral corticosteroid therapy for osteoporosis, and give them appropriate prophylaxis. Start prophylaxis without monitoring for people aged > 65 years.

Modified release theophylline

- ◆ Theophylline should only be used after a trial of short-acting bronchodilators and long-acting bronchodilators, or for people who are unable to use inhaled therapy, as plasma levels and interactions need to be monitored.
- ◆ Take particular caution in older people, because of differences in pharmacokinetics, the increased likelihood of comorbidities and the use of other medications.
- ◆ Assess effectiveness by improvements in symptoms, activities of daily living, exercise capacity and lung function.
- ◆ Reduce the dose of theophylline for people who are having an exacerbation if they are prescribed macrolide or fluoroquinolone antibiotics (or other drugs known to interact).

Prophylactic antibiotics

- ◆ Before starting prophylactic antibiotic therapy, think about whether respiratory specialist input is needed.
- ◆ Consider azithromycin (usually 250mg 3 times a week) for people if they:
 - do not smoke, **AND**
 - have optimised non-pharmacological management and inhaled therapies, relevant vaccinations and (if appropriate) have been referred for pulmonary rehabilitation, **AND**
 - continue to have ≥ 1 of the following, particularly if they have significant daily sputum production:
 - ❖ frequent (typically ≥ 4 per year) exacerbations with sputum production,
 - ❖ prolonged exacerbations with sputum production,
 - ❖ exacerbations resulting in hospitalisation.
- ◆ Before offering prophylactic antibiotics, ensure that the person has had:
 - sputum culture and sensitivity (including tuberculosis culture), to identify other possible causes of persistent or recurrent infection that may need specific treatment .
 - training in airway clearance techniques to optimise sputum clearance (see chest physiotherapy in [NICE Pathway](#)),
 - CT scan of the thorax to rule out bronchiectasis and other lung pathologies.

U – unlicensed indication. Obtain and document informed consent.

- ◆ Before starting azithromycin, ensure the person has had:
 - an ECG to rule out prolonged QT interval, **AND**
 - baseline LFTs.
- ◆ When prescribing azithromycin, advise people about the small risk of hearing loss and tinnitus, and tell them to contact a healthcare professional if this occurs.
- ◆ Review treatment after the first 3 months, and then at least every 6 months.
- ◆ Only continue treatment if the continued benefits outweigh the risks. Be aware that there are no long-term studies on the use of prophylactic antibiotics in people with COPD.
- ◆ For people who are taking prophylactic azithromycin and are still at risk of exacerbations, provide a non-macrolide antibiotic to keep at home as part of their exacerbation action plan.
- ◆ Be aware that it is not necessary to stop prophylactic azithromycin during an acute exacerbation of COPD.

Box 3: Self-management

- ◆ Develop an individualised self-management plan in collaboration with each person with COPD and their family or carers (as appropriate), including relevant education points (see [NICE pathway](#)).
- ◆ Review the plan at future appointments.
- ◆ Develop an individualised exacerbation action plan in collaboration with each person who is at risk of exacerbations.
- ◆ Offer people a short course of oral corticosteroids and a short course of oral antibiotics to keep at home as part of their exacerbation action plan if:
 - they have had an exacerbation within the last year, and remain at risk of exacerbations,
 - they understand and are confident about when and how to take these medicines, and the associated benefits and harms,
 - they know to tell their healthcare professional when they have used the medicines, and to ask for replacements.
- ◆ At all review appointments, discuss corticosteroid and antibiotic use with people who keep these medicines at home, to check they still understand how to use them. For people who have used ≥ 3 courses of oral corticosteroids and/or oral antibiotics in the last year, investigate the possible reasons for this.
- ◆ Encourage people with COPD to respond promptly to exacerbation symptoms by following their action plan, which may include:
 - adjusting their short-acting bronchodilator therapy to treat their symptoms,
 - taking a short course of oral corticosteroids if their increased breathlessness interferes with activities of daily living,
 - adding oral antibiotics if their sputum changes colour and increases in volume or thickness beyond their normal day-to-day variation,
 - telling their healthcare professional.
- ◆ Ask people with COPD if they experience breathlessness they find frightening. If they do, consider including a cognitive behavioural component in their self-management plan to help them manage anxiety and cope with breathlessness.
- ◆ For people at risk of hospitalisation, explain to them and their family members or carers (as appropriate) what to expect if this happens (including non-invasive ventilation and discussions on future treatment preferences, ceilings of care and resuscitation).

COPD.....continued

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Stable COPD continued...

Mucolytic therapy

- ◆ Consider mucolytic drug therapy for people with a chronic cough productive of sputum.
- ◆ Only continue mucolytic therapy if there is symptomatic improvement (e.g. reduction in frequency of cough and sputum production).
- ◆ Do not routinely use mucolytic drugs to prevent exacerbations in people with stable COPD.

Anti-oxidant therapy

- ◆ Treatment with alpha-tocopherol and beta-carotene supplements, alone or in combination is not recommended.

Anti-tussive therapy should not be used in the management of stable COPD.

Phosphodiesterase-4 inhibitors

- ◆ See NICE advice on [roflumilast for COPD](#).

Oxygen therapy (stable COPD)

- ◆ See [NICE pathway](#).

Lung surgery and lung volume reduction procedures

- ◆ See [NICE pathway](#)

Pulmonary rehabilitation

- ◆ See [NICE pathway](#)

Managing coexisting conditions

- ◆ See [NICE pathway](#)

Follow-up

- ◆ See [NICE pathway](#)

Palliative care

- ◆ See [NICE pathway](#)

Exacerbations of COPD

- ◆ Be aware that:
 - an acute exacerbation of COPD is a sustained worsening of symptoms from a person's stable state.
 - a range of factors (including viral infections and smoking) can trigger an exacerbation.
 - many exacerbations (including some severe exacerbations) are not caused by bacterial infections so will not respond to antibiotics.
 - Some people at risk of exacerbations may have antibiotics to keep at home as part of their exacerbation action plan.

Assessing the need for hospital treatment

- ◆ See [NICE pathway](#)

Clinical investigations in primary care

- ◆ For people who have their exacerbation managed in primary care:
 - sending sputum samples for culture is not recommended in routine practice,
 - pulse oximetry is of value if there are clinical features of a severe exacerbation.

Treatment and management (COPD exacerbations)

- ◆ Increased breathlessness is a common feature of COPD exacerbations. This is usually managed by taking increased doses of short-acting bronchodilators.

Antibiotics

- ◆ For guidance on using antibiotics to treat COPD exacerbations, see NICE guidance on [antimicrobial prescribing for acute exacerbations of COPD](#).

Box 4: Delivery systems for inhaled therapy during exacerbations

- ◆ Both nebulisers and hand-held inhalers can be used to administer inhaled therapy during exacerbations.
- ◆ The choice of delivery system should reflect the dose of drug needed, the person's ability to use the device, and the resources available to supervise therapy administration.
- ◆ Change people to hand-held inhalers as soon as their condition has stabilised, because this may allow them to be discharged from hospital earlier.
- ◆ If a person with COPD is hypercapnic or acidotic, the nebuliser should be driven by compressed air rather than oxygen (to avoid worsening hypercapnia). If oxygen therapy is needed, administer it simultaneously by nasal cannulae.
- ◆ The driving gas for nebulised therapy should always be specified in the prescription.

Oral corticosteroids

- ◆ In the absence of significant contraindications, use oral corticosteroids, in conjunction with other therapies, in all people admitted to hospital with a COPD exacerbation.
- ◆ In the absence of significant contraindications, consider oral corticosteroids for people in the community who have an exacerbation with a significant increase in breathlessness that interferes with daily activities.
- ◆ Encourage people who need corticosteroid therapy to present early to get maximum benefits.
- ◆ Prescribe prednisolone 30 mg orally for 7 to 14 days*.
- ◆ It is recommended that a course of corticosteroid treatment should not be longer than 14 days, as there is no advantage in prolonged therapy*.
- ◆ For guidance on stopping oral corticosteroid therapy, it is recommended that clinicians refer to the BNF.
- ◆ Think about osteoporosis prophylaxis for people who need frequent courses of oral corticosteroids.
- ◆ Make people aware of the optimum duration of treatment and the adverse effects of prolonged therapy.
- ◆ Give people (particularly people discharged from hospital) clear instructions on why, when and how to stop their corticosteroid treatment.

Oxygen therapy (exacerbations)

- ◆ See [NICE pathway](#)

Physiotherapy

- ◆ See [NICE pathway](#)

Treatments only delivered in hospital

- ◆ See [NICE pathway](#)

Further resources

[NICE NG56. Multimorbidity: clinical assessment and management](#)

[NICE NG5. Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes](#)

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* Recommendation being reviewed as part of the 2019 update to this guideline.