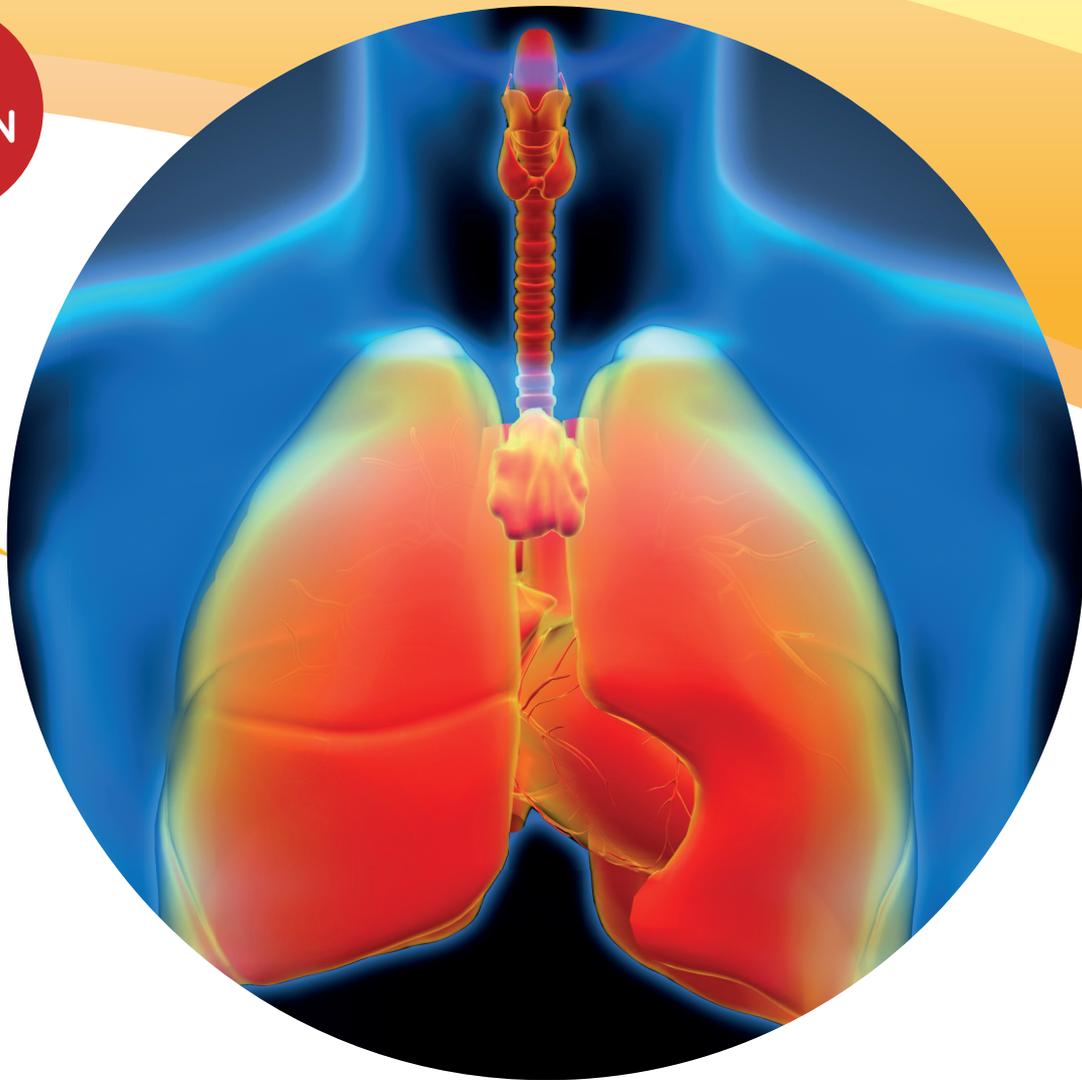


3rd
EDITION



Managing Malnutrition in COPD

A guide to managing disease-related malnutrition, including a pathway for the appropriate use of oral nutritional supplements (ONS) for community healthcare professionals

Produced by a multi-professional consensus panel



www.malnutritionpathway.co.uk

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Introduction

This document is a practical guide to support healthcare professionals in the nutritional management of Chronic Obstructive Pulmonary Disease (COPD) including the identification and management of malnutrition. It was written and agreed by a multi-professional panel with expertise and an interest in malnutrition and COPD and is based on clinical evidence, clinical experience and accepted best practice. It is an updated version of the ‘Managing Malnutrition in COPD’ 2016 and 2020 documents.

The NHS Long Term Plan¹ states the need to make staff on the frontline who are in contact with thousands of patients a year, feel equipped to talk about nutrition in an informed and sensitive way, to optimise health and refer those who require additional help on to those skilled to help. This document aims to assist professionals working with patients with COPD to achieve this.

This document and the resources provide first-line nutritional advice suitable for use across the spectrum of disease. It provides key information on nutrition screening in practice to identify those at risk of malnutrition (undernutrition), tips on further assessment of nutritional status to identify factors that contribute to poor dietary intake and the treatment strategies necessary to optimise nutrition, reverse malnutrition or prevent or slow deterioration in nutritional status, to improve or maintain function, physical health and well-being.

COPD and Malnutrition Overview

Chronic Obstructive Pulmonary Disease (COPD): Facts and Figures

COPD is a progressive lung disease caused by chronic inflammation and damage to the respiratory system. This damage results in restricted airflow causing breathing difficulties. COPD is the second most common lung disease in the UK, after asthma². Around 2% of the whole population – 4.5% of all people aged over 40 – live with diagnosed COPD². It is estimated that 3 million people in the UK have COPD, of whom 2 million are undiagnosed³.

COPD is one of the most costly conditions treated by the NHS, with a total annual direct cost of £1.8 billion and a total overall cost (direct, indirect and intangible costs) of £48.5 billion⁴. It is the second largest cause of emergency admissions (around 130,000 admissions per year)⁵. COPD is primarily managed in community settings and it accounts for around 1.4 million GP consultations per year⁵. The UK has the 12th highest recorded deaths from COPD in the world⁶.

Nutrition in COPD

The nutritional needs of individuals affected by COPD can vary across the spectrum and progression of the disease. In the initial phases of the disease, individuals may be overweight or obese and have poor metabolic health with an increased risk of cardiovascular disease and diabetes. As the disease progresses individuals are at increasing risk of undernutrition.

What do we mean by malnutrition?

Malnutrition can refer to undernutrition (being underweight or losing weight) or over nutrition (being overweight or obese). It is an imbalance of energy, protein and other nutrients that causes adverse effects on the body (shape, size and composition), the way in which it functions and clinical outcomes. Malnutrition can arise when requirements for energy, protein, vitamins and minerals increase⁷. It can also develop when nutritional intake is reduced⁷. Both can occur in tandem in individuals with COPD resulting in poor nutritional status, weight loss and loss of muscle.

Prevalence of Malnutrition in COPD

- Around 1 in 3 inpatients⁸ and 1 in 5 outpatients⁹ with COPD are at risk of malnutrition. Malnutrition may develop gradually over several years or might develop or progress following exacerbations. A recent systemic review and meta-analysis showed global prevalence of malnutrition in those with COPD at 30% and an at-risk prevalence of 50%¹⁰
- Sarcopenia, which is the loss of skeletal muscle mass and strength, is frequently observed in patients with COPD with an overall prevalence of 21.6% (range 8 - 63% according to study setting)¹¹. Sarcopenia can be missed in some due to a high body weight/body mass index (BMI), masking the condition. About 25% of patients with COPD will develop cachexia¹² (loss of lean tissue mass due to chronic illness) which further contributes to a poor quality of life and increased risk of mortality
- Figure 1 outlines the complex aetiology of malnutrition in patients with COPD

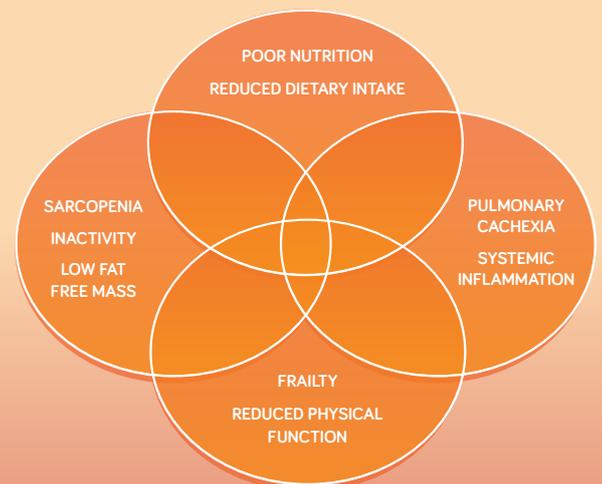


Figure 1: Complex aetiology of malnutrition in COPD¹³.

Why should we seek to identify and treat malnutrition?

- Low BMI and low fat-free mass (low muscle mass) are associated with worse outcomes in people with COPD¹⁴
- The loss of muscle and strength impairs respiratory function, physical function and negatively impacts on health status¹⁵
- The healthcare costs of managing individuals with malnutrition are three to four times greater than that of managing non-malnourished individuals, due to the higher use of healthcare resources¹⁶. In addition malnutrition in this patient group has been found to be a predictor of healthcare use, associated with significantly higher emergency hospitalisation and increased length of hospital admission, up to twice the usual duration^{8,17}
- Dietary advice and nutritional supplementation can promote significant weight gain and achieve significant improvements in respiratory muscle strength and health-related quality of life¹⁸
- Effectively managing malnutrition can bring about significant cost savings^{16,19-22}. Savings of at least £123,530 per 100,000 of the general population could be achieved by managing individuals at risk of malnutrition according to the National Institute for Health and Care Excellence (NICE) guidance²³

Consequences of Malnutrition in COPD²⁴⁻³³



4 steps to managing malnutrition including unintentional weight loss in people with COPD

The process of managing malnutrition in people with COPD can be broken down into four key steps:

- 1 Identification of malnutrition: nutrition screening
- 2 Assessment: identifying the underlying cause of the malnutrition
- 3 Management: identifying treatment goals and optimising nutritional intake
- 4 Monitoring the intervention

1. Identification of malnutrition: nutritional screening

- Identifying and managing malnutrition (in the general population and in individuals with COPD) can improve nutritional status⁷, clinical outcomes³⁴⁻³⁵ and reduce healthcare use^{7,20-21,35}
- As malnutrition can be easily overlooked and develop in those who are overweight or obese, routine nutritional risk screening using a validated screening tool, should be performed in all COPD patients across all settings^{6,36}
- Screening should take place on first contact with a patient and/or upon clinical concern e.g. recent exacerbation, change in social or psychological status. A review should take place at least annually, if unintentional weight loss is reported and more frequently if risk of malnutrition is identified³⁷
- NICE guidelines recommend BMI is calculated in all patients with COPD. It should be noted that BMI alone will not identify all patients who are at risk of malnutrition as a high BMI can mask unintentional weight loss including loss of muscle mass.
- NICE NG115 recommends attention is paid to changes in weight in older people, particularly if the change is more than 3 kg⁶ – such weight changes should however be taken within the context of the individual's original weight as a 3 kg weight loss in a 100 kg individual and a 45 kg individual is very different. Weight change should also be considered in terms of % change from usual weight e.g. 10% unplanned weight loss over 6 months, and in the context of time e.g. rapid daily changes can reflect fluid balance
- The Malnutrition Universal Screening Tool ('MUST')³⁸ is a simple 5 step screening tool that can be used across care settings to identify adults who are at risk of malnutrition: www.bapen.org.uk/pdfs/must/must_full.pdf It combines assessment of BMI, recent unplanned weight loss and presence of acute illness:
 - Unintentional weight loss of 5-10% over 3-6 months indicates risk of malnutrition irrespective of BMI³⁷
 - 'MUST' is a predictor of mortality and readmission in patients with COPD⁸
- Where patients are digitally literate, they can be encouraged to self-screen using the Malnutrition Self-Screening website: www.malnutritionselfscreening.org Results can be reported digitally to the GP surgery

Considerations

- Weight loss may be a sign of other conditions e.g. malignancy. Other conditions should therefore be considered and excluded before assuming the weight loss is COPD related. Nutritional advice can be instigated and should not be delayed whilst further investigations are being pursued
- Care should be taken when interpreting BMI or percentage weight loss if oedema is present. Mid upper arm circumference (MUAC) can be used in the presence of severe oedema, or in the absence of weight measurement, to estimate BMI (MUAC of <23 cm often indicates a BMI <20 kg/m²)³⁹ www.bapen.org.uk/pdfs/must/must_explan.pdf
- Hand grip strength may be used as a surrogate marker for muscle strength⁴⁰
- The physical issues experienced by those living with COPD can limit social activity and result in individuals being housebound. The symptoms and social isolation that ensues can contribute to depression as well as impact on an individual's ability to prepare and eat food
- It should be noted that there can be limitations related to screening of patients with COPD if screening is not regular, as acute exacerbations can lead to a rapid deterioration in nutrition and physical state¹³. Therefore it is important to both screen and assess patients regularly

2. Assessment

For all individuals who are malnourished, or at risk, it is important to carry out an assessment to identify the underlying causes which can help determine the most appropriate nutritional care and the need for further help.

The causes of malnutrition in COPD are multi-factorial and arise as a result of:

- Disease effects e.g. breathlessness, anorexia, inflammation
- Psychological factors e.g. motivation, apathy, depression
- Social factors e.g. social isolation, death of a partner, lack of practical support
- Environmental factors e.g. living conditions, access to shops, limited finances.
- Increased nutritional requirements e.g. energy, protein.
- Medication:
 - inhaled therapy and oxygen therapy causing taste changes, dry mouth
 - frequent or prolonged use of corticosteroids adversely affecting bone density, muscle mass (lean tissue)

Remember: Failing to identify and treat malnutrition can further impair nutritional intake⁴¹ whilst low BMI and particularly low muscle mass (lean tissue) are associated with worse outcomes in people with COPD⁴².

The Importance of Patient Observations

Identifying the causes and symptoms, which are interfering with the ability to eat and drink, and addressing those that can be reversed or modified should be an integral component of the treatment plan. The acronym LEARN⁴³ can aid practitioners in remembering the components that form part of the assessment:

- Look at the individual – what do you see? Have they got muscle wasting, are they thin or frail looking?
- Eating – ask about what they are eating, are they consuming foods from all food groups, missing meals?
- Appetite – ask about appetite, has it changed?
- Relatives – family members can be a source of information and support; do they have any concerns?
- Nutrition – give appropriate nutritional advice, if you are not skilled or confident to do so, seek help.

It should be noted that treatment plans will vary according to patient diagnosis. For example, plans for patients who are at risk of malnutrition and are frail will be different to those who are suffering from sarcopenic obesity. See www.malnutritionpathway.co.uk/sarcopenia for more information.

There are a number of different patient types that might be considered (Table 1 below outlines some of these):

Patient type	Considerations
Frail or severely malnourished / 'MUST' score ≥ 2 and disrupted food intake	This may take 6 months or more of dietary advice and high protein oral nutritional supplements (ONS) combined with resistance activity
Acute exacerbation	Dietary advice plus up to 3 months of high protein ready to drink ONS
Sarcopenic obesity	Focus on high protein diet combined with activity
End of life (weeks left to live)	Nutritional focus to be adjusted to comfort and patient's wishes

Table 1: Patient types and considerations

Dietary advice leaflets providing hints and tips on managing diet-related issues and symptoms interfering with eating and drinking, are available at www.malnutritionpathway.co.uk/leaflets-patients-and-carers Information and advice may also be available from local nutrition and dietetic departments. In some cases referral to relevant specialities may be required.

Table 2 on the following page summarises common factors that can interfere with eating and drinking in those with COPD along with ideas and dietary modifications that may help overcome them:

Examples of problems/symptoms	Considerations	
Early satiety, reduced appetite, feeling full after small amounts www.malnutritionpathway.co.uk/library/reduced_appetite.pdf	Eating nutrient dense/nutritious foods, little and often, e.g. high calorie/energy, high protein foods	Consider if any medications are causing or aggravating symptoms and whether they can be stopped or if a new medication may help. Seek advice from a pharmacist
Dry mouth, sore mouth, fatigue, chewing difficulties www.malnutritionpathway.co.uk/library/dry_mouth.pdf	Soft, easy to chew, moist diet with added sauces. Consider if issues are caused by external factors e.g. poor dentition, oral thrush, and refer as appropriate	
Loss of taste, taste changes www.malnutritionpathway.co.uk/library/loss_of_taste.pdf	Enhance taste with sauces, marinating, trying new foods, adding herbs, spices or zest	
Swallowing issues www.malnutritionpathway.co.uk/library/swallowing_issues.pdf	Consider referral to a Speech and Language Therapist. However, in the meantime, refer to advice on managing dysphagia - www.malnutritionpathway.co.uk/dysphagia.pdf	
Anxiety, depression	Undernourishment can be a cause and/or a consequence of anxiety/depression. Consider referral to other services e.g. talking therapies	

Table 2: Common factors that interfere with eating and drinking

Remember: some factors interfering with eating/drinking may be caused by serious medical problems - careful assessment (history and examination) and further investigations to exclude potential cancers and other conditions should always be considered.

3. Management of malnutrition in COPD

Once an individual with COPD is identified as at risk of malnutrition, they can be managed using the pathway within this document. The principles of the management strategies in the pathway are detailed on the following page. Management of malnutrition should be linked to the level of malnutrition risk (see page 8). Management options can include:

- Dietary advice, assistance with eating, texture modified diets and oral nutritional supplements (ONS) where indicated³⁷
- In most cases malnutrition can be managed using dietary advice to optimise food intake with oral nutritional supplements (ONS) being used when food intake has been demonstrated to be insufficient, or when it is anticipated food alone will not meet nutritional requirements³⁷
- All patients at risk of malnutrition should have a care plan, where applicable this should link to their overall disease management pathway

Consider a *multidisciplinary team approach* to determine the optimal nutritional strategy for the patient. The team may include:

- Occupational Therapist
- Social Prescriber
- Nurse
- Speech & Language Therapist
- Community Pharmacist
- Physiotherapist
- Integrated Care Consultant (Respiratory)
- General Practitioner (GP)
- Practice Pharmacist
- Respiratory Specialist Nurse
- Dietitian

Identifying Treatment Goals

- Agreeing realistic goals with the patient/carer should be an integral component of management. Set goals to assess the effectiveness of intervention, taking into account the stage of the disease e.g. nutritional support for weight maintenance or weight gain
- Goals could include: increase lean body mass, improve nutritional status, improve respiratory function, stabilise weight and retain function. (NB: goals should be patient-centred and realistic and adjusted according to the phase of disease e.g. in palliative care or advanced illness goals may include slowing rate of weight loss)
- **In stable COPD:** amongst those who are malnourished, it may be appropriate to aim for an increase in body weight and muscle mass (lean tissue). A 2 kg increase is suggested as a threshold at which functional improvements are seen^{34, 44-46}. Timescales to achieve weight gain will depend on the individual's condition
- **In acute exacerbations:** nutritional intervention to minimise loss of weight/muscle mass (lean tissue) may be appropriate
- Dietary advice and ONS should be considered for those at risk of malnutrition to ensure further weight loss is prevented and functional measures are improved (e.g. sit to stand and 6-minute walk test)⁴²

There are a number of patient digital interfaces now available (e.g. myCOPD: www.mymhealth.com/mycopd) to assist patients in managing their own care. These may not be suitable for all patients but should be considered for those who are digitally literate.

Pulmonary Rehabilitation is recommended as part of the management of individuals with COPD. Nutrition should be an integral component⁶:

- Consideration should be given to optimising nutritional status during pulmonary rehabilitation especially if a hospital admission or exacerbation resulted in deterioration in nutritional status
- Nutritional interventions in patients with COPD at risk of malnutrition have been demonstrated to improve outcomes of exercise programmes^{6,46-50}
- Nutritional support beyond the treatment of malnutrition, has been demonstrated as a way to maximise response to treatment and to treat or prevent the development of a negative energy balance that has been found to be common in patients with COPD participating in pulmonary rehabilitation¹³
- Nutritional status should be monitored before, during and after pulmonary rehabilitation
- Dietary advice within programmes should be tailored to the individual e.g. for obese patients the goal may be weight reduction with preservation of muscle mass (lean tissue)
- Physiotherapists involved in delivering pulmonary rehabilitation are in an ideal position to discuss nutrition with patients. The Malnutrition Pathway has developed some questions that might be helpful in opening up discussions about dietary intake with patients - www.malnutritionpathway.co.uk/library/weight_diet_conversations.pdf

Optimising nutritional intake - an evidence based approach

Dietitians are skilled to undertake a detailed nutrition assessment and provide individualised dietary counselling and guide decision-making on nutrition support. As nutritional issues are common and affect a high number of individuals with COPD, access to a dietitian may not be immediate. Referral to a dietitian is to be encouraged in those at high risk of malnutrition and where nutritional needs are complex, however other members of the healthcare team can play a crucial role in identifying and alleviating nutritional issues and monitoring nutritional status to prevent unnecessary deterioration and irreversible loss of muscle mass.

The following information aims to provide practical information and guidance to assist healthcare professionals in identifying the issues and offer first-line dietary advice and oral nutrition support to patients in a timely manner.

Oral nutritional support for the treatment and prevention of malnutrition can comprise some or all of the following³⁷:

- fortifying food and fluids with protein, carbohydrate and/or fat, plus minerals and vitamins
- the use of snacks, nourishing drinks and/or oral nutritional supplements in addition to regular meals
- changing meal patterns
- practical measures such as assistance with eating, shopping (physical and financial) and preparation of food
- texture modification

The intervention and goals should be determined through a thorough assessment and an understanding of what is feasible, acceptable and practical to the patient and carers.

When **determining the intervention** it is important to note that the disease itself along with associated treatments (including medications), can cause physiological changes that suppress appetite, reduce the desire to eat, trigger early satiety (a feeling of fullness after a small amount of food), affect taste and alter metabolism which in turn alters body composition (such as muscle mass). These effects may limit the effectiveness of a food-only approach. To minimise loss of muscle and function, evidence suggests²⁶ that the focus for patients with COPD who are at high malnutrition risk ('MUST' score ≥ 2) should be on early introduction of oral nutritional supplements and de-escalation as dietary intake improves. The management for such patients should comprise ready to drink oral nutritional supplements (ONS) combined with dietary advice for 6 months, moving to powdered ONS on improvement and finally transition to food only. The trajectory of the disease also needs to be taken into account (active management or end of life) in order to guide how assertive the intervention should be and manage patient and carer expectations of what can be achieved⁵¹.

Dietary advice to optimise nutritional intake

- Dietary advice in malnourished patients with COPD should ensure that requirements for all essential nutrients i.e. energy, protein, vitamins and minerals, are met or given due consideration³⁷
- Energy and protein requirements are likely to be higher or increased for patients^{25,52-57} who are:
 - at nutritional risk/moderately or severely malnourished
 - acutely unwell/have an infection
 - exercising where accrual of muscle mass is the aim
 (See the Parenteral and Enteral Nutrition Group (PENG) guidelines⁴⁰ for further information)
- Energy requirements for individuals with COPD for weight maintenance can be approximately 30 kcal/kg body weight/day and daily energy requirements in order to elicit weight gain are likely to be considerably higher (45 kcal/kg body weight/day)¹⁵

The Importance of protein

- The amount of protein recommended in those with COPD is estimated as follows:
 - 0.8 - 1.5 g protein/kg of body weight*/day for non-malnourished/not at nutritional risk/stable COPD⁵²
 - up to 1.5 g protein/kg of body weight*/day in acutely unwell (exacerbating) patients where the aim is to meet requirements attenuate further losses^{40,52,54}
 - where the goal is to gain or retain lean mass, in conjunction with exercise (e.g. pulmonary rehabilitation) and/or in malnourished outpatients where weight gain is the goal, up to 1.5 g protein/kg of body weight*/day may be required⁵⁸ (*in obese or overweight patients protein requirements should be calculated on ideal body weight)
 - in the absence of being able to translate the above requirements into amounts of protein required by an individual, patients should be encouraged to eat 3-4 portions of high protein foods per day
 - for further information and ideas on protein see www.malnutritionpathway.co.uk/proteinfoods

- Patients with COPD who require frequent steroid therapy, are inactive and/or have little exposure to sunlight (e.g. are housebound) are at high risk of osteoporosis⁵⁹. Attention should be given to addressing requirements for Vitamin D and calcium including the need for supplementation^{37,49,60}

- Dietary advice should be an integral part of COPD management across the continuum of care⁶. As nutritional needs may vary over time this core document is supported by a range of patient advice leaflets (red, yellow, green) which have been designed to help provide practical nutritional advice to patients according to nutritional status, nutritional (malnutrition) risk and disease status - www.malnutritionpathway.co.uk/copd

- Individuals with COPD may have concerns which affect the acceptability of dietary advice⁶¹ e.g. reservations about weight gain. Patient-centred discussions should be undertaken to discuss the potential benefit of nutritional interventions e.g. to maintain lung strength, overcome infection, improve ability to perform activities of daily living
- Consideration should be given to the patient/carer's ability to act on the dietary advice given, with regular monitoring built into clinical reviews
- Dietary advice forms an important component of the management pathway⁶²⁻⁶³, and should be used alongside ONS where indicated, i.e., where BMI is low ($<20 \text{ kg/m}^2$) or in high-risk individuals (unintentional weight loss $>10\%$ over 3-6 months)^{6,37}

Oral nutritional supplements (ONS) to optimise nutritional intake

NICE Guidance (NG115⁶ and CG32³⁷):

NICE COPD guideline (NG115) recommends ONS are provided for individuals with COPD with a low BMI (<20 kg/m²)⁶. Further information on oral nutrition support is available in NICE CG32³⁷.

Global Initiative for Chronic Obstructive Lung Disease (GOLD) report⁴²

For malnourished patients with COPD nutritional supplementation is recommended. This recommendation is based on systematic reviews confirming the positive effects on body mass, fat mass and fat-free mass of supplementation when provided alone and as an adjunct to exercise training.

- Evidence from systematic reviews show that ONS in addition to diet in COPD can:
 - Significantly improve hand grip strength^{44,46}
 - Enhance exercise performance⁴⁶
 - Significantly improve weight^{18,42,44}
 - Significantly improve respiratory muscle strength^{18,42}
 - Significantly improve patients' nutritional intake⁴⁴
 - Improve quality of life^{18,42,46}
- ONS increase total nutrient intakes (energy, protein and micronutrients) without affecting dietary intake⁶⁴
- Higher energy ONS (≥2 kcal/ml)⁶⁴ or low volume, high energy ONS (125 ml) may aid compliance and be easier to manage for individuals with early satiety and/or breathlessness
- Increased requirements for protein⁵⁸ and other nutrients in COPD may require a high protein, high energy, low volume ONS
- Low volume, energy dense ONS to be taken in small, frequent doses⁶⁵ e.g. between meals (frequent small amounts of ONS may avoid postprandial dyspnoea and satiety and improve compliance⁶⁵)
- Clinical benefits of ONS are often seen with 300-900 kcal/day (average 2 bottles), typically within 2-3 months of supplementation^{44,66-67}
- The exact choice of ONS should be based on a detailed nutritional assessment and patient preferences¹⁸, and be in line with the recommendation to achieve an additional intake in the region of ~600 kcal/day^{44,66-67}

Commencing ONS:

- Establish preferred flavours, likes and dislikes e.g. milk or juice, sweet or savoury.
- Test preferences and compliance with a 'starter pack' which offers a range of products/flavours and may be available free of charge from manufacturers
- Always issue ONS with clear instructions (e.g. one to be taken twice a day between meals for 12 weeks until review) to support adherence and discuss and manage expected impact and outcomes
- Add a prompt on repeat prescriptions to review the on-going need for ONS and evaluate compliance. If there is poor compliance to ONS, explore reasons and refer to a Dietitian or other healthcare professional if appropriate
- Based on a comprehensive nutritional assessment, a Dietitian may request a specific product for a patient. Should there be a reason or desire to amend the prescription e.g. it is not included in the local formulary, the rationale for the specific product recommended should be sought as multiple factors are likely to have guided decision-making regarding the most suitable ONS

Types of ONS most suited to patients with COPD

- There are a wide range of ONS styles (milk, juice, yogurt, savoury), formats (liquid, powder, pudding, pre-thickened), types, energy densities (1-2.4kcal/mL) and flavours available to suit a wide range of needs and individual preferences. Check for local guidance and see www.malnutritionpathway.co.uk/library/ons.pdf for more detail on products and indication for prescribing
- Standard ONS provide ~300kcal, 12g of protein and a full range of vitamins and minerals per serving⁶⁸. The majority of people requiring ONS can be managed using the most commonly used standard ONS (1.5-2.4kcal/mL)
- Low volume products may aid compliance^{63,69} and help patients reach protein and energy targets – NB: other favourite fluids can be encouraged as needed to maintain hydration
- High protein ONS may be needed to meet high protein requirements (>1.2 g / kg ideal body weight), address the shortfall in dietary protein intake and replete lost muscle. Low volume, high protein ONS are available

In addition to ready-to-use ONS, a number of powdered nutritional supplements are available on prescription (and for self-purchase) and can be useful in addition to the diet. Clinical, practical and social issues, that may affect adherence, should be considered when deciding on the most appropriate product; such considerations may include taking into account dietary intolerances (e.g. lactose), the presence of diabetes (e.g. medication may need to be adjusted) and renal function, cost and affordability, palatability, and the ability of the individual to buy milk and make up a powdered product. Before recommending powdered ONS to patients consider the following⁷⁰:

- Clinical appropriateness e.g. nutritional content, volume
- Does the patient or carer have the physical ability to make up powdered ONS as directed on the package and to ensure safe handling practice?
- Does the patient have access to both a fridge and fresh milk and have adequate storage for milk and boxes of powder?

If there is concern with points i - iii, a ready-to-use ONS may be more appropriate. The above considerations will also apply to self-purchase powdered ONS which are available in supermarkets, pharmacies and online.

Further points to consider:

- Acute and chronic disease may adversely affect appetite and the ability to consume, source and prepare meals and drinks. Dietary advice and the use of ONS can only be effective if it is feasible, acceptable and acted on by the patient or carer. Frequent patient communication is required to assess and reset goals
- If ONS have been initiated in hospital but the patient was not reviewed by a Dietitian and no follow-on advice is provided, it is suggested that the patient is reassessed following the management pathway (page 8)

NOTE: Due to heterogeneity in the studies evaluating oral nutrition support, the dose and duration of ONS remains unclear and hence in clinical practice this should be determined on an individual basis.

Identifying Malnutrition according to Risk Category Using 'MUST' ^{*38} - First Line Management Pathway

BMI score >20 kg/m ² Score 0 18.5 - 20 kg/m ² Score 1 <18.5 kg/m ² Score 2	Weight loss score Unplanned weight loss score in past 3-6 months <5% Score 0 5 - 10% Score 1 >10% Score 2	Acute disease effect score <i>(unlikely to apply outside hospital)</i> If patient is acutely ill and there has been, or is likely to be, no nutritional intake for more than 5 days Score 2
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Total score 0 - 6

- Explore and, where possible, address factors contributing to underlying cause of malnutrition
- Consideration should be given to optimising nutritional status during pulmonary rehabilitation especially if a hospital admission or exacerbation has resulted in deterioration in nutritional status
- Identify treatment goals

Low risk - score 0 Routine clinical care

- Provide green leaflet: 'Eating Well for your Lungs' to raise awareness of the importance of a healthy diet
- If BMI >30 kg/m² (obese) treat according to local guidelines
- Consider if patient would benefit from dietary advice and dietary counselling to improve health and well being
- (NB: weight reduction needs to be balanced against potential risk of losing muscle)
- Review / re-screen annually

Medium risk - score 1 Observe

- Dietary advice to maximise nutritional intake. Encourage small frequent meals and snacks, with a focus on nourishing food and fluids⁵²
 - Provide yellow leaflet: 'Improving Your Nutrition in COPD' to support dietary advice
- NICE recommends⁵ COPD patients with a BMI <20 kg/m² should be:
- prescribed oral nutritional supplements (ONS). See ONS pathway, page 9
 - encouraged to exercise to augment the effects of nutritional supplementation
- Review progress** after 1-3 months:
- if improving continue until 'low risk'
 - if deteriorating, consider treating as 'high risk'

High risk - score 2 or more Treat**

- Dietary advice to maximise nutritional intake. Encourage small frequent meals and snacks, with high energy and protein food and fluids⁵²
- Provide red leaflet: 'Nutrition Support in COPD' to support dietary advice
- Prescribe oral nutritional supplements (ONS) and monitor. See ONS pathway, page 9. (Consider local formularies)
- Review progress according to ONS pathway, page 9
- On improvement, consider managing as 'medium risk'
- Consider referral to a Dietitian for dietary counselling at the earliest opportunity especially for complex cases

*The 'Malnutrition Universal Screening Tool' ('MUST') is reproduced here with the kind permission of BAPEN (British Association for Parenteral and Enteral Nutrition). For more information and supporting materials see <http://www.bapen.org.uk/musttoolkit.html>

**Treat, unless detrimental or no benefit is expected from nutritional support e.g. imminent death.

Consider factors contributing to malnutrition/poor nutritional intake and whether they can be treated or managed:

- Shortness of breath • Dry Mouth • Taste changes • Nausea • Early satiety • Poor appetite • Fatigue • Anorexia • Polypharmacy

See relevant patient and carer leaflets for advice: www.malnutritionpathway.co.uk/copd

The following questions can assist in obtaining information to inform a clinical impression of malnutrition risk and determine the most appropriate intervention:

1. How is your appetite lately? How are you managing with your eating and drinking?
2. How would you describe your weight? What is a usual weight for you?
3. Do you feel like your weight has changed in the last few weeks or months?
4. How are your clothes and jewellery fitting? Do you feel they fit differently to usual?

Estimated risk of malnutrition

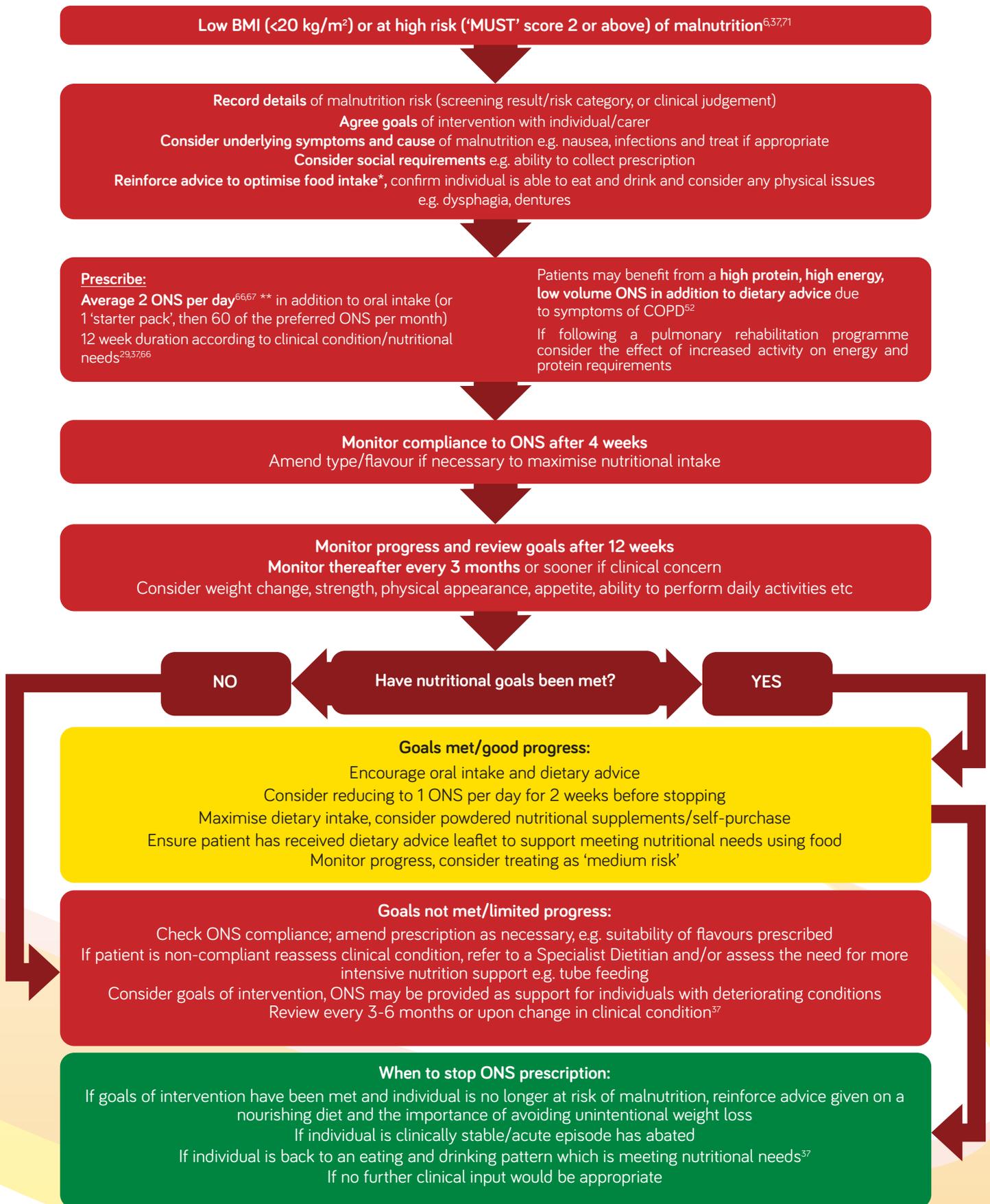
Indicators

Unlikely to be at-risk (low)	Not thin, weight is stable or increasing, no unplanned weight loss, no reduction in appetite or intake
Possibly at-risk (medium)	Thin as a result of COPD or other condition, or unplanned weight loss in past 3-6 months, reduced appetite or ability to eat
Likely to be at risk (high)	Thin or very thin and/or significant unplanned weight loss in previous 3-6 months, reduced appetite or ability to eat and/or reduced dietary intake

For all individuals

- Discuss when to seek help e.g. ongoing weight loss, changes to body shape, strength or appetite
- Refer to other healthcare professionals if additional support is required (e.g. dietitian, physiotherapist, GP)

Pathway for Using Oral Nutritional Supplements (ONS) in the Management of Malnutrition in COPD



Hydration

In all patients, care should be taken to ensure advice on adequate hydration is given including alongside exercise. Keeping hydrated can keep secretions thin and less sticky to facilitate chest clearance⁷² and prevent a dry mouth when using nebulisers and steroid-based inhalers.

Monitoring the intervention

- Monitor progress against goals and modify intervention appropriately - follow guidance in the management pathway on page 9 (or in line with your local pathway)
- Frequency of monitoring depends on the risk category and intervention - further information on nutritional monitoring can be found in the NICE Guideline CG32³⁷
- Consider introducing protocols to assist in helping to save clinician time in re-assessment and that enable patients to submit their weights via the GP system (e.g. AccurX) with alerts generated according to whether goals are met or not met
- Consider monitoring weight change, hand-grip strength, sit to stand, walking tests, along with observations including ability to perform activities of daily living, physical appearance, appetite and disease progression
 - Further information on the sit to stand test, four stage balance test and timed up and go test is available from www.cdc.gov/steady/materials.html under the functional assessments section
 - Instructions on administering a two-minute walk endurance test and a four-meter walk gait speed test can be found at: www.nihtoolbox.org/test/2-minute-walk-endurance-test
- Consideration should be given to issues which may impact on food intake and the practicalities of dietary advice, such as access to food, reduced mobility and breathlessness e.g. mMRC ≥ 2
- Smoking cessation is not only important to preserve lung function, but also supports the management of malnutrition as it can increase appetite and support weight gain^{52,73}. Patients may also find their sense of smell and taste are enhanced if smoking is stopped, making food more pleasurable

Discontinuing ONS

After the initial prescription, the need for ONS should be reviewed. Discontinue ONS when adequate oral intake is established, goals/targets are achieved and the individual is no longer at risk of malnutrition³⁷. Continue to monitor/make regular assessment of progress to check individual remains stable especially during and after exacerbations.

Summary – top tips for practice

1. All patients with COPD should be regularly screened for malnutrition using a validated screening tool. Where possible regular self-screening should be encouraged.
2. In those who are malnourished or at risk of malnutrition, it is crucial to carry out a further assessment to identify underlying factors contributing to the malnutrition that can be addressed or need to be taken into consideration e.g. the disease itself, medications, psychological, social and environmental factors, physical ability to source and prepare food and changes in appetite.
3. Identifying treatment goals to determine the effectiveness of intervention according to disease status is also important. Consider the role of nutritional intervention alongside a pulmonary rehabilitation programme. Give appropriate nutritional intervention advice including a protein rich diet and oral nutritional supplementation – the latter when it is anticipated or proven that diet alone is insufficient to meet requirements.
4. Incorporate frequent assessments to monitor the effectiveness of the intervention and trigger adjustments or onward referral to specialist services e.g. registered dietitians, a nutrition support team.

Consensus Panel

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Putting the Guidance into Practice

Managing Malnutrition in COPD patient materials

The red, yellow and green leaflets for patients mentioned throughout this document are available free to download from www.malnutritionpathway.co.uk/copd Leaflets focusing on breathless, swallowing difficulties, taste changes and loss of appetite as well as a leaflet on the importance of eating enough protein with tips on incorporating protein into the diet can also be accessed at: www.malnutritionpathway.co.uk/leaflets-patients-and-carers

Information on a best practice example of local implementation of the Managing Malnutrition in COPD pathway can be found under Great Western Hospitals NHS Foundation Trust at www.malnutritionpathway.co.uk/best-practice-awards-winners



Other Helpful Resources

The **Malnutrition Pathway website** includes a number of free guidelines, fact sheets, patient materials, videos and podcasts focusing on the identification and management of malnutrition in the community: www.malnutritionpathway.co.uk

Further nutritional information is available focusing on:

Dysphagia: www.malnutritionpathway.co.uk/dysphagia.pdf Falls: www.malnutritionpathway.co.uk/falls.pdf

Sarcopenia: www.malnutritionpathway.co.uk/sarcopenia Cancer: www.malnutritionpathway.co.uk/cancer

There is a microsite to support members of the Primary Care Network (PCN) team to understand their role in identifying malnutrition and the appropriate action to take to treat or prevent it, in line with NICE guidance:

www.malnutritionpathway.co.uk/pcn/pcn_pathways.html

BAPEN: British Association for Parenteral and Enteral Nutrition: www.bapen.org.uk

Key documents and reports: 'MUST' toolkit, including 'MUST', explanatory booklet, e-learning and 'MUST' calculator

NICE: National Institute for Health and Care Excellence: www.nice.org.uk

NICE CG32: Nutrition Support in Adults NICE QS24: Nutrition Support in Adults

NICE NG115: Chronic Obstructive Pulmonary Disease in over 16s: Diagnosis and Management

BDA: British Dietetic Association www.bda.uk.com Fact sheet and key documents

CARERS UK: Useful nutrition leaflets and resources:

www.carersuk.org

ASTHMA + LUNG UK: Health information about living with COPD:

www.asthmaandlung.org.uk/conditions/copd-chronic-obstructive-pulmonary-disease

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