Managing Malnutrition in COPD

Including a pathway for the appropriate use of ONS to support community healthcare professionals

www.malnutritionpathway.co.uk/copd/
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Managing Adult Malnutrition in the Community panel
Experts involved in the development of ‘Managing Adult Malnutrition in the Community’ have also been consulted on this document.
Introduction

This document is a practical guide to support healthcare professionals in the dietary management of Chronic Obstructive Pulmonary Disease (COPD) including the identification and management of malnutrition. For further information on identifying and managing disease related malnutrition please see ‘Managing Adult Malnutrition in the Community’1 (www.malnutritionpathway.co.uk).

This document was written and agreed by a multi-professional panel with expertise and an interest in malnutrition and COPD. It is based on clinical evidence, clinical experience and accepted best practice. It is an updated version of the Respiratory Healthcare Professionals Nutritional Guidelines for COPD Patients which was developed in 2011. As COPD is caused by chronic damage to the respiratory system the information in this document is aimed at adults and not children.

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. Around 900,000 people are diagnosed with COPD in the UK, although it is understood that more than 3 million individuals live with the disease2,3. COPD is one of the most costly conditions treated by the NHS, with a total annual cost of over £800 million (direct healthcare costs)4, being the second largest cause of emergency admissions (around 130,000 admissions per year)5. COPD is primarily managed in the community setting and accounts for around 1.4 million GP consultations per year5.

Malnutrition

Malnutrition can refer to under nutrition (being underweight or losing weight) or over nutrition (being overweight or obese). This document focuses primarily on the issue of under nutrition (being underweight or losing weight) in COPD.

Malnutrition 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 is frequently associated with increased requirements for energy and protein. It is also linked to a decreased nutritional intake,6 and weight loss6. Effectively managing malnutrition can bring about significant cost savings1,7-10. Savings of over £119,000 per 100,000 of the general population could be achieved by managing individuals at risk of malnutrition according to the guidance in the National Institute of Health and Care Excellence (NICE) Quality Standards10.

Prevalence of Malnutrition in COPD

Using the Malnutrition Universal Screening Tool (‘MUST’) to identify risk, it has been estimated that around 21% of individuals with COPD (up to 630,000 people in the UK) are at risk of malnutrition11. Malnutrition may develop gradually over several years or might develop or progress following exacerbations.
Causes and Consequences of Malnutrition in COPD

The causes of malnutrition in COPD patients are varied and the consequences are likely to affect nutritional intake\(^\text{12}\). The consequences of malnutrition in COPD are significant and associated with increased healthcare costs\(^\text{13}\).

<table>
<thead>
<tr>
<th>Causes of malnutrition in COPD</th>
<th>Consequences of malnutrition in COPD(^\text{13-14,16-21})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease effects e.g. breathlessness, anorexia</td>
<td>Increased mortality</td>
</tr>
<tr>
<td>Psychological factors e.g. motivation, apathy, depression</td>
<td>Increased healthcare costs</td>
</tr>
<tr>
<td>Social factors e.g. social isolation, death of a partner</td>
<td>Longer hospital stays</td>
</tr>
<tr>
<td>Environmental factors e.g. living conditions</td>
<td>More frequent readmissions</td>
</tr>
<tr>
<td>Increased nutritional requirements e.g. energy, protein</td>
<td>Reduced muscle strength</td>
</tr>
<tr>
<td>Effects of medication e.g. taste changes</td>
<td>Reduced respiratory muscle function</td>
</tr>
</tbody>
</table>

Identification of Malnutrition - Nutritional Screening

- Identifying and managing malnutrition (in the general population and in individuals with COPD) can improve nutritional status\(^\text{6}\), clinical outcomes\(^\text{22-23}\) and reduce healthcare use\(^\text{6-8,23}\).
- Routine nutritional risk screening with a validated screening tool should be performed in all COPD patients across settings\(^\text{24}\).
- NICE guidelines recommend BMI is calculated in all patients with COPD\(^\text{25}\).
- 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 and more frequently if risk of malnutrition is identified\(^\text{24}\).
- ‘MUST’ is a simple 5 step screening tool that can be used across care settings to identify adults who are at risk of malnutrition (see Appendix I). It combines assessment of BMI, recent weight loss and presence of acute illness.
- Unintentional weight loss of 5 – 10 % over 3 – 6 months indicates risk of malnutrition irrespective of BMI\(^\text{26}\).

Considerations

- Weight loss may be a sign of other conditions, e.g. malignancy. These conditions should be excluded before it is assumed that weight loss is COPD related.
- 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 <23cm often indicates a BMI <20kg/m\(^2\))\(^\text{27}\). See the ‘MUST’ Report for further information on alternative measurements, adjusting for oedema\(^\text{26}\) and taking accurate weight and height measurements at www.bapen.org.uk/pdfs/must/must_explan.pdf.
Managing Malnutrition in COPD

Once identified as at risk of malnutrition, individuals with COPD can be managed using the pathway within this document. The principles of the management strategies in the pathway are detailed below:

- Management of malnutrition should be linked to the risk category (low, medium or high risk)

**For all individuals:**
- ☑ record risk
- ☑ agree goals of intervention
- ☑ monitor

### Goal setting - Agree goals of intervention with individual/carer

- Set goals to assess the effectiveness of intervention, taking into account the disease stage and prognosis
- Goals could include: increase lean body mass, improve nutritional status e.g. minimise weight loss and loss of function (e.g. in palliative care or advanced illness)
- **Stable COPD:** it may be appropriate to aim for an increase in body weight and fat-free mass. Amongst those who are malnourished a 2 kg increase is suggested as a threshold at which functional improvements are seen, timescales will depend on the individual’s condition
- **Acute Exacerbations:** minimising the loss of weight and fat free mass through nutritional intervention may be an appropriate goal
- **Pulmonary Rehabilitation:** is recommended as part of the management of individuals with COPD, and nutrition should be incorporated as part of the intervention. Nutritional intervention is likely to support the effectiveness of exercise programmes in malnourished COPD patients. Consideration should be given to optimising nutritional status during pulmonary rehabilitation as energy requirements may increase with increased physical activity. Dietary advice and oral nutritional supplements should be considered for those at risk of malnutrition to ensure further weight loss is prevented

### Management of malnutrition

- Follow guidance in the management pathway on page 6. This includes different strategies depending on the malnutrition risk category
- Management options can include: dietary advice, assistance with eating, texture modified diets and oral nutritional supplements (ONS) where indicated
- Dietary advice should aim to increase intake of all nutrients including energy, protein and micronutrients (vitamins and minerals)
- Consideration should be given to issues which may impact on food intake and the practicalities of dietary advice, such as mobility and access to food, particularly in patients on home oxygen therapy
- Smoking cessation is an important strategy to support the management of malnutrition and may increase appetite and support weight gain. Patients may also find their senses of smell and taste are enhanced if smoking is stopped; making food more pleasurable

### Monitoring progress

- Monitor progress against goals and modify intervention appropriately
- Consider weight change, strength e.g. ability to perform activities of daily living, physical appearance, appetite and disease progression
- Frequency of monitoring depends on the risk category and intervention
- Further information on nutritional monitoring can be found in the NICE Guidelines CG32.
Identifying Malnutrition According to Risk Category Using ‘MUST’\textsuperscript{*}\textsuperscript{26} - First Line Management Pathway

<table>
<thead>
<tr>
<th>BMI score</th>
<th>Weight loss score</th>
<th>Acute disease effect score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;20kg/m\textsuperscript{2}</td>
<td>Score 0</td>
<td>Unplanned weight loss score in past 3-6 months</td>
</tr>
<tr>
<td>18.5 – 20kg/m\textsuperscript{2}</td>
<td>Score 1</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>&lt;18.5kg/m\textsuperscript{2}</td>
<td>Score 2</td>
<td>5 – 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;10%</td>
</tr>
</tbody>
</table>

**Total score 0-6**

<table>
<thead>
<tr>
<th>Low risk - score 0</th>
<th>Medium risk - score 1</th>
<th>High risk - score 2 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine clinical care</td>
<td>Observe</td>
<td>Treat**</td>
</tr>
</tbody>
</table>

- **Provide green leaflet:** ‘Eating Well for your Lungs’ to raise awareness of the importance of a healthy diet
- **If BMI >30 (obese) treat according to local guidelines**
- **Review / re-screen annually.**

- **Dietary advice** to maximise nutritional intake. Encourage small frequent meals and snacks, with high energy and protein food and fluids\textsuperscript{34}
- **Provide yellow leaflet:** ‘Improving Your Nutrition in COPD’ to support dietary advice

NICE recommends COPD patients with a BMI <20kg/m\textsuperscript{2} should be prescribed oral nutritional supplements (ONS)\textsuperscript{25}.

See ONS pathway, page 7

- **Review progress** after 1-3 months: - if improving continue until ‘low risk’ - if deteriorating, consider treating as ‘high risk’.

**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.**

The following indicators can be used collectively to estimate risk of malnutrition in the absence of height and weight (measured or recalled)\textsuperscript{26}:

- Thin or very thin in appearance, or loose fitting clothes / jewellery
- History of recent unplanned weight loss
- Changes in appetite, need for assistance with feeding or swallowing difficulties affecting ability to eat and drink
- A reduction in current dietary intake compared to ‘normal’

<table>
<thead>
<tr>
<th>Estimated risk of malnutrition</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlikely to be at-risk (low)</td>
<td>Not thin, weight is stable or increasing, no unplanned weight loss, no reduction in appetite or intake</td>
</tr>
<tr>
<td>Possibly at-risk (medium)</td>
<td>Thin as a result of COPD or other condition, or unplanned weight loss in past 3-6 months, reduced appetite or ability to eat</td>
</tr>
<tr>
<td>Likely to be at risk (high)</td>
<td>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</td>
</tr>
</tbody>
</table>

For all individuals

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

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

**Low BMI (<20kg/m²) or at high risk of malnutrition**

- Record details of malnutrition risk (screening result/risk category, or clinical judgement)
- Agree goals of intervention with individual/carer
- Consider underlying symptoms and cause of malnutrition e.g. nausea, infections and treat if appropriate
- Consider social requirements e.g. ability to collect prescription
- Reinforce advice to optimise food intake*, confirm individual is able to eat and drink and consider any physical issues e.g. dysphagia, dentures

**Prescribe:**
- 2 ONS per day (range 1-3)** in addition to oral intake (or 1 ‘starter pack’, then 60 of the preferred ONS per month)
- 12 week duration according to clinical condition/nutritional needs

Patients may benefit from a low volume, high energy/high protein ONS in addition to dietary advice due to symptoms of COPD

If following a pulmonary rehabilitation programme consider increased energy and protein requirements

**Monitor compliance to ONS after 6 weeks**
- Amend type/flavour if necessary to maximise nutritional intake

**Monitor progress and review goals after 12 weeks**
- Monitor every 3 months or sooner if clinical concern
- Consider weight change, strength, physical appearance, appetite, ability to perform daily activities etc

Have nutritional goals been met?

<table>
<thead>
<tr>
<th>YES</th>
<th>GOALS MET/GOOD PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Encourage oral intake and dietary advice</td>
</tr>
<tr>
<td></td>
<td>Consider reducing to 1 ONS per day for 2 weeks before stopping</td>
</tr>
<tr>
<td></td>
<td>Maximise nutritional intake, consider powdered nutritional supplements to be made up with water or milk</td>
</tr>
<tr>
<td></td>
<td>Ensure patient has received dietary advice leaflet to support meeting nutritional needs using food</td>
</tr>
<tr>
<td></td>
<td>Monitor progress, consider treating as ‘medium risk’</td>
</tr>
</tbody>
</table>

No improvement, seek advice from a Dietitian

<table>
<thead>
<tr>
<th>NO</th>
<th>GOALS NOT MET/LIMITED PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Check ONS compliance; amend prescription as necessary, e.g. increase of ONS</td>
</tr>
<tr>
<td></td>
<td>Review every 3-6 months or upon change in clinical condition</td>
</tr>
<tr>
<td></td>
<td>Reassess clinical condition, consider more intensive nutrition support or seek advice from a Dietitian</td>
</tr>
<tr>
<td></td>
<td>Consider goals of intervention, ONS may be provided as support for individuals with deteriorating conditions</td>
</tr>
</tbody>
</table>

When to stop ONS prescription:
- If goals of intervention have been met and individual is no longer at risk of malnutrition
- If individual is clinically stable/acute episode has abated
- If individual is back to an eating and drinking pattern which is meeting nutritional needs

When to stop ONS prescription:
- If no further clinical input would be appropriate

**ONS – oral nutritional supplements / sip feeds / nutrition drinks as per BNF section 9.4.2**

* ‘Your Guide to Making the Most of Your Food’ is available from www.malnutritionpathway.co.uk

**Some individuals may require more than 3 ONS per day – seek dietetic advice

**NOTE:** ONS requirement will vary depending on nutritional requirements, patient condition and ability to consume adequate nutrients, ONS dose and duration should be considered
Optimising Nutritional Intake - An Evidence Based Approach to Managing Malnutrition

NICE Guidance (CG32$^{24}$ and CG101$^{25}$):

NICE COPD guidelines (CG101) recommend ONS are provided for individuals with COPD with a low BMI (<20kg/m$^2$) $^{25}$. NICE CG32 recommends considering oral nutrition support to improve nutritional intake for people who can swallow safely and are malnourished or at risk of malnutrition (recommendation based on A-grade evidence$^{24}$).

Dietary advice to optimise nutritional intake

- Dietary advice should be used with care, as it may supplement energy and/or protein without providing adequate additional micronutrients and minerals$^{24}$
- Dietary advice forms an important component of the management pathway, and should be used alongside ONS where indicated, i.e. where BMI is low (<20kg/m$^2$) or in high risk individuals
- Leaflets are available (red, yellow and green leaflets to be used according to risk category) to provide practical dietary advice
- Individuals with COPD may also have concerns which affect the acceptability of dietary advice$^{40}$ e.g. reservations about weight gain. Clear communication of the goals of nutritional interventions is important e.g. to preserve or improve lean body mass, maintain lung strength, overcome infection, improve ability to perform activities of daily living etc.
- Consideration should be given to the practicalities of implementing dietary advice strategies in all individuals

Oral nutritional supplements (ONS) to optimise nutritional intake

- Evidence from systematic reviews show ONS in COPD can:
  - Significantly improve hand grip strength$^{28,30}$
  - Significantly improve respiratory muscle strength$^{15}$
  - Significantly improve exercise performance$^{30}$
  - Significantly improve patients’ nutritional intake$^{28}$
  - Significantly improve weight$^{15,28}$
  - Improve quality of life$^{15,30}$

- ONS increase energy and protein without affecting dietary intake$^{41}$
- Higher energy ONS (≥2kcal/ml) or low volume high energy ONS may aid compliance$^{41}$ and be easier to manage for individuals with early satiety and/or breathlessness
- Increased requirements for protein$^{42}$ and other nutrients in COPD may be managed with a low volume, high energy/high protein ONS
- Maximise oral intake by recommending low volume, energy dense ONS to be taken in small, frequent doses$^{43}$ e.g. between meals
- Clinical benefits of ONS are often seen with 300-900kcal/day (1-3 bottles), typically within 2-3 months of supplementation$^{37,38}$
## Useful Information

**Managing Malnutrition in COPD patient materials** ([www.malnutritionpathway.co.uk/copd](http://www.malnutritionpathway.co.uk/copd))
- The red, yellow and green leaflets for patients mentioned throughout this document are available free to download from this website.

**Managing Adult Malnutrition in the Community** ([www.malnutritionpathway.co.uk](http://www.malnutritionpathway.co.uk))
- Guidelines and resources to support the management of adult malnutrition in the community.

**BAPEN**
- **British Association for Parenteral and Enteral Nutrition** ([www.bapen.org.uk](http://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](http://www.nice.org.uk))
  - NICE CG32: Nutrition Support in Adults
  - NICE CG101 Chronic Obstructive Pulmonary Disease in over 16s: Diagnosis and Management.

**BDA**
- **British Dietetic Association** ([www.bda.uk.com](http://www.bda.uk.com))
  - Fact sheet and key documents.

**Carers UK** ([www.carers.org.uk](http://www.carers.org.uk))
- Useful nutrition leaflets and resources.

**BLF**
- **British Lung Foundation** ([www.blf.org.uk/COPD](http://www.blf.org.uk/COPD))
  - Health information about living with COPD.
Managing Malnutrition in COPD

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Appendix I: ‘Malnutrition Universal Screening Tool’ (‘MUST’) Flowchart

1. **Step 1**
   - BMI score
   - Score
   - BMI kg/m²
   - >20 (>30 Obese) = 0
   - 18.5 - 20 = 1
   - <18.5 = 2

2. **Step 2**
   - Weight loss score
   - Unplanned weight loss in past 3-6 months
   - %
   - Score
   - <5 = 0
   - 5 - 10 = 1
   - >10 = 2

3. **Step 3**
   - Acute disease effect score
   - If patient is acutely ill and there has been or is likely to be no nutritional intake for >5 days
   - Score 2

4. **Step 4**
   - Overall risk of malnutrition
   - Add scores together to calculate overall risk of malnutrition
   - Score:
   - 0 Low Risk
   - 1 Medium Risk
   - 2 or more High Risk

5. **Step 5**
   - Management guidelines

   **0 Low Risk**
   - Routine clinical care
   - Repeat screening
   - Hospital – weekly
   - Care Homes – monthly
   - Community – annually for special groups (e.g., those >75 yrs)

   **1 Medium Risk**
   - Observe
   - Document dietary intake for 3 days
   - If adequate – little concern and repeat screening
   - Hospital – weekly
   - Care Home – at least monthly
   - Community – at least every 2-3 months
   - If inadequate – clinical concern – follow local policy, set goals, improve and increase overall nutritional intake, monitor and review care plan regularly

   **2 or more High Risk**
   - Treat*
   - Refer to dietitian, Nutritional Support Team or implement local policy
   - Set goals, improve and increase overall nutritional intake
   - Monitor and review care plan
   - Hospital – weekly
   - Care Home – monthly
   - Community – monthly
   - *Unless detrimental or no benefit is expected from nutritional support e.g., imminent death.

   All risk categories:
   - Treat underlying condition and provide help and advice on food choices, eating and drinking when necessary.
   - Record malnutrition risk category.
   - Record need for special diets and follow local policy.

   Obesity:
   - Record presence of obesity. For those with underlying conditions, these are generally controlled before the treatment of obesity.

Re-assess subjects identified at risk as they move through care settings

See The ‘MUST’ Explanatory Booklet for further details and The ‘MUST’ Report for supporting evidence.

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References

25. Schols AM et al., Weight loss is a reversible factor in the prognosis of chronic obstructive pulmonary disease. Am J Respir Crit Care Med 1998; 157;1791-1797
27. Sugawara K et al., Effects of nutritional supplementation combined with low-intensity exercise in malnourished patients with COPD. Respir Med. 2010 Dec;104(12):1883-9
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Costs of production of this document were met by an unrestricted educational grant from Nutricia Advanced Medical Nutrition (www.nutricia.co.uk)