Enabling good nutritional care for patients with COPD

Jaqui Walker

Nutrition is an important modifiable factor for patients with chronic obstructive pulmonary disease (COPD). Being overweight brings breathing difficulties and being malnourished leads to poorer outcomes. Maintaining a healthy weight and a nutritious diet is a central part of COPD management. This article equips community nurses and patients with the tools needed to assess and promote a healthy weight and diet while living with COPD. It explains the reasons for malnutrition and how these can be avoided. Helping people improve their diet as well as the role of oral nutritional supplements (ONS) are explored, and specific issues, such as vitamin D deficiency, are discussed.

KEYWORDS:
- COPD
- Nutrition
- Assessment
- Malnutrition
- Nutritional supplements

Chronic obstructive pulmonary disease (COPD) is expected to be the third leading cause of death in the world by 2020 (Global Initiative for Chronic Obstructive Lung Disease [GOLD], 2018). COPD is:

A common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airflow and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases.

(GOLD, 2018)

One of the common problems for people living with COPD is low body weight, which can weaken heart and lung function and impact on their ability to exercise (Ferreira et al, 2012; GOLD, 2018). One study found a 21% overall prevalence of malnutrition in patients with COPD (Collins et al, 2010). Assessing and managing malnutrition and implementing appropriate management strategies results in better outcomes for patients. Although malnutrition includes being overweight, and this also has implications for health in people living with COPD, the focus of this article is on patients who are under- or losing weight.

MALNOURISHED COPD PATIENTS HAVE POORER OUTCOMES

Malnutrition is essentially 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 pathway, 2016).

Weight loss is not an inevitable part of disease progression in COPD, but is instead an independent factor influencing survival (Schols et al, 2014). This makes maintaining a healthy weight an important part of COPD management.

Weight loss, fatigue and anorexia are common symptoms in people with severe COPD and are of prognostic importance (GOLD, 2018). As well as being an indicator of poorer outcomes for the patient, they can also be a sign of co-existing disease, such as tuberculosis or lung cancer, and it is therefore important to investigate these symptoms fully (GOLD, 2018).

Muscle mass decline in patients who are underweight, or fat mass increase in patients who are overweight or obese are associated with worse health status, and mortality is higher where there is muscle or fat mass decline (Rutten et al, 2013). Fat-free

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mass is a predictor of mortality in patients with COPD, and so body composition assessment is a useful maker of COPD severity (Schols et al, 2005).

The consequences of malnutrition in people with COPD include:
- Increased mortality
- Increased healthcare costs
- Longer hospital stays
- More frequent readmissions
- Reduced muscle strength
- Reduced respiratory muscle function (Malnutrition pathway 2016).

Working in partnership with dietetic services and ensuring appropriate patients are referred to a dietician is an integral part of holistic COPD care and will improve outcomes.

**REASONS FOR POOR NUTRITIONAL INTAKE IN COPD**

McGinley (2014) outlines the following reasons for poor nutrition in COPD:
- Difficulty swallowing or chewing due to shortness of breath
- Chronic ‘mouth breathing’ can alter the taste of food
- Chronic mucous production
- Coughing
- Fatigue
- Morning headache or confusion as a result of increased carbon dioxide in the blood
- Anorexia, loss of appetite and early satiety
- Depression
- Side-effects of medication, e.g. dry mouth with long-acting muscarinic receptor antagonists (LAMA).

Living and eating alone, poor dentition and poverty are additional factors (Schols et al, 2014).

Furthermore, patients with severe COPD experience an increased resting energy expenditure, which is associated with increased protein turnover and a loss of fat-free mass. They also have a higher energy cost of ventilation caused by their abnormal pulmonary mechanics. This hypermetabolic state can then lead to weight loss if sufficient calories are not consumed (Kao et al, 2011).

**ASSESSMENT**

It is important to calculate body mass index (BMI) for patients with COPD (National Institute for Health and Care Excellence [NICE], 2010). This should be done at least annually at review appointments, but more frequently where there is a concern and in patients with severe COPD. If the patient has a BMI that is abnormally high or low, or if it is changing over time, referral to a dietician should be made (GOLD, 2018).

As well as BMI, body composition is important; this includes fat mass and distribution, lean mass and its distribution, and bone mineral density. Fat-free mass is lean mass plus bone mineral density and is an important way of assessing body composition (Schols et al, 2014). Fat-free mass, in addition to body mass index (BMI), can affect those with both moderate and severe COPD (Schols et al, 1993).

Acute exacerbations are a key time when weight loss, muscle wasting and bone density depletion may occur as a result of malnutrition, physical inactivity, hypoxia, inflammation and oral steroids (Kao et al, 2011). Thus, extra attention to nutrition should be considered at times of exacerbation.

Nutritional assessment should be a core part of a COPD review and community nurses need the skills and knowledge to assess and manage this effectively in time-constrained appointments.

The Malnutrition Universal Screening Tool (MUST) is a simple five-step screening tool that can be used to identify people at risk of malnutrition. It looks at BMI, recent weight loss and the presence of acute illness (Malnutrition pathway, 2016). Low, medium and high-risk patients can then be identified and the malnutrition pathway advises on suitable education, observation and intervention. This screening tool can be included in the COPD review and referral to a dietician or signposting to educational materials can be made as appropriate.

**MANAGING MALNUTRITION**

An energy and protein-enriched diet to help patients with COPD avoid weight loss is important, but care should be taken to consider fat quality in a higher fat diet in order to increase foods of nutritional benefit, rather than add to other issues such as cardiovascular disease risk.

**Oral nutritional supplements (ONS)**

When nutritional requirements cannot be met by diet alone, COPD patients with a low BMI will benefit from oral nutritional supplements (ONS), with the aim of increasing their calorie intake (NICE, 2010;
Box 1.

USEFUL RESOURCES

- Chest Heart and Stroke Scotland has a booklet called ‘Healthy Eating’ – for general healthy eating advice: www.chss.org.uk
- British Lung Foundation has produced a leaflet called ‘Eating well with a lung condition’ which offers advice on eating and breathlessness, managing a dry mouth and how to manage bloating and trapped wind: www.blf.org.uk/support-for-you/eating-well/diet-and-my-symptoms
- My lungs my life has a booklet called ‘Healthy eating for people with COPD’ which explains the importance of a healthy diet and gives useful practical advice: http://mylungsmylife.org
- The Lung Institute has an online article that explains how to create a healthy COPD diet, which covers the importance of protein, vitamin D, fish, drinking plenty of water and avoiding unhealthy food where possible: https://lunginstitute.com/blog/create-healthy-copd-diet-5-easy-steps.

Encouraging patients to have a well-balanced diet with plenty of fresh fruit and vegetables will not only improve lung health, but also reduce metabolic and cardiac risk factors (Schols et al, 2014).

Infectious, neuromuscular and anti-tumour activities within the body (Schols et al, 2014). It can be measured with a simple blood test. The level of vitamin D within the body is dependent upon the capacity of the skin to synthesis it, hours of sunlight, genetic variation and intake in food (Schols et al, 2014). People with COPD often have smoke-induced skin ageing, a reduced amount of time outdoors and a low dietary intake, leaving them at risk of vitamin D deficiency (Schols et al, 2014). Thus, community nurses should encourage patients to have a well-balanced diet with plenty of fruit and vegetables, as well as considering the introduction of ONS.

Dietary advice and interventions

Practical advice on meal preparation, timing and content can be of real value. Tips, such as eating well early in the day when energy levels are higher, eating frequent small energy-dense meals spread throughout the day (Schols et al, 2014), and choosing foods that are easy to eat and prepare to reduce the fatigue associated with eating can be helpful to ensure patients with COPD consume enough food (McGinley, 2014).

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Patients who achieve a 2kg weight gain can expect to see functional improvements (Collins et al, 2013).

Smoking cessation

If the patient is still smoking, helping them to stop can improve taste and appetite (Bowden and Hodson, 2016).

Managing exacerbations

Patients with COPD can experience periods of acute worsening of respiratory symptoms, i.e. exacerbations (GOLD, 2018). Planning for adequate nutritional intake during exacerbations is important (Bowden and Hodson, 2016). Community nurses who see exacerbating patients are in an ideal position to advise on this while assessing and prescribing for the exacerbation.

GOLD, 2018). ONS, such as powders, puddings or liquids can be used with support from a dietician (Schols et al, 2014).

ONs in malnourished patients with COPD have been shown to significantly improve (Malnutrition pathway, 2016; GOLD, 2018):
- Hand grip strength
- Respiratory muscle strength
- Exercise performance, e.g. six-minute walk test
- Nutritional intake
- Body weight (including fat mass and fat-free mass)
- Health status
- Overall quality of life.

Indeed, a Cochrane review of 17 studies, including 632 participants, concluded that there is a growing evidence base that ONS can improve body weight, respiratory muscle strength, walking ability and quality of life, particularly in malnourished COPD patients (Ferreira et al, 2012).

Exercise and ONS used in combination for malnourished patients is also beneficial for improving function (NICE, 2010; Schols et al, 2014; GOLD, 2018). ONS, such as powders, puddings or liquids can be used with support from a dietician (Schols et al, 2014).

High energy ONS given between meals of 300–900kcal/day can be expected to show clinical benefits within two months (Malnutrition pathway, 2016). They can also help prevent the development, progression and exacerbation of COPD and suppress the inflammatory response (Rawal and Yadav, 2015).

Vitamin D

Vitamin D and antioxidant vitamins (A, C and E) can be depleted in people with COPD (Schols et al, 2014). Vitamin D is important for bone health and also has a role in anti-inflammatory, anti-

Remember

In poorly nourished patients with COPD, nutritional supplementation improves muscle strength, exercise tolerance, quality of life, and decreases morbidity and mortality.
Patient story

Tom, aged 72, stopped smoking when he was diagnosed with severe COPD two years ago. You see him today and find that he has lost 3kg in weight since his last appointment six months ago. He had previously declined pulmonary rehabilitation as it was too far from his home, but there is now a class available close to home in the local community hospital. His BMI is 18 and he is breathless walking down the corridor to your waiting room.

What investigations do you want to do?
What interventions may help Tom?
Would you refer to other services?
Is there any information you can signpost him to?
What would your management be if he had low vitamin D?
You agree a management plan with Tom — he asks you how much improvement he can expect to see? What would you tell him?

CONCLUSION

Nurses in primary care are the main point of contact for many patients with COPD and the gatekeeper to other services and treatments. Understanding the importance of nutrition for people with COPD, explaining this to patients and screening for malnutrition, as well as planning effective interventions is a vital part of COPD management and will improve outcomes in this distressing disease. JCN

REFERENCES

Managing Malnutrition in COPD (2016) Managing Adult Malnutrition in the Community panel. Available online: www.malnutritionpathway.co.uk/copd

Box 2.

USEFUL RESOURCES FOR PATIENTS AND CARERS

Managing malnutrition in COPD patient materials are available from: www.malnutritionpathway.co.uk/copd
Eating well for your lungs
Improving your nutrition in COPD
Nutrition support in COPD.

Revalidation Alert

Having read this article, reflect on:
- Why malnourished patients with COPD have poorer outcomes
- How ONS can help
- What is involved in assessing a patient’s nutritional status
- Why patients with COPD are susceptible to malnutrition.

Then, upload the article to the free JCN revalidation e-portfolio as evidence of your continued learning: www.jcn.com/revalidation