The role of nutrition in the management of COPD patients

Edel McGinley

This article examines the role of malnutrition in chronic obstructive pulmonary disease (COPD). Until recently, weight loss was considered an inevitable consequence of COPD, however, modern research has demonstrated that weight gain is in fact achievable and can result in functional improvements. It is important that community nurses are aware of the importance of nutrition in COPD, both in screening for malnutrition and developing appropriate treatment plans, including the use of oral nutritional supplements alongside dietary advice and counselling. The current NHS policy of moving care ‘closer to home’ is resulting in more complex COPD patients being managed in the community and with this comes the challenge of managing reduced weight and low oral intake. It is, therefore, essential that community nurses develop the necessary skills and resources to deal with this growing group of patients.

KEYWORDS:
Malnutrition ■ COPD ■ Nutritional supplements ■ Diet

An estimated 835,000 people are affected by chronic obstructive pulmonary disease (COPD) in the UK, with a further two million remaining undiagnosed (Shahab et al, 2006). COPD is a chronic progressive lung disease, which makes breathing difficult due to partially obstructed airflow into and out of the lungs. It results from inflammation stimulated by exposure to toxins, primarily due to a history of smoking. It is the fifth largest cause of respiratory deaths in the UK (British Thoracic Society, 2006).

COPD is an umbrella term that includes both emphysema and chronic bronchitis. Patients with emphysema experience shortness of breath due to a reduction in the elasticity and eventual damage to the air sac walls in the lungs. This leads to impaired exhalation and a resultant build-up of carbon dioxide in the lungs. These patients typically present as underweight, often exhibiting significant weight loss due to the increased energy output associated with laboured breathing (Wouters, 2000).

In contrast, in the author’s experience, patients with chronic bronchitis typically present as normal weight or overweight, but have a persistent cough, increased mucous production and shortness of breath due to inflammation, scarring, and eventual narrowing of the airways.

Compared to those who are undernourished, obese and overweight COPD patients can experience:
- Improved survival (Landbo et al, 1999)
- Fewer early readmissions (Steer et al, 2010)
- Fewer emergency hospital admissions and shorter lengths of stay (Collins et al, 2011).

ROLE OF NUTRITION IN COPD

In patients with COPD, low body weight and significant weight loss are associated with a reduced overall prognosis and increased mortality, independent of the severity of the disease (Landbo et al, 1999). Therefore, dietary

<table>
<thead>
<tr>
<th>Table 1: Reasons for poor nutritional intake</th>
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<tr>
<td>Difficulty swallowing or chewing due to dyspnoea (shortness of breath)</td>
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<tr>
<td>Chronic ‘mouth breathing’, which can alter the taste of food</td>
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<td>Chronic mucous production</td>
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<td>Coughing</td>
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<td>Fatigue</td>
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<td>Morning headache or confusion due to hypercapnia (increased carbon dioxide in the blood)</td>
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<td>Anorexia</td>
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<td>Depression</td>
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<td>Side-effects of medications</td>
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education and intervention play important roles in the management of patients with COPD.

Malnutrition is a significant problem in patients with COPD, with several factors contributing to a lowered body weight and weight loss, including (Congleton, 1999; Slinde et al, 2002):

- Increased resting energy expenditure
- Increased energy expenditure during activity
- Reduced dietary intake.

Other factors that contribute to a reduced nutritional intake include:

- Increased shortness of breath
- Chronic ‘mouth breathing’
- Coughing
- Loss of appetite
- Difficulty swallowing or chewing due to dyspnoea (shortness of breath) (Table 1).

Those patients identified as malnourished or at risk of malnutrition are more likely to be admitted to hospital, experience increased length of hospital stay, have earlier readmission rates and have a poorer prognosis. In particular to COPD, malnutrition can impair pulmonary function, increase susceptibility to infection, lower exercise capacity, and increase the risk for mortality and morbidity (Ferreira et al, 2000).

British Association for Parenteral and Enteral Nutrition (BAPEN)

Malnutrition Universal Screening Tool BAPEN (2004)
Available from: www.bapen.org.uk/pdfs/must/must_full.pdf
IDENTIFYING MALNUTRITION

It is essential that community nurses understand how to undertake regular nutritional screening to identify and develop appropriate care plans in all patients, but specifically in those with COPD. To do this they should know how to use a validated nutritional screening tool.

The tool most commonly used in the UK is MUST (malnutrition universal screening tool) developed by BAPEN (British Association of Parenteral and Enteral Nutrition, 2004) — this is recommended in the National Institute for Health and Care Excellence (NICE) (2006) guidelines for nutritional support.

MUST is a validated tool for use within the primary care setting and involves three steps:
- BMI score
- Percentage weight loss score
- Disease effect score (likely decrease in oral intake for more than five days) (Figure 1).

It is vital that community nurses screen all new patients and continue to regularly screen current patients as per local guidelines — only in this way will they be able to spot any deterioration in the patient’s nutritional status.

Patients with a MUST score of ‘2’ or more should be referred directly to a dietitian for further assessment and support. Those patients who score ‘1’, have a medium risk of malnutrition and, in the case of COPD, it is essential that dietary advice is provided to prevent further weight loss.

DIETETIC INTERVENTION

In the management of malnutrition, the dietitian may use one or a combination of the following approaches in a patient with COPD:
- Dietary advice and support to increase dietary intake, focusing on the frequency of meals and the types of food/fluid consumed
- Food fortification — aimed at improving the energy ‘density’ of meals and snacks
- Prescription of oral nutrition support supplements.

Dietary advice should include the following:
- Eat meals when energy levels are at their highest, which is usually in the morning
- Eat several small energy dense meals to avoid becoming breathless while eating
- Eat slowly and chew foods thoroughly to avoid ‘swallowing air’ while eating
- Choose foods that are easy to chew or change the food consistency if the patient reports fatigue on eating. This can be done by using energy dense liquids to create a softer texture, e.g. adding full-fat milk and butter to mashed potato or meat-based gravy to cottage pie. Avoid the use of water or clear fluids such as stock and broth as these will increase the volume of food but decrease the energy content further, thereby increasing the risk of decreased calorie intake
- Choose foods that are easy to prepare — this conserves energy for eating
- Eat while sitting up to ease pressure on the lungs
- Drink fluids at the end of the meal rather than during — this will lessen the likelihood of the patient ‘feeling full’ while eating.

Stratton et al (2003) have demonstrated the benefit of...
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![Diagram showing cumulative incidence of allergies]

- **Cumulative Incidence (%)**
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oral nutrition supplements in malnourished patients with stable COPD, including:

- Improved energy and protein intake
- Improved body weight
- Improved functional outcomes (such as peripheral muscle strength, and maximum inspiratory and expiratory pressure).

However, oral nutrition supplements are not effective as a sole treatment option in all patients and reported compliance rates can be as low as 50%, especially in the elderly (Payette et al, 2002; Bonnefoy et al, 2003). Poor compliance can be influenced by:

- Taste fatigue (where patients who have been taking oral nutrition supplements for a long time become bored with the lack of flavour or similar flavours)
- Gastrointestinal symptoms
- Individual preference.

As discussed above, other factors that can affect patients’ tolerance of oral nutrition supplements include early satiety and anorexia. Anker et al (2006) recommended energy dense (high in calorie and protein) and small volume oral nutrition supplements, and/or small energy dense and frequent meals to help alleviate these problems. The author’s recent practice also shows that poor compliance can be improved with the use of energy dense oral nutrition supplements, which are now readily available on prescription for disease-related malnutrition, including in COPD patients.

Weight gain
Stratton et al (2003) reported that a weight gain of at least 2kg is required in COPD patients in order to achieve any benefit from nutritional intervention.

This was similarly reported in a study by Weekes et al (2008), which demonstrated that dietary counselling resulted in significant benefits for dietary intake, body composition and quality of life in a COPD patient group who achieved weight gain of at least 2kg. The researchers focused on dietary education and counselling for a period of at least six months and advice was tailored and individualised for each patient (Weekes et al, 2008). It was also noted that some beneficial effects persisted for at least six months after the intervention period, in contrast to the use of oral nutrition supplements as a sole treatment option.

These results were backed up in research by Efthimiou et al (1988), which demonstrated decreased oral intake and further weight loss when nutrition supplements were discontinued, particularly in patients with COPD.

‘When addressing nutritional intake and status with COPD patients, it is important for community nurses to remember that not all symptoms can be tackled by nutritional intervention alone — often a multidisciplinary approach needs to be considered’

Counselling
The kind of dietary counselling mentioned in the above studies can consist of:

- Taking a detailed dietary history, which gathers information on frequency of meals, snacks and drinks, portion sizes, cooking methods, and the patient’s support network
- The drawing up of personalised dietary goals to increase calorie and protein intake based on the dietary history. These goals can include food fortification (adding extra calories to meals or snacks using high-calorie, high-protein foods, e.g. butter, cream, yogurt, milk); manipulating meal patterns (increasing frequency of energy dense snacks between meals); and/or recommending energy dense drinks (e.g. full-fat milk; making coffee/tea with half milk/half water; and malt or hot chocolate drinks).

The above studies suggest that with the use of tailored advice based on a patient’s dietary preferences, symptoms, support network and lifestyle, it may be possible to achieve compliance for longer periods, even in the absence of long-term direct dietetic intervention and monitoring. For example, Weekes et al (2008) demonstrated that in stable COPD outpatients, dietary advice plus a six-month supply of whole milk powder had beneficial effects, including:

- Significant improvements in nutritional intake, body weight, functional status and quality of life
- Effects lasting for six months beyond the intervention period.

Leaflets
Weekes et al (2008) also examined the use of dietary advice leaflets versus nutritional counselling (with or without oral nutrition...
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supplements) and found that providing literature is ineffective in achieving weight gain and functional benefits in COPD patients.

It is important to stress the importance of education and counselling alongside oral nutrition supplements as, in the author’s experience, it is common in primary and secondary care for patients to be prescribed oral nutrition supplements as a sole treatment for weight loss without referral to a dietician for specialist input or dietary advice.

The combination of education and counselling alongside oral nutrition supplements provides the patient with greater choice and results in long-term changes, ultimately supporting improvements in nutritional status and weight gain beyond the initial intervention period.

**MULTIDISCIPLINARY APPROACH**

When addressing nutritional intake and status with COPD patients, it is important for community nurses to remember that not all symptoms can be tackled by nutritional intervention alone — often a multidisciplinary approach needs to be considered. An example would be a patient whose dyspnoea (shortness of breath) causes problems when eating — this could be discussed with a respiratory nurse specialist, who might suggest the use of oxygen therapy alongside small easy-to-prepare energy dense meals, thereby minimising the burden of eating on the patient’s breathing.

**CONCLUSION**

In the author’s opinion, the way that nutrition in COPD patients is managed within the community needs more thought, particularly as nutritional interventions often extend no further than the provision of dietary leaflets.

Although many community nurses already educate and support patients, initiating changes where possible, it is vital that all community staff are aware of the range of interventions available.

This article highlights the need for a multidisciplinary approach to pulmonary rehabilitation and management of COPD patients, including timely referral to the dietician for specialist input.

It is also crucial that community nurses do not simply provide oral nutrition support to patients with COPD, but also consider the use of dietary counselling in order to maintain any improvements over a longer period of time.

**REFERENCES**


