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Malnutrition and mental health conditions

Examining the links between malnutrition and mental health conditions, with a focus on eating disorders and alcohol dependence



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Introduction

People with malnutrition or at risk of malnutrition are often unrecognised and untreated.¹ More than 3 million people in the UK are malnourished or at risk of malnutrition.¹ A British Association for Parenteral and Enteral Nutrition (BAPEN) advisory group report states that 93% of people at risk of, or affected by, malnutrition live in the community¹. Malnutrition can develop when the diet does not contain the right amount of nutrients and is deficient in essential vitamins, minerals and other nutrients required to maintain healthy tissues and organ function.^{2,3}

The consequences of malnutrition are many, and when left untreated, malnutrition can lengthen hospitalisation, reduce quality of life and increase the risk of developing other diseases.⁴ One of the consequences of malnutrition is the negative and significant impact on a patient's mental health.⁵⁻⁸ These negative effects can include psychosocial effects such as apathy, depression, anxiety and self-neglect.^{5,6}



**More than 3 million people
in the UK are malnourished
or at risk of malnutrition¹**

Mental health disease can also result in undernutrition and malnutrition in patients.^{3,8-10} Statistics show that 1 in 6 adult patients with mental health conditions are malnourished.¹¹

This is associated with the complex nature of mental health conditions, which often requires psychological and pharmacological treatment, and can affect a patient's appetite, or result in deficiencies or excesses in nutrient intake, imbalance of essential nutrients or impaired nutrient utilisation.

In this summary, we will discuss:

- Links between malnutrition and mental health
- Mental health conditions that can result in malnutrition
- Eating disorders and malnutrition
- Alcohol use disorders and malnutrition
- How you can support patients with malnutrition

Links between malnutrition and mental health

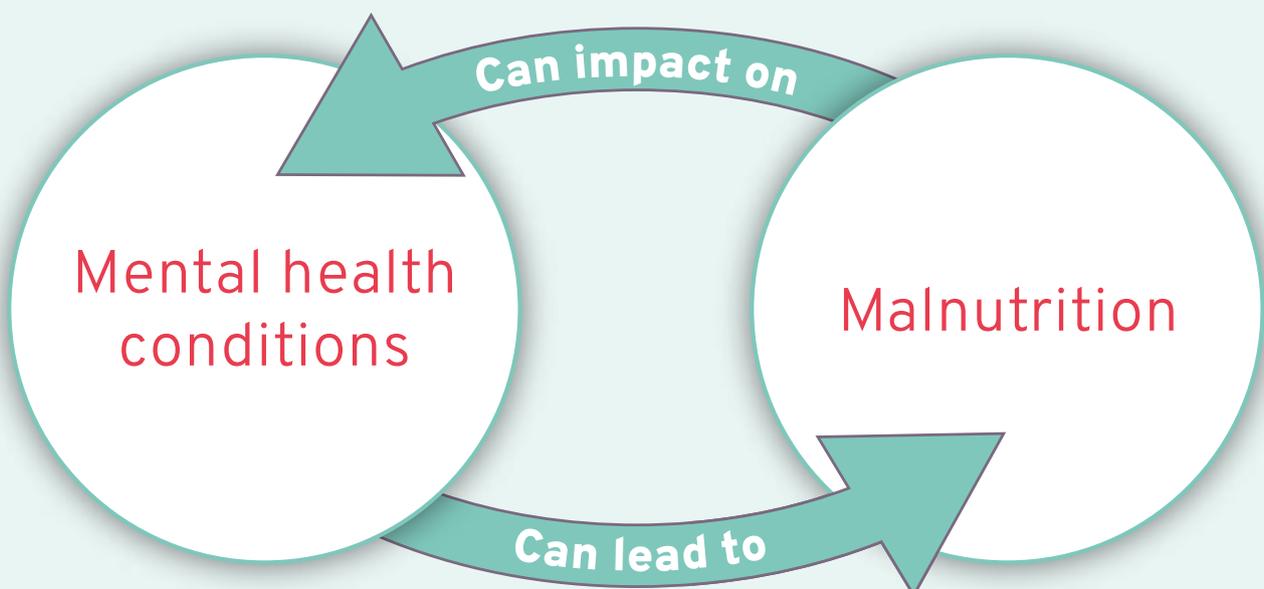
Nutrition plays a vital role in the mental health of individuals. The link between malnutrition and mental health is positively correlated, with mental health conditions impacting on malnutrition and malnutrition affecting the mental health of individuals.^{3,5-10}

Malnutrition negatively impacts the brain and can cause apathy, depression, anxiety, self neglect and deterioration in social interactions.^{5,6} Deficiencies in nutrients such as protein, B vitamins, vitamin D, magnesium, zinc, selenium, iron, calcium, and omega-3 fatty acids have a significant impact on brain and nervous system function, which can affect the appearance of depressive symptoms.¹²

Some mental health conditions can cause loss of motivation/interest in food or a reduced capacity to eat.^{7,8,13,14} In a large cross-sectional survey of elderly men and women in Norway, scientists tried to establish associations between mental health (particularly anxiety and depression) and both the risk of malnutrition and body mass index.¹⁰ They concluded that impaired mental health was strongly associated with the risk of malnutrition¹⁰. In addition, some medications for mental health conditions can also contribute to loss of appetite.¹⁵

Therefore, patients who are affected by a diverse range of mental health conditions can also be at risk of malnutrition and some of these relationships are addressed in the following section.

Figure 1. Link between mental health conditions and malnutrition^{3,5-10}



Mental health conditions that can result in malnutrition

Table 1 presents an overview of mental health conditions linked to malnutrition and summarises how some of the mental health conditions can lead to malnutrition.

Overall, we can conclude that strong links exist between mental health impairment and malnutrition. The variety of symptoms of different psychosocial conditions can have a detrimental effect and cause an abnormal appetite, vomiting, diarrhoea and vitamin and mineral absorption issues. As a result, these symptoms can contribute to malnutrition through imbalanced food intake.

Despite the many mental health conditions that can lead to malnutrition, in this article we will aim to focus on two specific areas in relation to malnutrition: eating disorders and alcohol use disorders. We will examine the condition further and provide information on how these patients' nutritional needs can be supported.

Table 1. Causes of malnutrition in different mental health conditions

Mental health condition	Causes of malnutrition
Eating disorders in general	<ul style="list-style-type: none"> • Not eating enough, abnormal eating patterns, exercising too much, taking laxatives and vomiting^{13,16} • Patients with eating disorders can also often struggle with symptoms of anxiety and depression¹⁷
Anorexia nervosa	<ul style="list-style-type: none"> • Restricted food intake, engaging in behaviour which impedes weight gain and an intense fear of gaining weight¹⁸
Bulimia nervosa	<ul style="list-style-type: none"> • Periods of uncontrolled eating of a significant amount within a short time period is followed by behaviour including self-induced vomiting, laxative abuse or excessive exercise¹⁸
Bipolar disorder	<ul style="list-style-type: none"> • Higher calorie intake/lower diet quality has been reported in women¹⁹ • Lack of appetite due to medication side effects^{15,20}
Depression/anxiety	<ul style="list-style-type: none"> • Reduced appetite and interest in eating²¹ • Lack of appetite due to medication side effects¹⁵
Depression in older people	<ul style="list-style-type: none"> • Physical decline and long term health conditions^{22,23} • Reduced access to nutritious food, difficulty in chewing/swallowing^{22,23} • Bereavement, loneliness or isolation impacting on appetite^{22,23}
Drug/alcohol dependency	<ul style="list-style-type: none"> • Inadequate diet and impaired appetite^{24,25} • Vomiting, diarrhoea & steatorrhea²⁵ • Vitamin and mineral absorption issues^{24,25} • Increase in metabolic demands due to thiamine deficiency^{24,26}

Eating disorders and malnutrition

Definition

Eating disorders are ‘serious mental illnesses affecting people of all ages, genders, ethnicities and backgrounds. People with eating disorders use disordered eating behaviour as a way to cope with difficult situations or feelings.’¹³

Eating disorders can include:²⁷

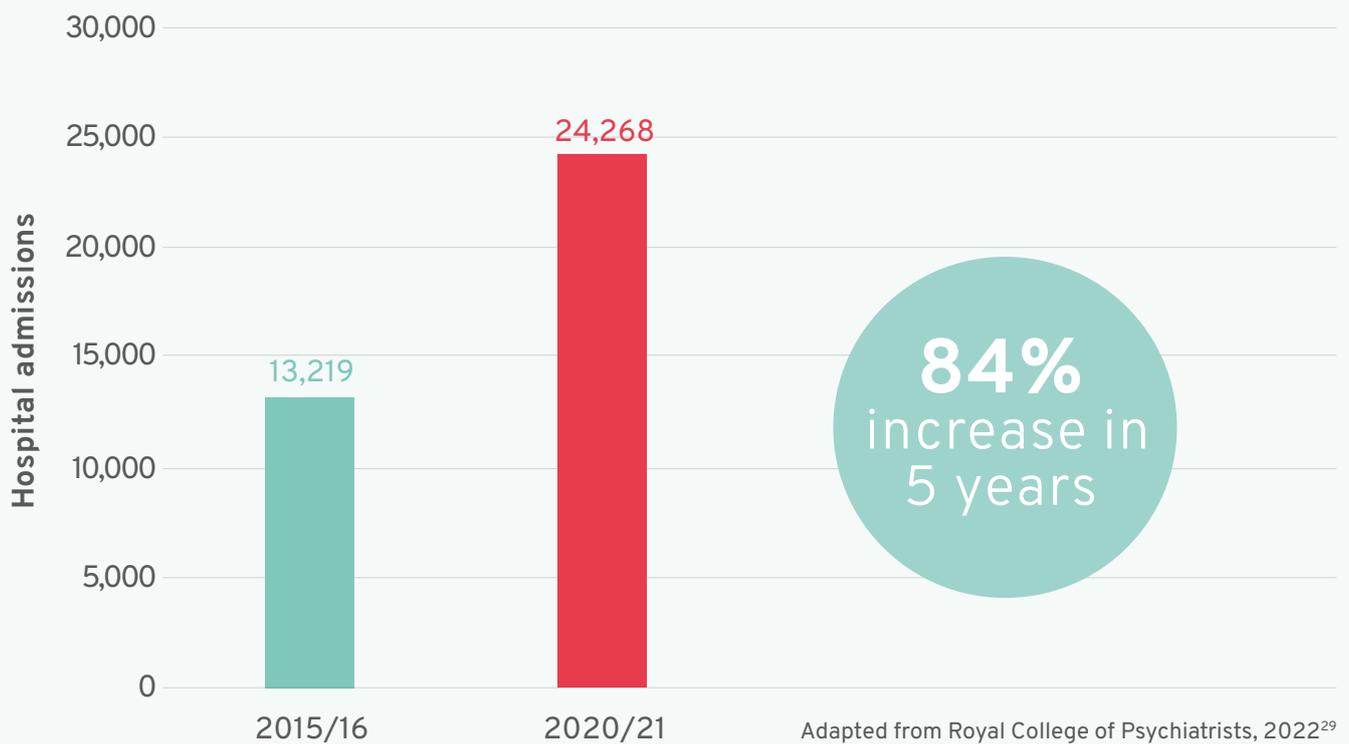
- Anorexia nervosa
- Bulimia nervosa
- Avoidant restrictive food intake disorder (ARFID)
- Binge eating disorder

Statistics

Approximately 1.25 million people in the UK are estimated to have an eating disorder, with 75% of cases affecting women, and 25% affecting men.²⁸

An analysis of hospital data by the Royal College of Psychiatrists showed that hospital admissions for eating disorders had increased by 84% in five years (2020-21 vs 2015-16) and amounted to over 24,000.²⁹

Figure 2. Hospital admissions for eating disorders²⁹



Complications

There are a wide range of effects that eating disorders can have on patients which can negatively affect their quality of life. Some of the reported consequences from eating disorders can include:³⁰

- Psychological and emotional difficulties
- Social and relationship difficulties
- Cardiovascular issues e.g. arrhythmias, hypotension, valve prolapse, peripheral oedema or sudden death (in anorexia nervosa)

- Loss of muscle strength, loss of bone density (in anorexia nervosa)
- Gastrointestinal issues
- Cognitive impairment
- Increased mortality

Micronutrient deficiencies associated with eating disorders can include:²⁷

- Vitamin C deficiency can result in anaemia
- Low calcium and phosphate can cause vitamin D deficiency
- Vitamin B1 (thiamine) deficiency is linked to neurological diseases, such as Wernicke's encephalopathy
- Vitamin B12 or folate deficiency can cause anaemia

Management guidelines

Those with diagnosed eating disorders can require intense specialist treatment and ongoing support to meet individualised nutritional goals.^{13,27,30-32} In order to effectively support and treat patients, guidelines specific to eating disorders have been developed. These guidelines benefit patients and healthcare professionals by providing awareness around both the condition and treatments available, and broaden knowledge, such as spotting an eating disorder and signs of emergencies.²⁷

In 2022, the Royal College of Psychiatrists issued updated guidance on eating disorders (MEED: Medical emergencies in eating disorders: Guidance on Recognition and Management). This update replaces the previous Management of Really Sick Patients with Anorexia Nervosa (MARSIPAN) and Junior MARSIPAN guidance, which previously concentrated on anorexia nervosa only, and is an important source of information for all nurses and other health professionals on a variety of eating disorders.^{27,33}

The guidance includes recommendations, such as:²⁷

- Medical and psychiatric ward staff need to be aware that patients may be at high risk despite appearing well and having normal blood parameters
- Primary care teams should:
 - Refer eating disorder patients early for specialist care
 - Provide monitoring after discharge
 - Work in collaboration with medical services and eating disorder services (EDSs), including community EDSs
- Physical risk assessment in primary and secondary settings should include:
 - Nutritional status (including current intake)
 - Disordered eating behaviours
 - Physical examination
 - Blood tests and electrocardiography
- Micronutrient replacement should be considered:
 - Pabrinex (Vitamins B&C High Potency): Ampoules 1+2 by infusion over 30 minutes or intramuscular administration
 - Thiamine: 50 mg four times daily
 - Vitamin B Co-Strong
 - Balanced Multivitamin/Trace Element Preparation (e.g. Forceval Capsules): one capsule daily
 - Phosphate 500mg twice daily orally/ via nasogastric tube (NGT)

The full guidelines can be found at: <https://www.rcpsych.ac.uk/improving-care/campaigning-for-better-mental-health-policy/college-reports/2022-college-reports/cr233>

Eating disorders case study

This is a fictional case study based on a patient that may be seen within a primary care setting. It highlights some of the potential issues that

patients may present with and offers some thoughts on possible next steps that could be taken to support the patient.



EATING DISORDERS/RESTRICTIVE DIETS

A PATIENT PROFILE

20 year old Holly is a university student. She previously suffered from anxiety due to school bullying but has had no other significant health concerns on her records since then.

Presentation:

Holly visited her GP with a friend. She had recently admitted to her friend that she would frequently overeat and then force herself to vomit afterwards, and her friend has encouraged her to seek help.

Holly's development of bulimia started when at school, but her episodes were limited due to living in a small house with concerned parents. Now she is away from home with more freedom, she is frequently forcing herself to vomit. Her BMI is within the normal range, but Holly feels she needs to lose weight. She often feels tired and weak, and is consequently struggling with her studies.

Next steps:

1. Discuss referral to specialist mental health services.
2. While waiting for referral, commence guided self-help programme as an initial treatment approach.
3. Due to the unhealthy eating choices and frequent vomiting, Holly's nutritional intake may be sub-optimal, so she was prescribed a multivitamin supplement.

This is a fictional case study based on a patient that may be seen in a primary care setting and the image featured is a model.

Alcohol use disorders and malnutrition

Definition

Alcohol problems and mental ill health are closely linked.^{34,35}

Research shows that people who drink alcohol excessively are more likely to develop mental health problems.^{34,35} It's also true that people with severe mental illness are more likely to have alcohol problems. This may be because they 'self-medicate', meaning they drink to deal with difficult feelings or symptoms.^{34,35}

Alcohol use disorders and alcohol dependence can impact nutritional health. This can impact on the metabolism of B vitamins, and increase the risk of pancreatic and liver conditions, further challenging optimal nutritional intake.^{26,31,36-38}

Definitions include:

- **Harmful drinking:** 'A pattern of alcohol consumption that is causing mental or physical damage.'³⁸
- **Alcohol use disorder:** 'A medical condition characterised by an impaired ability to stop or control alcohol use despite adverse social, occupational, or health consequences.'³⁹
- **Alcohol dependence:** 'A cluster of behavioural, cognitive and physiological factors that typically include a strong desire to drink alcohol and difficulties in controlling its use.'³⁸

The NHS recommends that both men and women are advised not to regularly drink more than 14 units a week.⁴⁰⁻⁴²

Figure 3. One unit of alcohol equals⁴¹



Half pint of "regular" beer, lager or cider



Half a small glass of wine



1 single measure of spirits



1 small glass of sherry



1 single measure of aperitifs

Statistics

NHS England data (2021) provides evidence of how many people may be at risk of harmful drinking:⁴²

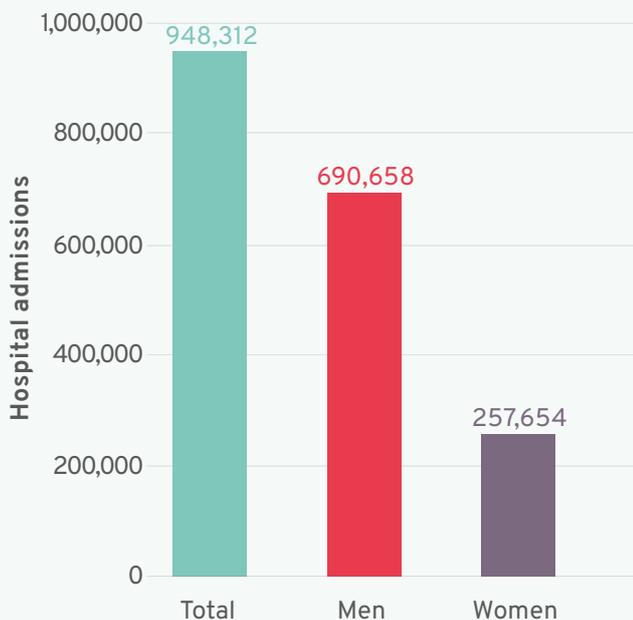
- 21% of adults drank at increasing or higher risk of alcohol-related harm (more than 14 units per week).
 - A higher proportion of men (28%) than women (15%) drank at increasing or higher risk levels.

- 5% of men drank over 50 units and 2% of women usually drank over 35 units (higher risk levels) in a week.

Alcohol consumption is linked to a wide variety of negative health outcomes including morbidity, mortality, and disability.⁴³ Government data for 2021-22 England showed:⁴⁴

- Nearly 21,000 deaths that were related to alcohol. Of these:
 - Almost 8,000 deaths were from chronic liver disease
 - 7,500 deaths were wholly caused by alcohol
- 950,00 hospital admissions that were alcohol-related
 - Admissions in men was 2.7 times the figure for women

Figure 4. Hospital admissions related to alcohol from 2021 to 2022⁴⁴



Adapted from Gov.uk official statistics, 2022⁴⁴

Complications

Misuse of alcohol has a wide range of effects that can negatively affect patients' quality of life. Some of the reported malnutrition related consequences from alcohol dependence can include:

- Alcohol related brain damage^{25,45}
- Development of behavioural and psychological disorders^{24,45}
- Organ damage e.g. alcohol induced liver disease, pancreatitis^{26,46}
- Increased risk of infection^{26,46}
- Higher rates of mortality^{44,46}
- Gastrointestinal conditions: harmful alcohol drinking and dependence can cause damage to much of the gastrointestinal tract, increasing the risk of cancer in the tract itself and associated organs, particularly the oesophagus, liver, and colon.^{47,48} Alcohol can also increase the risk of reflux and gastritis, which can impact nutritional intake.^{47,48}

Micronutrient deficiencies in alcohol related conditions can be caused by poor diet, digestion impairment and malabsorption and can include:^{36,38,49-51}

- B vitamins: linked to the development of liver disease, GI tract disorders, Wernicke's encephalopathy and anaemia. Specifically:
 - Thiamine (vitamin B1): linked to Wernicke's encephalopathy.
 - Riboflavin (vitamin B2): linked to dementia and anaemia.
 - Folic acid (vitamin B9): linked to the development of liver disease, muscle weakness, GI tract disorders and anaemia.
 - Vitamin B12: linked to anaemia, neurological conditions, anxiety, depression and psychosis.
- Vitamin D: linked to the development of liver disease.
- Magnesium: linked to the development of liver disease and cardiovascular issues.
- Selenium: linked to the development of liver disease.

Management guidelines

In order to effectively support and treat patients with alcohol misuse there are a number of techniques employed in healthcare settings and also a range of guidelines available.

Alcohol screening and brief intervention

Treatment options vary and are dependent on the level of addiction. For some patients, something simple such as a brief intervention may be all that is required, but for others this may be inadequate and referral to a specialist service may be required.^{41,52}

Using a simple screening tool such as the AUDIT-C, which asks just three initial questions, can provide a score to help determine the level of advice, support and treatment a patient might need.⁴¹

The questions and scoring can be accessed via the government website, which lists a number of alcohol use screening tools, and is available at: <https://www.gov.uk/government/publications/alcohol-use-screening-tests>.

Guidelines

There are a variety of guidelines available with advice and recommendations for alcohol misuse and their associated health conditions.

These include:

NICE Clinical Guidance 100 (Alcohol-use disorders: diagnosis and management of physical complications)³⁸

Offers information on physical health problems that are completely or partly caused by an alcohol-use disorder.

Available at: <https://www.nice.org.uk/guidance/cg100>

NICE Clinical Guidance 115 (Alcohol-use disorders: diagnosis, assessment and management of harmful drinking (high-risk drinking) and alcohol dependence)⁵³

Covers identifying, assessing and managing alcohol-use disorders.

Available at: <https://www.nice.org.uk/guidance/cg115>

Welsh Framework report⁵⁴

Provides advice and information on treating alcohol misuse in secondary and primary care settings, including pharmacological interventions.

Available at: <https://www.gov.wales/sites/default/files/publications/2019-02/alcohol-misuse-in-wales.pdf>

Alcohol dependence case study

This is a fictional case study based on a patient that may be seen within a primary care setting. It highlights some of the potential issues that

patients may present with and offers some thoughts on possible next steps that could be taken to support the patient.



ALCOHOL DEPENDENCE

A PATIENT PROFILE

55 year old Tony has been struggling with anxiety and depression over the last 10 years, in part due to the breakdown of family relationships and regular periods of unemployment. Tony had previously admitted to 'liking a drink.'

Presentation:

Tony presented to his GP as he had recently started but then subsequently lost his new job due to problems with attendance and concentration whilst at work.

After discussing Tony's lifestyle it became clear that he was neglecting himself. He ate poorly and infrequently, and drank alcohol every day, often in excess. A quick alcohol screening questionnaire was undertaken and Tony's score placed him within the high dependency category. Tony appeared surprised with the result but was keen in looking at ways to improve his lifestyle.

Next steps:

1. Provide initial support and advice along with referral to local alcohol support service team.
2. Consider a multivitamin to supplement Tony's nutritional intake. This was deemed an appropriate choice due to chronic alcohol use being linked to multiple vitamin and mineral deficiencies,⁵⁵ and after excluding life threatening vitamin deficiencies on clinical examination, which, if evident would require hospitalisation.

This is a fictional case study based on a patient that may be seen in a primary care setting and the image featured is a model.

How we can support patients with malnutrition

A wide variety of patients with mental health conditions are at risk of malnutrition. As well as the standard management and care options required for these patients to help treat and manage their specific condition (such as medication and psychological therapy), it is also worth considering their nutritional needs.

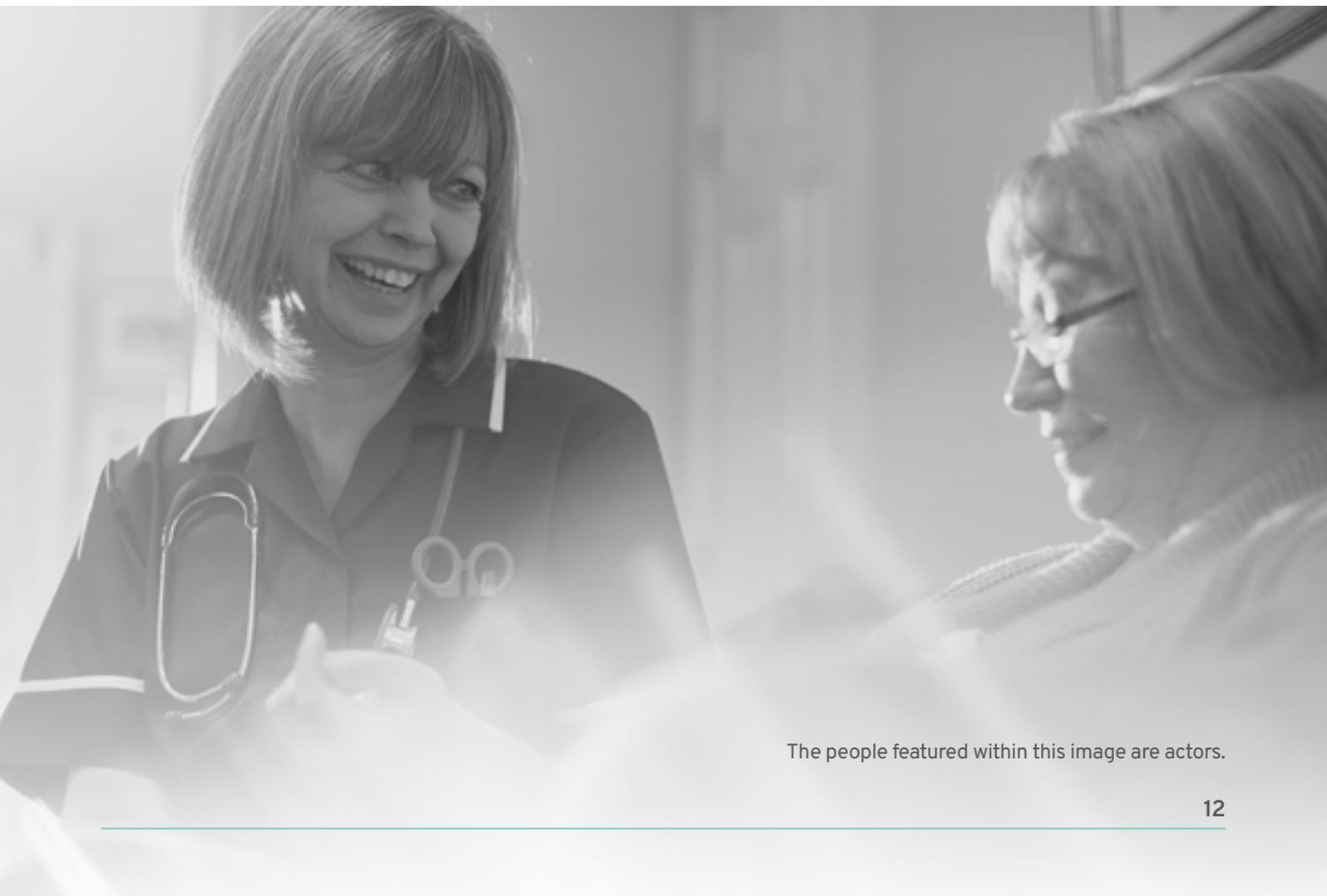
NICE Quality Standard (QS24) highlights the need for all care services to take responsibility for the identification of people at risk of malnutrition, to provide nutritional support for everyone who needs it and to take an integrated approach to the provision of services.⁵⁶

To help identify patients who may be at nutritional risk, a widely used screening tool such as the **Malnutrition Universal Screening Tool (MUST)** can be used.⁵⁷⁻⁶⁰ MUST has been developed to aid in identifying adults who are underweight and at risk of malnutrition.⁵⁸ It has

been evaluated in hospital wards, outpatient clinics, general practice, the community and in care homes.⁵⁸ An interactive version of MUST can be used at: <https://www.bapen.org.uk/must-and-self-screening/must-calculator/>.

If possible, a ‘food first’ approach should be the initial option to consider for your patients, along with nutritional support and advice. BAPEN offers suggestions and advice on food first which can be found at: <https://www.bapen.org.uk/education/nutrition-support/nutrition-by-mouth/food-first-food-enrichment/>.

When a patient is identified as high risk of malnutrition and food intake alone is insufficient, or when it is anticipated that food alone is insufficient to meet daily nutritional requirements, prescribing oral nutritional supplements, in addition to regular meals, can be considered.⁶¹



The people featured within this image are actors.

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- In convalescence from surgery, e.g. where nutritional intake continues to be inadequate.
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- Where food intolerance exists, e.g. exclusion diets – in synthetic diets, e.g. in phenylketonuria, galactosaemia and ketogenic diets.

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All references accessed May 2024.

PRESCRIBING INFORMATION for Forceval® Capsules
Please refer to full Summary of Product Characteristics (SmPC) before prescribing.

Presentation: Brown and maroon, oblong, soft gelatin capsule printed containing: Vitamin A (as β -Carotene) 2,500 iu; Vitamin D2 (Ergocalciferol) 400 iu; Vitamin B1 (Thiamine) 1.2 mg; Vitamin B2 (Riboflavin) 1.6 mg; Vitamin B6 (Pyridoxine) 2.0 mg; Vitamin B12 (Cyanocobalamin) 3.0 mcg; Vitamin C (Ascorbic Acid) 60 mg; Vitamin E (dl- α -Tocopheryl Acetate) 10 mg; d-Biotin (Vitamin H) 100 mcg; Nicotinamide (Vitamin B3) 18 mg; Pantothenic Acid (Vitamin B5) 4.0 mg; Folic Acid (Vitamin B Complex) 400 mcg; Calcium 108 mg; Iron 12 mg; Copper 2.0 mg; Phosphorus 83 mg; Magnesium 30 mg; Potassium 4.0 mg; Zinc 15 mg; Iodine 140 mcg; Manganese 3.0 mg; Selenium 50 mcg; Chromium 200 mcg; Molybdenum 250 mcg.
Indications: As a therapeutic nutritional adjunct in conditions where the intake or absorption of vitamins and minerals is suboptimal, in convalescence from illness or surgery or for patients on special or restricted diets, where food intolerances exist or as an adjunct in synthetic diets. **Dosage and method of administration:** Adults and the elderly: One capsule daily swallowed whole with water, preferably one hour after a meal. Not recommended in children under 12 years of age. **Contraindications:** Hypercalcaemia, haemochromatosis, and other iron storage disorders. Hypersensitivity to the active substance(s) or to any of the excipients. Allergy to peanuts or soya. **Warnings and precautions:** Protein and energy are also required to provide complete nutrition in the daily diet. No other vitamins, minerals, or supplements with or without vitamin A should be taken with this preparation except under medical supervision. Do not take on an empty stomach. Do not exceed the stated dose. Contains iron,

keep out of the reach and sight of children as overdose may be fatal. Contains E123 (amaranth) and E124 (ponceau 4R red), which may cause allergic reactions. High dose of β -carotene (20-30 mg/day) may increase the risk of lung cancer in current smokers and those previously exposed to asbestos. Product contains 4.5 mg β -carotene per recommended daily dose. Patients with thyroid disorders should seek medical advice before taking Forceval Capsules. **Interactions:** Folic acid can reduce the plasma concentration of phenytoin. Oral iron and zinc reduce the absorption of tetracyclines. **Pregnancy and lactation:** Forceval Capsules may be administered during pregnancy and lactation at the recommendation of the physician. **Side Effects:** Frequency not known: Hypersensitivity reaction (such as rash), gastrointestinal disturbances (such as nausea, vomiting and abdominal pain). Prescribers should consult the SmPC in relation to other adverse reactions. **Legal Category:** P Packs and **NHS price:** 15 capsules (£5.46), 30 capsules (£9.92) or 90 capsules (£28.77). **Marketing Authorisation number:** PL16853/0079 **Further information available from:** Alliance Pharmaceuticals Ltd, Avonbridge House, Bath Road, Chippenham, Wiltshire, SN15 2BB www.alliancepharma.co.uk **Date of preparation:** April 2024

Adverse Event Reporting
Adverse events should be reported. Reporting forms and information can be found at yellowcard.mhra.gov.uk or by searching for MHRA Yellow Card in the Google Play or Apple App Store. Adverse events should also be reported to Pharmacovigilance at Alliance Pharmaceuticals Ltd, Tel: 01249 466966, email: pharmacovigilance@alliancepharma.co.uk.

