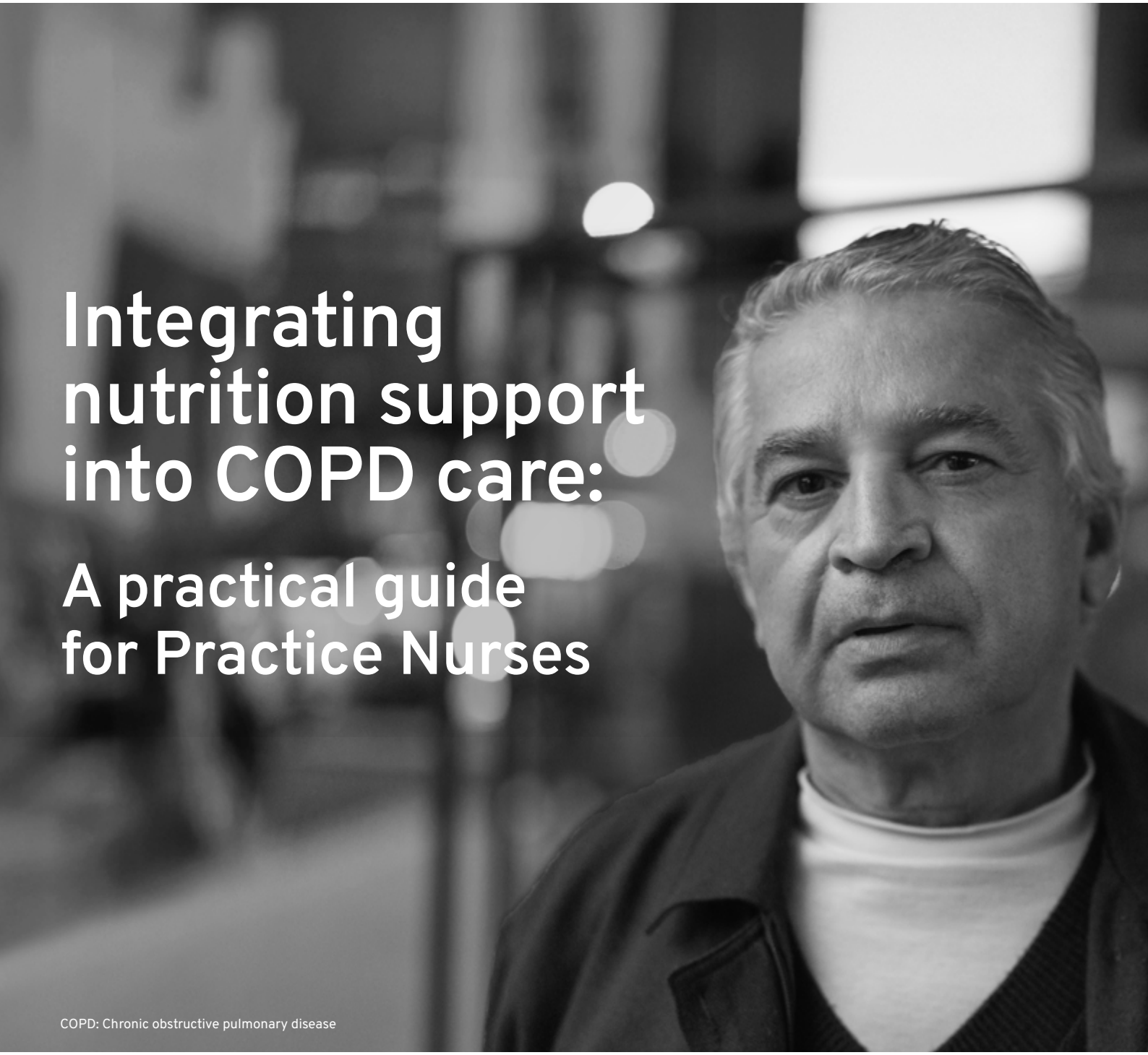

Integrating nutrition support into COPD care:

A practical guide for Practice Nurses

COPD: Chronic obstructive pulmonary disease

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An introduction to nutrition in COPD

The management of COPD often focuses on pharmacological therapies, pulmonary rehabilitation, smoking cessation, and symptom control, all of which are key pillars in management.[1] However, nutrition can play a role in the clinical course of COPD, influencing physical function, respiratory efficiency, overall quality of life and mortality.[2,3] Despite its importance, nutritional care can be inconsistent, especially in those with stable COPD.[3]

This article aims to support Practice Nurses in identifying and managing malnutrition as part of holistic COPD management, highlighting practical steps and resources to help integrate nutritional care into routine practice.

COPD prevalence and burden

In the UK, COPD affects a significant number of the population and despite its mostly preventable nature, COPD remains a leading cause of morbidity and mortality, placing a substantial burden on both patients and the NHS alike.[4-6]

In the UK, COPD affects a significant number of the population:[7]

COPD specific burdens include:

£1.9 billion
total NHS annual cost (2017)[9]

29%
of the total NHS cost for respiratory illness (2017)[9]

1.4 million GP consultations
per year[7]

Reduced quality of life
with COPD being the fifth leading cause of disability-adjusted life years lost worldwide (2013)[6]

Depression and anxiety
are common comorbidities[6]

Why is nutrition of importance in COPD?

Malnutrition occurs when there is as an imbalance of energy, protein, and other nutrients that might lead to a negative effect on body composition, physical function, and health outcomes.[5,10,11]

Although no recent UK studies have examined the prevalence of malnutrition in individuals with COPD, it is generally considered to be a significant concern.[2,3,12] A 2010 UK study reported that 21% of COPD outpatients were malnourished, with prevalence rates increasing markedly in correlation with disease severity.[13] A 2023 systemic review and meta-analysis highlighted a global prevalence of malnutrition in those with COPD at 30% and an at-risk prevalence of 50%.[5,12]

It's also important to recognise that malnutrition and obesity can coexist in COPD patients, especially within the initial phase of the condition.[5,10,11] As the condition progresses, individuals might then face an increasing risk of undernutrition.[5]

Sarcopenia, characterised by the progressive loss of skeletal muscle mass and strength, and frailty are commonly observed in individuals with COPD, and can contribute to poor pulmonary function and worse clinical outcomes.[5] In patients with high body mass index (BMI), sarcopenia may be masked and therefore difficult to recognise.[5]

Why are COPD patients at risk of malnutrition?

In patients with COPD, malnutrition is often multifactorial.[5] Increased energy and protein requirements can outpace dietary intake, especially when symptoms such as breathlessness, fatigue, and early satiety reduce a patient's ability or willingness to eat.[5,14]

Disease related factors

From a physiological perspective, COPD increases resting energy expenditure due to the increased work of breathing.[2,5,14]

At the same time, patients often have reduced appetite and food intake due to early satiety, breathlessness during meals, and fatigue.[2,3,5,14]

- Increased energy expenditure.[2,5]
- Reduced intake.[2,5]
- Frequent exacerbations leading to catabolic stress and additional appetite loss.[14]

Psychosocial and environmental factors

Depression and anxiety, common comorbidities in COPD, can diminish appetite and motivation to prepare or consume meals.[3,5,15]

Social isolation, limited mobility, and a restricted income can impair a patient's ability to shop for, prepare, and access nutritionally adequate food. Patients who live alone and lack support systems are particularly vulnerable.[5,16]

- Depression and anxiety.[3,5]
- Social isolation and economic hardship.[5]
- Functional decline.[3,5]

Medication-related factors

Medications prescribed to manage COPD symptoms may also contribute to poor nutritional status. Corticosteroids, for example, are associated with negatively affecting bone density.[17] Some other COPD treatments, such as antibiotics, bronchodilators and mucolytics may cause gastrointestinal side effects, such as nausea or altered taste, which negatively impact food intake.[18-22]

- Corticosteroids.[17]
- Some antibiotics, bronchodilators and mucolytics.[18-22]

Consequences of malnutrition in COPD

Malnutrition in COPD can contribute to multiple negative health outcomes:[2,3,23,24]

Physical

- Poor lung function secondary to decreased muscle strength.[2,3]
- Reduced ability to cough, increasing the risk of respiratory infections and pneumonia.[2]
- Rapid deterioration in lung function.[2]
- Decrease in exercise capacity.[2,14]
- Increased fatigue and apathy, which can delay recovery.[2]
- Increased risk of delayed wound healing and infection.[2]
- Increased risk of falls due to lower limb muscle weakness and reduced activities.[2,23]
- Impaired renal function, leading to over- or under-hydration.[2]
- Higher mortality rates: COPD patients were three-fold more likely to die within six months than those not at risk. (2010 data)[2,24]

Social/psychological

- Difficulty performing activities of daily living e.g. shopping and meal preparation.[3]
- The development of depression and social isolation, resulting from the physical issues experienced by someone with COPD. These challenges can restrict social activity and lead to individuals becoming housebound, which can impair their ability to prepare and eat meals.[2,5]

As malnourished individuals are more likely to require hospitalisation, suffer from recurrent exacerbations and increased risk of mortality, there is a clear clinical requirement to address nutrition proactively in the COPD patient population.[2,3,5,6,24]

How to identify nutritional issues in COPD patients

Identifying and managing malnutrition can improve nutritional status, clinical outcomes and reduce healthcare use.[5]

Healthcare professionals such as Practice Nurses have a key role to play in the early identification and management of malnutrition in COPD given the regular contact they have with this specific cohort of patients, for example during:

- ✓ Annual COPD reviews.
- ✓ Post-exacerbation follow-ups.
- ✓ Pulmonary rehabilitation referrals.

Malnutrition screening and assessment

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, also if unintentional weight loss is reported and more frequently if risk of malnutrition is identified.[5]

As malnutrition may be under-recognised, particularly in individuals who are overweight or obese, it is recommended that all patients with COPD are included in routine nutritional risk screening using a validated screening tool, such as the Malnutrition Universal Screening Tool (MUST) across all healthcare settings.[5,25-28]

Five steps used in MUST:[27,28]

Step 1

- Gather measurements: height, weight and body mass index (BMI).
- If it is not possible to obtain height and weight, alternative measurements can be used.

Step 2

- Note unplanned weight loss.

Step 3

- Consider the effect of acute disease.

Step 4

- Add scores from steps 1, 2 and 3 together to obtain overall risk of malnutrition.
- 0 = low risk (routine clinical care), 1 = medium risk (observe), 2 = high risk (treat).

Step 5

- Using the management guidelines and/or local policy, form an appropriate care plan.

Visit the MUST tool on the BAPEN website **here** for full details and additional information.

In addition to using MUST, the **Malnutrition in COPD Pathway** recommends the LEARN acronym for assessment:[5]

L **Look at the individual** – what do you see? Have they got muscle wasting, are they thin or frail looking?

E **Eating** – ask about what they are eating, are they consuming foods from all food groups, missing meals?

A **Appetite** – ask about appetite, has it changed?

R **Relatives** – family members can be a source of information and support; do they have any concerns?

N **Nutrition** – give appropriate nutritional advice. If you are not skilled or confident to do so, seek advice from someone qualified e.g. your local dietitian.

How to manage nutrition in COPD

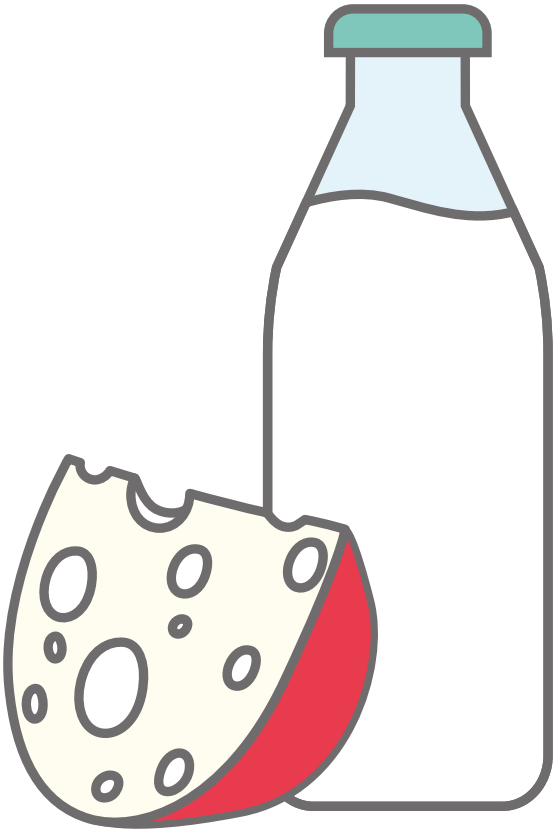
Post-screening, Practice Nurses can initiate practical interventions based on the risk of malnutrition.[5] These interventions should be delivered as part of a multidisciplinary team (MDT) approach, ensuring that care plans are individualised and responsive to each patient's specific clinical needs and circumstances.[5]

In the first instance, oral nutritional support, such as personalised dietary advice, food fortification, adjusting meal patterns or textures, and providing practical support with eating or shopping, should be used to help optimise food intake.[3,5] If nutritional requirements are not met through food-based techniques alone, oral nutritional supplements (ONS) may be introduced in conjunction.[5]

For any high risk or complex cases, these should be referred to a dietitian.[5]

Food First nutrition advice to patients[5,29-32]

- ✓ Little and often: aim for three small meals plus two to three nourishing snacks.
- ✓ Choosing meals that are easier to prepare.
- ✓ Choosing full fat and sugar products rather than low fat/low sugar/sugar free.
- ✓ Food Enrichment using everyday food items to enrich the diet with energy and protein e.g. adding butter, cream or cheese.
- ✓ Encourage the patient to clear mucus from their airways before eating.
- ✓ Choose soft, moist foods if the patient is experiencing a dry mouth.
- ✓ Encourage a daily intake of at least five portions of fruit and vegetables to provide essential fibre, vitamins, and minerals, helping to support their immune function.
- ✗ Avoid foods which stick to the mouth and can be difficult to swallow, such as pastry, chocolate or mashed potato.



- Evaluate whether any current medications may be contributing to or exacerbating symptoms, and determine if discontinuation is appropriate or if initiating an alternative therapy may be help.

Nutritional management in COPD should be guided by the stage and severity of the disease. In stable COPD, the focus is on promoting weight gain and increasing lean muscle mass in malnourished patients.[5] During acute exacerbations, the priority shifts to preventing further weight and muscle loss, with early dietary advice and the use of oral nutritional supplements (ONS) where appropriate.[5]

Oral nutritional supplements (ONS)

In COPD, the body's increased need for energy and protein may exceed what the patient consumes, particularly when symptoms like breathlessness, fatigue, and early satiety limit their appetite or capacity to eat.[5]

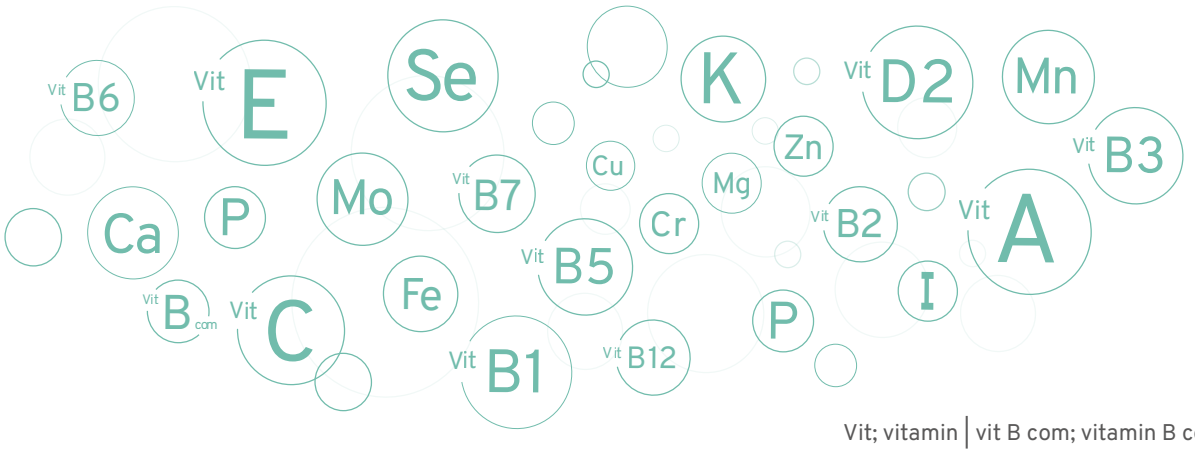
ONS can be used when dietary intake and support have been insufficient, or when it is anticipated that food alone will not meet nutritional requirements.[5] The **Malnutrition in COPD Pathway** includes additional information on ONS such as when to use and types of ONS available.[5]

Micronutrient challenges in COPD

Micronutrients are essential components of nutrition in health and disease.[33-35] Each micronutrient is responsible, often in combination, for various steps of metabolic, antioxidant, endocrine and immune reactions.[33]

To optimise nutritional intake for COPD, micronutrients should not be overlooked.[3] The development of micronutrient deficiencies can arise due to an imbalance between the body's increased demand, driven by systemic inflammation and oxidative stress, along with inadequate dietary intake.[14]

Vitamin D	Vitamin D levels are often low in patients with COPD, potentially due to inadequate dietary intake, limited sun exposure, and reduced cutaneous synthesis with ageing.[5,14,36,37] Vitamin D plays a crucial role in skeletal health, and deficiency can contribute to the development of osteoporosis,[38] a condition for which COPD patients are already at increased risk.[36] Additionally, vitamin D helps support the immune function.[33]
Vitamins A, C and E	Vitamins A, C and E have anti-inflammatory and antioxidant effects and may be protective in the progression of COPD.[14,36]
Vitamin B6	COPD patients with lower vitamin B6 intakes may have a higher risk of frailty.[39]
Calcium	Calcium may be lower in COPD patients due to frequent steroid therapy.[17,32] Some patients may also avoid dairy due to increased mucus production, however this is not a universal experience.[30,40]
Iron	A 2015 study (n=113) found that iron deficiency was more common in patients with COPD (18%) vs. controls (5%), p=0.029. Patients with iron deficiency also had more self-reported exacerbations and a trend towards worse exercise tolerance.[41]



Vit; vitamin | vit B com; vitamin B complex

The role of Forceval® Capsules in nutritional support

Where there is a specific concern about the adequacy of micronutrient status in appropriate patients, Forceval® Capsules, a medicinal multivitamin and mineral supplement, is indicated as a therapeutic nutritional adjunct for individuals aged 12 years and above.[42]

Consider Forceval® Capsules for eligible patients with COPD:[42]

- With suboptimal intake of vitamins and minerals
- With suboptimal absorption of vitamins and minerals e.g. due to concurrent medication decreasing vitamin and mineral absorption
- Convalescence from surgery
- Convalescence from illness e.g. anorexia or cachexia
- In special or restricted diets

Balancing Undernutrition and Overnutrition

While the primary focus is often on undernutrition, it is important to consider overnutrition and obesity in the course of COPD and its management.[5] Obesity in COPD patients can be caused from inactivity and an increased appetite due to oral steroid use.[43] However, excess body weight can exacerbate breathlessness and reduce mobility so it's important that patients are encouraged to maintain a healthy weight.[43,44]

Guidance and guidelines to help with nutritional management in COPD

NICE NG115 Chronic obstructive pulmonary disease in over 16s: diagnosis and management (2023)[45]

Covers diagnosing and managing COPD for those patients over 16 years. Includes information on non-pharmacological care, as well as treatment options available.

Managing Malnutrition in COPD guide[5]

Developed by an expert working group of professionals to provide nutritional advice suitable for use across the spectrum of COPD. It provides information on screening, identification of malnutrition, tips on further assessment of nutritional status to identify factors that contribute to poor dietary intake and the treatment strategies necessary to optimise nutrition.

Managing Malnutrition in the Community[46]

Pathway to assist community healthcare professionals in identifying and managing disease-related malnutrition. Developed by a multi-professional team and endorsed by ten key organisations, including The British Association for Parenteral and Enteral Nutrition (BAPEN) and The British Pharmaceutical Nutrition Group (BPNG)

Eating Well for Healthier Lungs[47]

Asthma and Lung UK have developed a useful leaflet, 'Eating Well for Healthier Lungs', that provides advice for both weight gain and weight loss, specifically for people living with a lung condition.

Conclusion

Malnutrition in COPD is a common, but sometimes overlooked component of disease management.[2,3] Left unaddressed, it exacerbates disease progression, increases hospital admissions, and reduces quality of life.[2,3,5,14] Practice Nurses have the opportunity to identify at-risk patients and initiate early nutritional interventions that can help improve outcomes.[5]

Summary to guide you in the management of COPD

- Identify patients at risk.
- Integrate the MUST screening tool into routine COPD assessments.
- Initiate appropriate dietary advice and nutritional support strategies, such as 'Food First', or ONS if applicable.
- Where complex needs exist, refer to dietitians.
- Educate patients on the importance of good nutrition.
- Consider micronutrient supplementation, such as Forceval® Capsules, in eligible patients who have COPD with micronutrient deficiencies, as required.

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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 (£6.28), 30 capsules (£11.41) or 90 capsules (£33.09). **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: June 2024

Adverse events should be reported. Reporting forms and information can be found at yellowcard.mhra.gov.uk. Adverse events should also be reported to Alliance Pharmaceuticals Ltd, Tel: 01249 466966, email: pharmacovigilance@alliancepharma.co.uk

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Please consult the SmPC for a full listing of contra-indications, precautions, and adverse events before prescribing this medicine. Rash, nausea, vomiting and abdominal pain have been reported. Should not be given to individuals with known allergies to peanut or soya.

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