NICE National Institute for Health and Care Excellence

NICE guideline

Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition

Clinical guideline
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All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

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This guideline is the basis of QS24.

Overview

This guideline covers identifying and caring for adults who are malnourished or at risk of malnutrition in hospital or in their own home or a care home. It offers advice on how oral, enteral tube feeding and parenteral nutrition support should be started, administered and stopped. It aims to support healthcare professionals identify malnourished people and help them to choose the most appropriate form of support.

Who is it for?

- All healthcare workers in hospital and the community who are directly involved in patient care
- People who are malnourished or at risk of malnutrition in hospital or in their own home or a care home and their families and carers

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Introduction

Malnutrition is a state in which a deficiency of nutrients such as energy, protein, vitamins and minerals causes measurable adverse effects on body composition, function or clinical outcome. In this guideline, we do not use the term to cover excess nutrient provision.

Malnutrition is both a cause and a consequence of ill health. It is common and increases a patient's vulnerability to disease. Methods to improve or maintain nutritional intake are known as nutrition support. These include:

- oral nutrition support – for example, fortified food, additional snacks and/or sip feeds
- enteral tube feeding – the delivery of a nutritionally complete feed directly into the gut via a tube
- parenteral nutrition – the delivery of nutrition intravenously.

These methods can improve outcomes, but decisions on the most effective and safe methods are complex.

Currently, knowledge of the causes, effects and treatment of malnutrition among healthcare professionals in the UK is poor. This guideline aims to help healthcare professionals correctly identify people in hospital and the community who need nutrition support, and enable them to choose and deliver the most appropriate nutrition support at the most appropriate time.

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Key priorities for implementation

Key clinical priorities

- Screening for malnutrition and the risk of malnutrition should be carried out by healthcare professionals with appropriate skills and training.
- All hospital inpatients on admission and all outpatients at their first clinic appointment should be screened. Screening should be repeated weekly for inpatients and when there is clinical concern for outpatients. People in care homes should be screened on admission and when there is clinical concern.
- Hospital departments who identify groups of patients with low risk of malnutrition may opt out of screening these groups. Opt-out decisions should follow an explicit process via the local clinical governance structure involving experts in nutrition support.
- Nutrition support should be considered in people who are malnourished, as defined by any of the following:
  - a body mass index (BMI) of less than 18.5 kg/m^2
  - unintentional weight loss greater than 10% within the last 3 to 6 months
  - a BMI of less than 20 kg/m^2 and unintentional weight loss greater than 5% within the last 3 to 6 months.
- Nutrition support should be considered in people at risk of malnutrition, defined as those who have:
  - eaten little or nothing for more than 5 days and/or are likely to eat little or nothing for 5 days or longer
  - a poor absorptive capacity and/or high nutrient losses and/or increased nutritional needs from causes such as catabolism.
- Healthcare professionals should consider using oral, enteral or parenteral nutrition support, alone or in combination, for people who are either malnourished or at risk of malnutrition, as defined above. Potential swallowing problems should be taken into account.

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Key organisational priorities

- All healthcare professionals who are directly involved in patient care should receive education and training, relevant to their post, on the importance of providing adequate nutrition.
- Healthcare professionals should ensure that all people who need nutrition support receive coordinated care from a multidisciplinary team. The composition of this team may differ according to setting and local arrangements.
- All acute hospital trusts should employ at least 1 specialist nutrition support nurse.
- All hospital trusts should have a nutrition steering committee working within the clinical governance framework.

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Using this guideline

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information about shared decision making.

Health and social care professionals should follow our general guidelines for people delivering care:

- Decision making and mental capacity
- Medicines adherence
- Medicines optimisation
- Multimorbidity
- Patient experience in adult NHS services
- People's experience in adult social care services
- Shared decision making

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

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Recommendations

1.1 Organisation of nutrition support in hospital and the community

1.1.1 All healthcare professionals who are directly involved in patient care should receive education and training, relevant to their post, on the importance of providing adequate nutrition. Education and training should cover:

- nutritional needs and indications for nutrition support
- options for nutrition support (oral, enteral and parenteral)
- ethical and legal concepts
- potential risks and benefits
- when and where to seek expert advice.

1.1.2 Healthcare professionals should ensure that care provides:

- food and fluid of adequate quantity and quality in an environment conducive to eating
- appropriate support, for example, modified eating aids, for people who can potentially chew and swallow but are unable to feed themselves.

1.1.3 Healthcare professionals should ensure that all people who need nutrition support receive coordinated care from a multidisciplinary team. The composition of this team may differ according to setting and local arrangements.

1.1.4 All acute hospital trusts should have a multidisciplinary nutrition support team, which may include: doctors (for example, gastroenterologists, gastrointestinal surgeons, intensivists or others with a specific interest in nutrition support), dietitians, a specialist nutrition nurse, other nurses, pharmacists, biochemistry and microbiology laboratory support staff, and other allied healthcare professionals (for example, speech and language therapists).

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1.1.5 All hospital trusts should have a nutrition steering committee working within the clinical governance framework.

1.1.6 Members of the nutrition steering committee should be drawn from trust management, and include senior representation from medical staff, catering, nursing, dietetics, pharmacy and other healthcare professionals as appropriate, for example, speech and language therapists.

1.1.7 All acute hospital trusts should employ at least 1 specialist nutrition support nurse.

1.1.8 The specialist nutrition support nurse should work alongside nursing staff, as well as dietitians and other experts in nutrition support, to:

- minimise complications related to enteral tube feeding and parenteral nutrition
- ensure optimal ward-based training of nurses
- ensure adherence to nutrition support protocols
- support coordination of care between the hospital and the community.

1.2 Screening for malnutrition and the risk of malnutrition in hospital and the community

1.2.1 Screening for malnutrition and the risk of malnutrition should be carried out by healthcare professionals with appropriate skills and training.

1.2.2 All hospital inpatients on admission and all outpatients at their first clinic appointment should be screened. Screening should be repeated weekly for inpatients and when there is clinical concern for outpatients.

1.2.3 Hospital departments who identify groups of patients with low risk of malnutrition may opt out of screening these groups. Opt-out decisions should follow an explicit process via the local clinical governance structure involving experts in nutrition support.

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1.2.4 People in care homes should be screened on admission and when there is clinical concern. Clinical concern includes, for example, unintentional weight loss, fragile skin, poor wound healing, apathy, wasted muscles, poor appetite, altered taste sensation, impaired swallowing, altered bowel habit, loose fitting clothes or prolonged intercurrent illness.

1.2.5 Screening should take place on initial registration at general practice surgeries and when there is clinical concern. Clinical concern includes, for example, unintentional weight loss, fragile skin, poor wound healing, apathy, wasted muscles, poor appetite, altered taste sensation, impaired swallowing, altered bowel habit, loose fitting clothes or prolonged intercurrent illness. Screening should also be considered at other opportunities (for example, health checks, flu injections).

1.2.6 Screening should assess body mass index (BMI) and percentage unintentional weight loss and should also consider the time over which nutrient intake has been unintentionally reduced and/or the likelihood of future impaired nutrient intake. The Malnutrition Universal Screening Tool (MUST), for example, may be used to do this. BMI is weight in kilograms divided by height in metres squared.

1.3 Indications for nutrition support in hospital and the community

1.3.1 Nutrition support should be considered in people who are malnourished, as defined by any of the following:

- a BMI of less than 18.5 kg/m^2
- unintentional weight loss greater than 10% within the last 3 to 6 months
- a BMI of less than 20 kg/m^2 and unintentional weight loss greater than 5% within the last 3 to 6 months.

1.3.2 Nutrition support should be considered in people at risk of malnutrition who, as defined by any of the following:

- have eaten little or nothing for more than 5 days and/or are likely to eat little

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or nothing for the next 5 days or longer

- have a poor absorptive capacity, and/or have high nutrient losses and/or have increased nutritional needs from causes such as catabolism.

1.3.3 Healthcare professionals should consider using oral, enteral or parenteral nutrition support, alone or in combination, for people who are either malnourished or at risk of malnutrition, as defined in recommendations 1.3.1 and 1.3.2. Potential swallowing problems should be taken into account.

1.3.4 Healthcare professionals involved in starting or stopping nutrition support should:

- obtain consent from the patient if he or she is competent
- act in the patient's best interest if he or she is not competent to give consent
- be aware that the provision of nutrition support is not always appropriate. Decisions on withholding or withdrawing of nutrition support require a consideration of both ethical and legal principles (both at common law and statute including the Human Rights Act 1998).

  When such decisions are being made, follow the General Medical Council's Treatment and care towards the end of life: good practice in decision making and the Department of Health and Social Care's Reference guide to consent for examination or treatment, second edition (2009).

1.3.5 Healthcare professionals should ensure that people having nutrition support, and their carers, are kept fully informed about their treatment. They should also have access to appropriate information and be given the opportunity to discuss diagnosis and treatment options.

1.4 What to give in hospital and the community

1.4.1 Healthcare professionals who are skilled and trained in nutritional requirements and methods of nutrition support should ensure that the total nutrient intake of people prescribed nutrition support accounts for:

- energy, protein, fluid, electrolyte, mineral, micronutrients and fibre needs

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- activity levels and the underlying clinical condition – for example, catabolism, pyrexia
- gastrointestinal tolerance, potential metabolic instability and risk of refeeding problems
- the likely duration of nutrition support.

Total intake includes intake from any food, oral fluid, oral nutritional supplements, enteral and/or parenteral nutrition support and intravenous fluid. The term 'micronutrient' is used throughout to include all essential vitamins and trace elements.

1.4.2 For people who are not severely ill or injured, nor at risk of refeeding syndrome, the suggested nutritional prescription for total intake should provide all of the following:

- 25 to 35 kcal/kg/day total energy (including that derived from protein); this level may need to be lower in people who are overweight, with a BMI over 25; when using parenteral nutrition, it is often necessary to adjust total energy values listed on the manufacturer's information, which may not include protein energy values
- 0.8 to 1.5 g protein (0.13 to 0.24 g nitrogen)/kg/day
- 30 to 35 ml fluid/kg (with allowance for extra losses from drains and fistulae, for example, and extra input from other sources – for example, intravenous drugs)
- adequate electrolytes, minerals, micronutrients (allowing for any pre-existing deficits, excessive losses or increased demands) and fibre if appropriate.

Total intake includes intake from any food, oral fluid, oral nutritional supplements, enteral and/or parenteral nutrition support and intravenous fluid.

1.4.3 The prescription should be reviewed according to the person's progress, and care should be taken when:

- using food fortification that tends to supplement energy and/or protein

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without adequate micronutrients and minerals

- using feeds and supplements that meet full energy and nitrogen needs, as they may not provide adequate micronutrients and minerals when only used in a supplementary role
- using pre-mixed parenteral nutrition bags that have not had tailored additions from pharmacy.

1.4.4 Nutrition support should be cautiously introduced in seriously ill or injured people requiring enteral tube feeding or parenteral nutrition. It should be started at no more than 50% of the estimated target energy and protein needs. It should be built up to meet full needs over the first 24 to 48 hours according to metabolic and gastrointestinal tolerance. Full requirements of fluid, electrolytes, vitamins and minerals should be provided from the outset of feeding.

1.4.5 People who have eaten little or nothing for more than 5 days should have nutrition support introduced at no more than 50% of requirements for the first 2 days, before increasing feed rates to meet full needs if clinical and biochemical monitoring reveals no refeeding problems.

1.4.6 People who meet the criteria in box 1 should be considered to be at high risk of developing refeeding problems.

Box 1 Criteria for determining people at high risk of developing refeeding problems

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Patient has 1 or more of the following:

- BMI less than 16 kg/m^2
- unintentional weight loss greater than 15% within the last 3 to 6 months
- little or no nutritional intake for more than 10 days
- low levels of potassium, phosphate or magnesium before feeding.

Or patient has 2 or more of the following:

- BMI less than 18.5 kg/m^2
- unintentional weight loss greater than 10% within the last 3 to 6 months
- little or no nutritional intake for more than 5 days
- a history of alcohol abuse or drugs including insulin, chemotherapy, antacids or diuretics.

1.4.7 People at high risk of developing refeeding problems (box 1) should be cared for by healthcare professionals who are appropriately skilled and trained and have expert knowledge of nutritional requirements and nutrition support.

1.4.8 The prescription for people at high risk of developing refeeding problems should consider:

- starting nutrition support at a maximum of 10 kcal/kg/day, increasing levels slowly to meet or exceed full needs by 4 to 7 days
- using only 5 kcal/kg/day in extreme cases (for example, BMI less than 14 kg/m^2 or negligible intake for more than 15 days) and monitoring cardiac rhythm continually in these people and any others who already have or develop any cardiac arrythmias
- restoring circulatory volume and monitoring fluid balance and overall clinical status closely

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- providing immediately before and during the first 10 days of feeding: oral thiamin 200 to 300 mg daily, vitamin B co strong 1 or 2 tablets, 3 times a day (or full dose daily intravenous vitamin B preparation, if necessary) and a balanced multivitamin or trace element supplement once daily
- providing oral, enteral or intravenous supplements of potassium (likely requirement 2 to 4 mmol/kg/day), phosphate (likely requirement 0.3 to 0.6 mmol/kg/day) and magnesium (likely requirement 0.2 mmol/kg/day intravenous, 0.4 mmol/kg/day oral) unless pre-feeding plasma levels are high; pre-feeding correction of low plasma levels is unnecessary.

1.5 Monitoring of nutrition support in hospital and the community

1.5.1 Healthcare professionals should review the indications, route, risks, benefits and goals of nutrition support at regular intervals. The time between reviews depends on the patient, care setting and duration of nutrition support. Intervals may increase as the patient is stabilised on nutrition support.

1.5.2 People having nutrition support in hospital should be monitored by healthcare professionals with the relevant skills and training in nutritional monitoring.

1.5.3 Healthcare professionals should refer to the protocols for nutritional, anthropometric and clinical monitoring, shown in table 1, when monitoring people having nutrition support in hospital.

1.5.4 Healthcare professionals should refer to the protocols for laboratory monitoring, shown in table 2, when monitoring people having nutrition support in hospital. Table 2 is particularly relevant to parenteral nutrition. It could also be selectively applied when enteral or oral nutrition support is used, particularly for people who are metabolically unstable or at risk of refeeding syndrome. The frequency and extent of the observations given may need to be adapted in acutely ill or metabolically unstable people.

1.5.5 People having parenteral nutrition in the community need regular assessment and monitoring. This should be carried out by home care specialists and by

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experienced hospital teams (initially at least weekly), using observations marked * in table 1. In addition, they should be reviewed at a specialist hospital clinic every 3 to 6 months. Monitoring should be more frequent during the early months of home parenteral nutrition, or if there is a change in clinical condition, when the full range of tests in tables 1 and 2 should be performed. Some of the clinical observations may be checked by patients or carers.

1.5.6 People having oral nutrition support and/or enteral tube feeding in the community should be monitored by healthcare professionals with the relevant skills and training in nutritional monitoring. This group of people should be monitored every 3 to 6 months or more frequently if there is any change in their clinical condition. A limited number of observations and tests from table 1 should be performed. Some of the clinical observations may be checked by patients or carers. If clinical progress is satisfactory, laboratory tests are rarely needed.

1.5.7 If long-term nutrition support is needed patients and carers should be trained to recognise and respond to adverse changes in both their well-being and in the management of their nutritional delivery system.

Table 1 Protocol for nutritional, anthropometric and clinical monitoring of nutrition support

Monitoring of nutrition support	Parameter	Frequency	Rationale
Nutritional	Nutrient intake from oral, enteral or parenteral nutrition (including any change in conditions that are affecting food intake)	Daily initially, reducing to twice weekly when stable	To ensure that patient is receiving nutrients to meet requirements and that current method of feeding is still the most appropriate. To allow alteration of intake as indicated
Nutritional	Actual volume of feed delivered*	Daily initially, reducing to twice weekly when stable	To ensure that patient is receiving correct volume of feed. To allow troubleshooting

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Monitoring of nutrition support	Parameter	Frequency	Rationale
Nutritional	Fluid balance charts (enteral and parenteral)	Daily initially, reducing to twice weekly when stable	To ensure patient is not becoming over or under hydrated
Anthropometric	Weight*	Daily if concerns regarding fluid balance, otherwise weekly reducing to monthly	To assess ongoing nutritional status, determine whether nutritional goals are being achieved and take into account both body fat and muscle
Anthropometric	Body mass index (BMI)*	Start of feeding and then monthly	To assess ongoing nutritional status, determine whether nutritional goals are being achieved and take into account both body fat and muscle
Anthropometric	Mid-arm circumference*	Monthly, if weight cannot be obtained or is difficult to interpret	To assess ongoing nutritional status, determine whether nutritional goals are being achieved and take into account both body fat and muscle
Anthropometric	Triceps skinfold thickness	Monthly, if weight cannot be obtained or is difficult to interpret	To assess ongoing nutritional status, determine whether nutritional goals are being achieved and take into account both body fat and muscle

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Monitoring of nutrition support	Parameter	Frequency	Rationale
Gastrointestinal (GI) function	Nausea or vomiting*	Daily initially, reducing to twice weekly	To ensure tolerance of feed
GI function	Diarrhoea*	Daily initially, reducing to twice weekly	To rule out any other causes of diarrhoea and then assess tolerance of feeds
GI function	Constipation*	Daily initially, reducing to twice weekly	To rule out other causes of constipation and then assess tolerance of feeds
GI function	Abdominal distension	As necessary	Assess tolerance of feed
Enteral tube – nasally inserted	Gastric tube position (pH less than or equal to 5.5 using pH paper – or noting position of markers on tube once initial position has been confirmed)	Before each feed begins	To ensure tube in correct position
Enteral tube – nasally inserted	Nasal erosion	Daily	To ensure tolerance of tube
Enteral tube – nasally inserted	Fixation (is it secure?)	Daily	To help prevent tube becoming dislodged
Enteral tube – nasally inserted	Is tube in working order (all pieces intact, tube not blocked or kinked)?	Daily	To ensure tube is in working order
Gastrostomy or jejunostomy	Stoma site	Daily	To ensure site not infected or red, no signs of gastric leakage

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Monitoring of nutrition support	Parameter	Frequency	Rationale
Gastrostomy or jejunostomy	Tube position (length at external fixation)	Daily	To ensure tube has not migrated from or into stomach and external over granulation
Gastrostomy or jejunostomy	Tube insertion and rotation (gastrostomy without jejunal extension only)	Weekly	Prevent internal overgranulation or prevention of buried bumper syndrome
Gastrostomy or jejunostomy	Balloon water volume (balloon retained gastrostomies only)	Weekly	To prevent tube falling out
Gastrostomy or jejunostomy	Jejunostomy tube position by noting position of external markers	Daily	Confirmation of position
Parenteral nutrition	Catheter entry site*	Daily	Signs of infection or inflammation
Parenteral nutrition	Skin over position of catheter tip (peripherally fed people)*	Daily	Signs of thrombophlebitis
Clinical condition	General condition*	Daily	To ensure that patient is tolerating feed and that feeding and route continue to be appropriate
Clinical condition	Temperature or blood pressure	Daily initially, then as needed	Sign of infection or fluid balance
Clinical condition	Drug therapy*	Daily initially, reducing to monthly when stable	Appropriate preparation of drug (to reduce incidence of tube blockage). To prevent or reduce drug nutrient interactions

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Monitoring of nutrition support	Parameter	Frequency	Rationale
Long- or short-term goals	Are goals being met?*	Daily initially, reducing to twice weekly and then progressively to 3- to 6-monthly, unless clinical condition changes	To ensure that feeding is appropriate to overall care of patient
Long- or short-term goals	Are goals still appropriate?*	Daily initially, reducing to twice weekly and then progressively to 3- to 6-monthly, unless clinical condition changes	To ensure that feeding is appropriate to overall care of patient

People at home having parenteral nutrition should be monitored using observations marked*.

Table 2 Protocol for laboratory monitoring of nutrition support

Parameter	Frequency	Rationale	Interpretation
Sodium (Na), potassium (K), urea, creatinine	Baseline Daily until stable Then 1 or 2 times a week	Assessment of renal function, fluid status, and Na and K status	Interpret with knowledge of fluid balance and medication Urinary sodium may be helpful in complex cases with gastrointestinal fluid loss
Glucose	Baseline 1 or 2 times a day (or more if needed) until stable Then weekly	Glucose intolerance is common	Good glycaemic control is necessary

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Parameter	Frequency	Rationale	Interpretation
Magnesium (Mg), phosphate	Baseline Daily if risk of refeeding syndrome Three times a week until stable Then weekly	Depletion is common and under recognised	Low concentrations indicate poor status
Liver function tests including International Normalised Ratio (INR)	Baseline Twice weekly until stable Then weekly	Abnormalities common during parenteral nutrition	Complex; may be due to sepsis, other disease or nutritional intake
Calcium, albumin	Baseline Then weekly	Hypocalcaemia or hypercalcaemia may occur	Correct measured serum calcium concentration for albumin Hypocalcaemia may be secondary to Mg deficiency Low albumin reflects disease not protein status
C-reactive protein	Baseline Then 2 or 3 times a week until stable	Assists interpretation of protein, trace element and vitamin results	To assess the presence of an acute phase reaction (APR); the trend of results is important
Zinc (Zn), copper (Cu)	Baseline Then every 2 to 4 weeks, depending on results	Deficiency common, especially when increased losses	People most at risk when anabolic APR causes Zn decrease and Cu increase

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Parameter	Frequency	Rationale	Interpretation
Selenium (Se)	Baseline if risk of depletion Further testing dependent on baseline These tests are needed primarily for people having parenteral nutrition in the community	Se deficiency likely in severe illness and sepsis, or long-term nutrition support	APR causes Se decrease Long-term status better assessed by glutathione peroxidase
Full blood count and mean corpuscular volume (MCV)	Baseline 1 or 2 times a week until stable Then weekly	Anaemia due to iron or folate deficiency is common	Effects of sepsis may be important
Iron (Fe), ferritin	Baseline Then every 3 to 6 months	Iron deficiency common in long-term parenteral nutrition	Iron status difficult if APR (Fe decrease, ferritin increase)
Folate, B12	Baseline Then every 2 to 4 weeks	Iron deficiency is common	Serum folate or B12 sufficient, with full blood count
Manganese	Every 3 to 6 months if on home parenteral nutrition These tests are rarely needed for people having enteral tube feeding (in hospital or in the community), unless there is cause for concern	Excess provision to be avoided, more likely if liver disease	Red blood cell or whole blood better measure of excess than plasma
25-OH vitamin D	6-monthly if on long-term support These tests are rarely needed for people having enteral tube feeding (in hospital or in the community), unless there is cause for concern	Low if housebound	Requires normal kidney function for effect

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Parameter	Frequency	Rationale	Interpretation
Bone densitometry	On starting home parenteral nutrition Then every 2 years These tests are rarely needed for people having enteral tube feeding (in hospital or in the community), unless there is cause for concern	Metabolic bone disease diagnosis	Together with lab tests for metabolic bone disease

1.6 Oral nutrition support in hospital and the community

People with dysphagia

1.6.1 People who present with any obvious or less obvious indicators of dysphagia listed in box 2 should be referred to healthcare professionals with relevant skills and training in the diagnosis, assessment and management of swallowing disorders.

Box 2 Indicators of dysphagia

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Obvious indicators of dysphagia

- difficult, painful chewing or swallowing
- regurgitation of undigested food
- difficulty controlling food or liquid in the mouth
- drooling
- hoarse voice
- coughing or choking before, during or after swallowing
- globus sensation
- nasal regurgitation
- feeling of obstruction
- unintentional weight loss – for example, in people with dementia.

Less obvious indicators of dysphagia

- change in respiration pattern
- unexplained temperature spikes
- wet voice quality
- tongue fasciculation (may be indicative of motor neurone disease)
- xerostomia
- heartburn
- change in eating habits – for example, eating slowly or avoiding social occasions
- frequent throat clearing
- recurrent chest infections

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- atypical chest pain.

1.6.2 Healthcare professionals should recognise that people with acute and chronic neurological conditions and those who have undergone surgery or radiotherapy to the upper aero-digestive tract are at high risk of developing dysphagia.

1.6.3 When managing dysphagia in people, healthcare professionals with relevant skills and training in the diagnosis, assessment and management of swallowing disorders should consider:

- the risks and benefits of modified oral nutrition support and/or enteral tube feeding
- the factors listed in box 3.

Box 3 Factors to be considered before modification of nutrition support and hydration in people with dysphagia

- recurrent chest infections
- mobility
- dependency on others for assistance to eat
- perceived palatability and appearance of food or drink
- level of alertness
- compromised physiology
- poor oral hygiene
- compromised medical status
- metabolic and nutritional requirements
- vulnerability (for example, immunocompromised)
- comorbidities.

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1.6.4 People with dysphagia should have a drug review to ascertain if the current drug formulation, route and timing of administration remains appropriate and is without contraindications for the feeding regimen or swallowing process.

1.6.5 Healthcare professionals with relevant skills and training in the diagnosis, assessment and management of swallowing disorders should regularly monitor and reassess people with dysphagia who are having modified food and liquid until they are stable.

Indications

1.6.6 Healthcare professionals should consider oral nutrition support to improve nutritional intake for people who can swallow safely and are malnourished or at risk of malnutrition, as defined in recommendations 1.3.1 and 1.3.2, respectively. Oral nutrition support includes any of the following methods to improve nutritional intake: fortified food with protein, carbohydrate and/or fat, plus minerals and vitamins; snacks; oral nutritional supplements; altered meal patterns; the provision of dietary advice.

1.6.7 Healthcare professionals should ensure that the overall nutrient intake of oral nutrition support offered contains a balanced mixture of protein, energy, fibre, electrolytes, vitamins and minerals.

1.6.8 If there is concern about the adequacy of micronutrient intake, a complete oral multivitamin and mineral supplement providing the reference nutrient intake for all vitamins and trace elements should be considered by healthcare professionals with the relevant skills and training in nutrition support who are able to determine the nutritional adequacy of a patient's dietary intake.

1.6.9 Oral nutrition support should be stopped when the patient is established on adequate oral intake from normal food.

Surgical patients

1.6.10 Peri-operative oral nutrition support should be considered for surgical patients

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who can swallow safely and are malnourished as defined in recommendation 1.3.1.

1.6.11 Healthcare professionals should consider giving post-caesarean or gynaecological surgical patients who can swallow safely, some oral intake within 24 hours of surgery.

1.6.12 Healthcare professionals should consider giving post-abdominal surgery patients who can swallow safely, and in whom there are no specific concerns about gut function or integrity, some oral intake within 24 hours of surgery. The patient should be monitored carefully for any signs of nausea or vomiting.

1.7 Enteral tube feeding in hospital and the community

In this guideline, enteral tube feeding refers to the delivery of a nutritionally complete feed (as specified in section 1.4) via a tube into the stomach, duodenum or jejunum.

Indications

1.7.1 Healthcare professionals should consider enteral tube feeding in people who are malnourished or at risk of malnutrition, as defined in recommendations 1.3.1 and 1.3.2, respectively, and have:

- inadequate or unsafe oral intake **and**
- a functional, accessible gastrointestinal tract.

1.7.2 Enteral tube feeding should not be given to people unless they meet the criteria in recommendation 1.7.1, or they are taking part in a clinical trial.

1.7.3 Enteral tube feeding should be stopped when the patient is established on adequate oral intake.

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Surgical patients

1.7.4 Surgical patients who are malnourished, as defined in recommendation 1.3.1, meet the criteria in recommendation 1.7.1, and are due to undergo major abdominal procedures, should be considered for pre-operative enteral tube feeding.

1.7.5 General surgical patients should not have enteral tube feeding within 48 hours post-surgery unless they meet the criteria in recommendation 1.7.1.

Route of access

1.7.6 People in general medical, surgical and intensive care wards who meet the criteria in recommendation 1.7.1 should be fed via a tube into the stomach unless there is upper gastrointestinal dysfunction.

1.7.7 People who meet the criteria in recommendation 1.7.1, with upper gastrointestinal dysfunction (or an inaccessible upper gastrointestinal tract) should be considered for post-pyloric (duodenal or jejunal) feeding.

1.7.8 Gastrostomy feeding should be considered in people likely to need long-term (4 weeks or more) enteral tube feeding.

1.7.9 Percutaneous endoscopic gastrostomy (PEG) tubes that have been placed without apparent complications can be used for enteral tube feeding 4 hours after insertion.

People with dysphagia

1.7.10 In the acute setting, for example, following stroke, people unable to swallow safely or take sufficient energy and nutrients orally should have an initial 2- to 4-week trial of nasogastric enteral tube feeding. Healthcare professionals with relevant skills and training in the diagnosis, assessment and management of swallowing disorders should assess the prognosis and options for future nutrition support.

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Mode of delivery

1.7.11 For people being fed into the stomach, bolus or continuous methods should be considered, taking into account patient preference, convenience and drug administration.

1.7.12 For people in intensive care, nasogastric tube feeding should usually be delivered continuously over 16 to 24 hours daily. If insulin administration is needed, it is safe and more practical to administer feeding continuously over 24 hours.

Motility agents

1.7.13 For people in intensive care with delayed gastric emptying who are not tolerating enteral tube feeding, a motility agent should be considered, unless there is a pharmacological cause that can be rectified or suspicion of gastrointestinal obstruction.

1.7.14 People in other acute care settings who have delayed gastric emptying and are not tolerating enteral tube feeding should also be offered a motility agent unless there is a pharmacological cause that can be rectified or suspicion of gastrointestinal obstruction.

1.7.15 If delayed gastric emptying is severely limiting feeding into the stomach, despite the use of motility agents, post-pyloric enteral tube feeding and/or parenteral nutrition should be considered.

Management of tubes

1.7.16 People requiring enteral tube feeding should have their tube inserted by healthcare professionals with the relevant skills and training.

1.7.17 The position of all nasogastric tubes should be confirmed after placement and before each use by aspiration and pH graded paper (with X-ray if necessary) as per the advice from the National Patient Safety Agency (2011); further patient safety alerts for nasogastric tubes have also been issued in 2013 and 2016. Local

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protocols should address the clinical criteria that permit enteral tube feeding. These criteria include how to proceed when the ability to make repeat checks of the tube position is limited by the inability to aspirate the tube, or the checking of pH is invalid because of gastric acid suppression.

1.7.18 The initial placement of post-pyloric tubes should be confirmed with an abdominal X-ray (unless placed radiologically). Agreed protocols setting out the necessary clinical checks need to be in place before this procedure is carried out.

1.8 Parenteral nutrition in hospital and the community

Indications

1.8.1 Healthcare professionals should consider parenteral nutrition in people who are malnourished or at risk of malnutrition as defined in recommendations 1.3.1 and 1.3.2, respectively, and meet either of the following criteria:

- inadequate or unsafe oral and/or enteral nutritional intake
- a non-functional, inaccessible or perforated (leaking) gastrointestinal tract.

Prescription

1.8.2 Parenteral nutrition should be introduced progressively and closely monitored, usually starting at no more than 50% of estimated needs for the first 24 to 48 hours. Parenteral nutrition can be withdrawn once adequate oral or enteral nutrition is tolerated and nutritional status is stable. Withdrawal should be planned and stepwise with a daily review of the patient's progress.

1.8.3 Patients who need parenteral nutrition should have their nutritional requirements determined by healthcare professionals with the relevant skills and training in the prescription of nutrition support. Before using most parenteral nutrition products, micronutrients and trace elements should be added and additional electrolytes

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and other nutrients may also be needed. Additions should be made under appropriate pharmaceutically controlled environmental conditions before administration.

1.8.4 Parenteral nutrition should be stopped when the patient is established on adequate oral and/or enteral support. There is no minimum length of time for the duration of parenteral nutrition.

Surgical patients

1.8.5 Healthcare professionals should consider supplementary peri-operative parenteral nutrition in malnourished surgical patients who meet the criteria in recommendation 1.8.1.

1.8.6 Peri-operative supplementary parenteral nutrition should not be given to surgical patients unless they meet the criteria set out in recommendation 1.8.1.

1.8.7 If intestinal tolerance persistently limits enteral tube feeding in surgical or critical care patients, parenteral nutrition should be used to supplement or replace enteral tube feeding.

Route of access

1.8.8 In hospital, parenteral nutrition can be given via a dedicated peripherally inserted central catheter as an alternative to a dedicated centrally placed central venous catheter. A free dedicated lumen in a multi-lumen centrally placed catheter may also be used.

1.8.9 Administration of parenteral nutrition via a peripheral venous catheter should be considered for patients who are likely to need short-term parenteral nutrition (less than 14 days) who have no need for central access for other reasons. Care should be taken in catheter choice, and in attention to pH, tonicity and long-term compatibility of the parenteral nutrition formulations in order to avoid administration or stability problems.

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1.8.10 Tunnelling subclavian lines is recommended for long-term use (more than 30 days).

1.8.11 Catheters do not have to be tunnelled for short-term use (less than 30 days).

Mode of delivery

1.8.12 Continuous administration of parenteral nutrition should be offered as the preferred method of infusion in severely ill people who require parenteral nutrition.

1.8.13 Cyclical delivery of parenteral nutrition should be considered when using peripheral venous cannulae with planned routine catheter change.

1.8.14 A gradual change from continuous to cyclical delivery should be considered in patients requiring parenteral nutrition for more than 2 weeks.

Management of catheters

1.8.15 Only healthcare professionals competent in catheter placement should be responsible for the placement of catheters and they should be aware of the importance of monitoring and managing these safely. See the NICE guideline on healthcare-associated infections: prevention and control in primary and community care.

1.9 Supporting patients in the community

1.9.1 Healthcare professionals should ensure that patients having enteral or parenteral nutrition in the community and their carers:

- are kept fully informed and have access to appropriate sources of information in formats, languages and ways that are suited to an individual's requirements; consideration should be given to cognition, gender, physical needs, culture and stage of life of the individual

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- have the opportunity to discuss diagnosis, treatment options and relevant physical, psychological and social issues
- are given contact details for relevant support groups, charities and voluntary organisations.

Enteral tube feeding

1.9.2 All people in the community having enteral tube feeding should be supported by a coordinated multidisciplinary team, which includes dietitians, district, care home or homecare company nurses, GPs, community pharmacists and other allied healthcare professionals (for example, speech and language therapists) as appropriate. Close liaison between the multidisciplinary team and patients and carers regarding diagnoses, prescription, arrangements and potential problems is essential.

1.9.3 Patients in the community having enteral tube feeding and their carers should receive an individualised care plan which includes overall aims and a monitoring plan.

1.9.4 Patients in the community having enteral tube feeding and their carers, should receive training and information from members of the multidisciplinary team on:

- the management of the tubes, delivery systems and the regimen, outlining all procedures related to setting up feeds, using feed pumps, the likely risks and methods for troubleshooting common problems and be provided with an instruction manual (and visual aids if appropriate)
- both routine and emergency telephone numbers to contact a healthcare professional who understands the needs and potential problems of people on home enteral tube feeding
- the delivery of equipment, ancillaries and feed with appropriate contact details for any homecare company involved.

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Parenteral nutrition

1.9.5 All people in the community having parenteral nutrition should be supported by a coordinated multidisciplinary team, which includes input from specialist nutrition nurses, dietitians, GPs, pharmacists and district and/or homecare company nurses. Close liaison between the multidisciplinary team and patients and carers regarding diagnoses, prescription, arrangements and potential problems is essential.

1.9.6 People in the community having parenteral nutrition and their carers should receive an individualised care plan which includes overall aims and a monitoring plan.

1.9.7 People in the community having parenteral nutrition and their carers should receive training and information from members of the multidisciplinary team on:

- the management of the delivery systems and the regimen, outlining all procedures related to setting up feeds, using feed pumps, the likely risks and methods for troubleshooting common problems and be provided with an instruction manual (and visual aids if appropriate)
- routine and emergency telephone numbers to contact a healthcare professional with the relevant competencies (specialist nutrition nurse, pharmacist)
- the arrangements for the delivery of equipment, ancillaries and feed with appropriate contact details for any homecare company involved.

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Recommendations for research

The guideline committee has made the following recommendations for research.

1 Educational intervention for all healthcare professionals

Further research is needed to ascertain whether an educational intervention (for example, three 1-week modular courses, over 6 months) for all healthcare professionals, in particular medical and nursing staff including those who work with people with dementia, would have an effect on patient care (that is, effect on nutritional status, length of hospital stay, frequency of GP visits, complications and quality of life) compared with no formal education.

Why the committee made the recommendation for research

It is known that healthcare professionals in both the hospital and community setting have a poor knowledge of nutrition. This is partly due to receiving a minimal amount of education in nutrition during their undergraduate or basic training. It is therefore essential to determine whether an organised nutrition support education programme to healthcare professionals would improve the choice made about nutrition support and the consequent care of patients prescribed nutrition support.

2 Nutritional screening programmes

What are the benefits to patients of a nutritional screening programme (using a simple tool such as the Malnutrition Universal Screening Tool [MUST]) compared with not screening people in: a) primary care (attending GP clinics); b) care homes; c) hospital inpatients; d) hospital outpatients and e) patients with dementia, in terms of determining the number of people at risk of malnutrition, complications, survival, hospital admission rates, length of stay, quality of life and cost effectiveness?

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Why the committee made the recommendation for research

There is no clear evidence available as to whether screening is really beneficial or how it should be carried out. With the lack of evidence, the committee have considered in detail this problem and have instead carefully developed consensus statements to support recommendations for screening. As a priority, it is important that we determine the need for screening and intervention – in particular, primary care and the wider community.

3 Clinical and cost effectiveness of nutritional monitoring

Further research is needed to identify which components of nutrition monitoring are clinically and cost effective.

Why the committee made the recommendation for research

There is no clear evidence available regarding the long- and short-term benefits of clinical monitoring in terms of prevention of complications and survival. With the lack of evidence, the committee have considered in detail this problem and have instead carefully developed the guidance for monitoring by expert clinical practice and consensus opinion.

4 Oral nutritional supplements for those at high risk of malnutrition identified by a screening tool

What are the benefits of patients (in hospital or the community, including older people) identified as at high risk of malnutrition, by a screening tool such as MUST, being offered either oral nutritional supplements compared with: a) dietary modification and/or food fortification; or b) dietary modification and/or food fortification together with dietary counselling, in terms of determining complications, survival, length of hospital stay, quality of life and cost effectiveness?

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Why the committee made the recommendation for research

This is an essential recommendation for research since there is insufficient evidence on the benefits of intervention used for oral nutrition support – in particular, the benefits of often first line treatment, for example food fortification and/or dietary counselling. It is essential to know this so that the indications on how to treat can be further supported.

5 Enteral tube feeding for dysphagia and early- to mid-stage dementia

What are the benefits of enteral tube feeding to patients compared with no enteral tube feeding in people with dysphagia and early- to mid-stage dementia in terms of reduced complications associated with swallowing, improved nutritional status, delayed onset of advanced stage dementia, hospital admissions, cost effectiveness and survival?

Why the committee made the recommendation for research

Much of the research tends to focus or concentrate on tube feeding people with advanced dementia or those who may be in terminal stages of the disease. Depending on the type of dementia, swallowing disorders may occur at an earlier stage in the disease, for example vascular dementia. The benefits and complications of tube feeding may be quite different in people in the earlier stages than those who are in the advanced stage of dementia.

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Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on diabetes and other endocrinal, nutritional and metabolic conditions.

See also the guideline committee's discussion and the evidence reviews (in the full guideline), and information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

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Update information

August 2017: Links were updated in recommendations 1.3.4 and 1.8.15. Recommendation 1.7.17 was updated and links added to National Patient Safety Agency documents.

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