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Nutritional support in hospital

A high level of malnutrition has been reported in adults in hospital and is linked to poor clinical outcome.^{[1] [2] [3]}

The results of studies have suggested that nutritional support is associated with reduced mortality among patients in hospital with malnutrition.^[4]

Oral, enteral or parenteral nutrition support, alone or in combination, should be considered for all people who are either malnourished or at risk of malnutrition. Potential swallowing problems should be taken into account.^[5]

The following article is about adult patients in hospital.

Identifying patients at risk^{[5] [6]}

- All hospital inpatients on admission and all outpatients at their first clinic appointment should be assessed.^[7] Assessment of nutritional status should be repeated weekly for inpatients and, when there is clinical concern, for outpatients.
- Unfortunately, simple routine screening demonstrates little measurable improvement in outcome measures.^[8]
- However, a multidisciplinary focus on improving nutritional status is likely to improve prognosis and reduce complications.^{[9] [10]}

- Nutritional 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/m².
 - Unintentional weight loss greater than 10% within the preceding 3-6 months.
 - A BMI of less than 20 kg/m² and unintentional weight loss greater than 5% within the preceding 3-6 months.
- Nutritional support should be considered in people at risk of malnutrition, defined as those who have:
 - Eaten little or nothing for more than five days and/or are likely to eat little or nothing for five days or longer.
 - A poor absorptive capacity.
 - High nutrient losses.
 - Increased nutritional needs from causes such as catabolism.

Improving oral nutrition

- Patients experiencing nausea should be offered anti-emetics.
- Patients with dysphagia (eg, from an oesophageal stricture) may be able to eat sloppy or liquid meals.
- Swallowing disorders from neurological causes benefit from more viscous liquids, and thickeners can be added.
- Adequate pain relief may improve appetite.
- Enough time should be dedicated to feeding patients who have difficulty in feeding themselves. This can be done by nurses, healthcare assistants or relatives.
- When these measures are inadequate, oral supplements may be added.

- If these fail, enteral or parenteral nutrition may be required – eg, for patients with prolonged unconsciousness, inability to swallow or intestinal failure. They may also be needed following major gastrointestinal (GI) surgery and in aggressive chemotherapy with severe inflammation of the mouth.
- Where possible, oral or enteral nutrition should be preferred to parenteral because it is cheaper, simpler and has other benefits – eg, it maintains the integrity of the gut barrier.

Enteral feeding

See also separate [Enteral Feeding](#) article.

- Patients able to sit up in bed and protect their airways can be fed into the stomach.
- 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).^[5]
- Feeding tubes can be placed directly into the GI tract, using tube enterostomies for long-term enteral nutritional support.
- Gastrostomies allow bolus feeding but jejunostomies need continuous infusion.

Enteral nutritional support systems

- A wide range of commercially prepared solutions is available.
- In most cases, isotonic solutions containing no lactose or fibre are preferred.
- They generally contain 1,000 kcal and 37–45 g of protein/litre.
- Preparations are also available with elemental solutions containing hydrolysed proteins or crystalline amino acids without significant fat content for patients with malabsorption, especially pancreatic insufficiency. They are highly hypertonic and can cause severe diarrhoea.

Complications of enteral nutrition

- The most common complications are nausea or vomiting, abdominal bloating and cramps, diarrhoea and constipation.
- Unconsciousness and impaired swallowing or vomiting may cause aspiration pneumonia, also caused by reflux. This can be prevented by giving feed directly into the small intestine via a nasogastric tube placed directly into the small intestine. Feed is controlled by infusion pump to prevent flooding.
- To prevent diarrhoea, avoid contamination of feed with bacteria, control the rate of infusion and give codeine phosphate or loperamide.
- Metabolic disturbances can occur - eg, rebound hypoglycaemia after sudden withdrawal, hypokalaemia, hypophosphataemia during re-feeding.
- Blocked feeding tubes: flush with water, warm solution of sodium bicarbonate, pancreatic enzymes. Consider using fizzy cola drinks.

Monitoring body weight

- Hydration state and overall clinical status needs daily assessment, with nutrition adjusted accordingly.
- There is also the need to measure electrolytes, serum glucose, phosphorus, magnesium, calcium and creatinine and urea daily until stabilised.

Parenteral nutrition

See also separate [Parenteral Feeding](#) article.

Indications for parenteral nutrition

- Complete mechanical intestinal obstruction.
- Ileus or intestinal hypomotility.
- Severe uncontrollable diarrhoea.
- Severe acute pancreatitis.
- High-output fistulae.

- Shock.

In patients who require immediate support but are expected to improve within 1-2 weeks, peripheral vein nutritional support can be given via standard intravenous (IV) lines. Nutritional support needs to include lipid, dextrose and amino acids.

Complications of parenteral nutrition

- Malposition of central venous catheter and possible pneumothorax.
- Catheter blockage from reflux of blood into the catheter or coagulation of the feed – consider routine heparin solution. Remove the clot with gentle suction or urokinase, hydrogen chloride or alcohol for lipid blockage.
- Infections: typically skin organisms. Needs to be inserted under aseptic conditions and not used for any other purpose.
- Fluid and electrolyte abnormalities:
 - These are common (eg, hyperglycaemia) especially if the rate of infusion is not properly regulated.
 - Abnormal LFTs, deficiencies of phosphate and essential fatty acids, hyperlipidaemia, hyperammonaemia, uraemia, mineral and vitamin deficiency, respiratory distress, intestinal atrophy and metabolic bone disease.

Further reading

- [NDR \(Nutrition and Diet Resources\) UK](#)
- [Feinberg J, Nielsen EE, Korang SK, et al; Nutrition support in hospitalised adults at nutritional risk. Cochrane Database Syst Rev. 2017 May 19;5\(5\):CD011598. doi: 10.1002/14651858.CD011598.pub2.](#)

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