

Nutrition in acute care

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Malnutrition is common in hospitalised patients but is underrecognised and undertreated. It increases mortality and complications, and delays recovery from illness during and after hospital stay. The doctor therefore has the responsibility of ensuring that malnutrition is recognised and treated appropriately. Since hospital stays are often short, there is a need to ensure continuity of care so that treatment that begins in hospital is continued in the community.

Hospital physicians have the opportunity to diagnose obesity related problems, which may go unrecognised. The most obvious example is type 2 diabetes but sleep apnoea,¹ which is linked to loud snoring and disrupted sleep, can present as tiredness, headaches, depression, loss of energy and even loss of memory. It commonly occurs in over-

weight individuals, especially those with large neck size (neck adipose tissue deposition) and responds to weight loss, although in severe cases continuous positive airway pressure may be needed. The management of obesity takes place predominantly in the community; hence the discussion that follows focuses mainly on the problem of malnutrition.

Causes of malnutrition

Malnutrition may arise from several causes:

- reduced dietary intake (probably the single most important general cause in clinical practice)
- reduced absorption (eg gastrointestinal (GI) disease producing malabsorption)
- increased losses (eg through burned skin or damaged gut), and
- increased demands associated with specific diseases.²

Most adult malnutrition in developed societies is associated with disease and disability which may decrease appetite and reduce ability to shop, cook and eat. It may also arise from psychosocial problems such as social isolation, poverty, alcoholism, bereavement and other psychological difficulties manifesting as eating disorders. Malnutrition is commoner in older adults than in younger people because diseases and psychosocial problems are more common in the elderly. It can also

develop very rapidly during severe acute illness which causes net hypercatabolism of lean tissue resulting in high urinary losses of nitrogen (1g nitrogen corresponds to 6.25 g protein).

Consequences of malnutrition

Malnutrition predisposes to disease and adversely affects clinical outcome. It impairs immune function which predisposes to infection, and lowers muscle strength which increases fatigue, impairs work performance and reduces cough pressure and expectoration of secretions. Recovery from chest infections is therefore delayed. Malnutrition also reduces the body's heat production in the cold while simultaneously increasing heat loss due to reduced insulation from subcutaneous fat. As a result, the malnourished easily become mildly hypothermic in winter, predisposing to falls. Malnourishment also reduces wound healing following surgery or trauma and detrimentally affects overall well-being. Studies have reported increases in post-surgical complications and mortality rates 3–4 times higher in the malnourished than in normally nourished patients.

In addition to these physical consequences of malnutrition, there are psychosocial effects,³ including depression, anxiety, self-neglect and poor mother-child relationships.

Recognising malnutrition

The most important step in recognising malnutrition is to *think about it*: 10–40% of adult patients admitted to hospital are underweight (body mass index (BMI) <20 kg/m²) vs less than 5% of the general population and further weight loss may develop during their hospital stay, especially if prolonged.

Specific nutrient deficiencies are also common, especially in older subjects and those with severe disease. In a recent UK survey, low folate and low vitamin C status was found in 29% and 14%, respectively, of free-living individuals aged 65 years and over. Corresponding figures for those living in residential accommodation were 40% and 35%.⁴

Key Points

Malnutrition, a common clinical problem in hospitalised patients, is under-recognised and undertreated

Nutritional screening should be carried out routinely in patients admitted to hospital using a reliable and valid tool such as the Malnutrition Universal Screening Tool (MUST)

The doctor has overall responsibility for the nutritional care of the patient; this may begin in hospital and continue in the community

Nutrition support teams can improve the clinical outcome of patients requiring specialist nutritional support

Refeeding of malnourished patients can be potentially life-threatening

KEY WORDS: malnutrition, 'MUST', nutritional support, refeeding syndrome, screening

Identification of malnutrition

The likelihood of the presence of malnutrition can be determined by enquiring about weight loss, current weight and predicting likely future changes. Screening procedures can be used to identify those patients at greatest risk; they should be simple, rapid and easy to use, acceptable to patients and healthcare workers, reliable and valid.

Malnutrition Universal Screening Tool

These requirements are exemplified by the Malnutrition Universal Screening Tool (MUST) (Fig 1). This tool⁵ has received support from the British Association for Parenteral and Enteral Nutrition, the British Dietetic Association, Registered Care Homes Association and the Royal College of Physicians. It aims to identify those at risk of nutritional problems by incorporating:

- current weight status (BMI)
- a history of recent unintentional weight loss, and
- the likelihood of weight loss in the future.

Using MUST, a prevalence of malnutrition risk in hospital of 10–60% is suggested, with variation by clinical specialty and especially high for older patients.

The title ‘MUST’ reflects the need to undertake such screening in all types of adult patients in all care settings. It can be used by a variety of healthcare workers and, with caution, be applied to patients with fluid disturbances, amputations and plaster casts as well as pregnant and lactating women (see Ref 5 for details).

Figure 1 provides a guide to using MUST which incorporates the three elements that reflect the patient journey from the past:

- weight loss in the previous 3–6 months
- present weight (current BMI), and
- the future weight (likely future changes).

Each of these factors is an independent predictor of outcome, its importance

varying with the condition and the healthcare setting. The total score is a better predictor of outcome than scores from individual components. The screening procedure may identify patients for more detailed assessment by a nutrition specialist (eg dietitian, nutrition nurse specialist or doctor with an interest in nutrition). Assessment is a more detailed, more specific and more in-depth evaluation of nutritional status for patients with complex problems.

For identification of specific nutrient deficiencies, the doctor relies heavily on the laboratory, although suspicion must be on clinical grounds, for example:

- vitamin B₁₂ deficiency in strict vegetarians
- vitamin D deficiency
- osteomalacia in housebound patients, and
- magnesium deficiency in patients with large GI fluid losses.

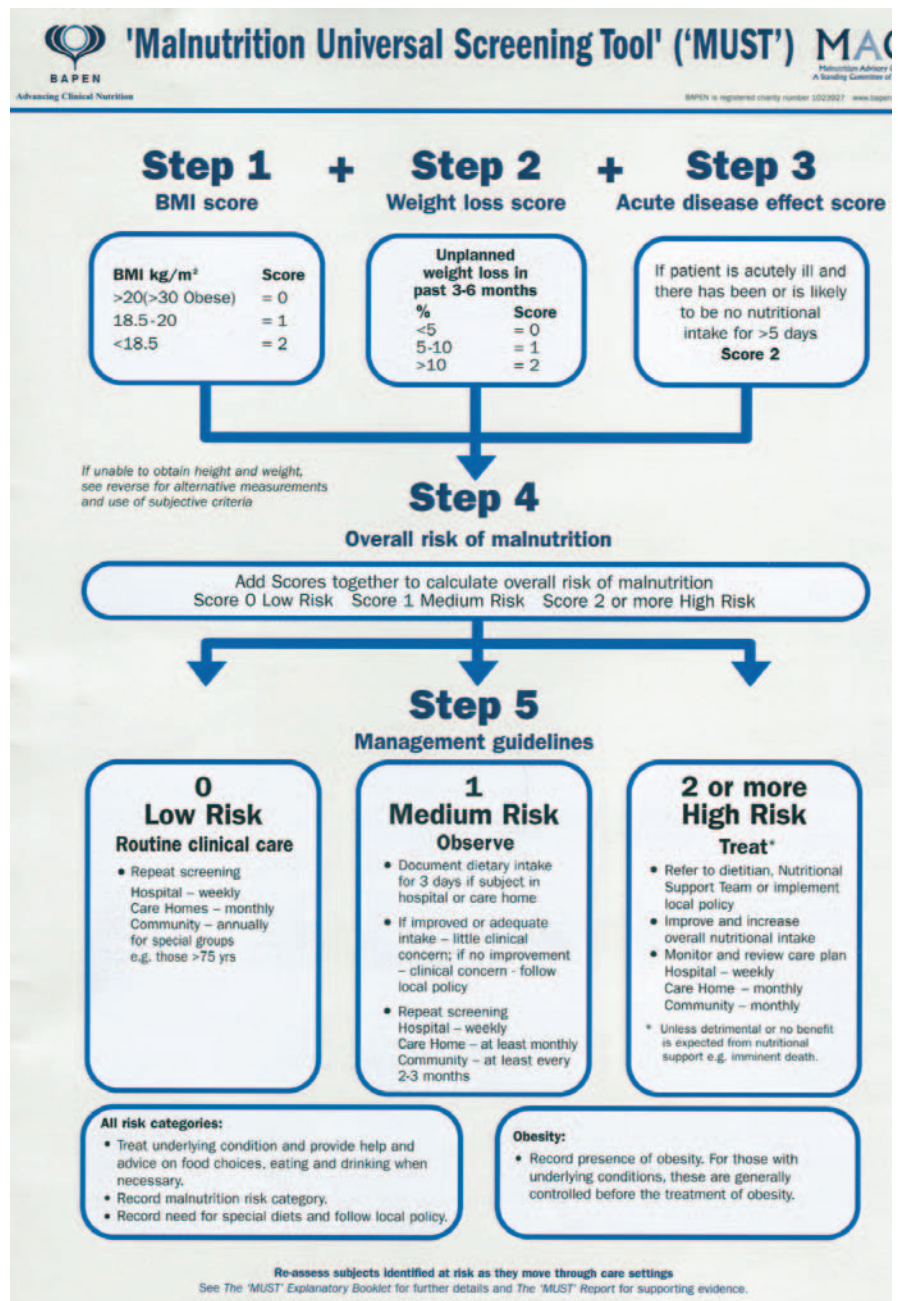


Fig 1. The Malnutrition Universal Screening Tool (MUST).

Management

For patients at low nutritional risk, routine clinical care is recommended. For patients at medium risk, closer observation (eg appetite, food charts) can help establish whether their dietary intake is adequate and improving. If it is deteriorating or they are already at high risk, treatment will normally be required. The treatment of patients at high risk depends on their underlying condition. Problems can sometimes be solved simply by helping patients to eat their meals, but more often appetising energy-dense diets, with or without multinutrient liquid or solid supplements, are required. At-risk patients may also benefit from a balanced multi-vitamin supplement to help meet any abnormal demands or losses in the context of their potentially depleted body stores.

Tube feeding

In patients unable to eat because of long-lasting swallowing difficulties or unconsciousness, tube feeding is usually effective although its use is not without complications. Tube placement and confirmation of position must be performed with care and, once feeding has started, patients watched carefully to avoid problems of feed aspiration or GI upsets such as nausea, pain and diarrhoea.⁶

Metabolic problems such as hyperglycaemia may also occur. Particular care is needed in the very undernourished patient who is at risk of life-threatening refeeding syndrome, a consequence of exposing acute nutrient deficiencies (eg thiamine deficiency producing Wernicke-Korsakoff syndrome) or dangerously rapid fluid and electrolyte shifts. Patients at risk should receive micronutrient supplements, particularly thiamine, from the outset of feeding; many patients also require aggressive potassium, phosphate and magnesium supplementation since plasma concentrations of these predominantly intracellular cations can plummet during early refeeding.⁷ At-risk patients also need close observation for cardiac dysrhyth-

mias and fluid overload/pulmonary oedema.

Parenteral nutrition

In patients with prolonged ileus, high intestinal fistulae or short-bowel syndrome, parenteral nutrition (PN) is generally required. This is a specialist, costly technique with risks of complications from intravenous catheter insertion, catheter related sepsis, venous thrombosis or metabolic upset (including hyperglycaemia and refeeding syndrome). It can be life-saving in patients who cannot be fed in any other way.

Randomised controlled trials/meta-analyses on the efficacy of PN can be misleading because they exclude, on ethical grounds, patients who definitively need PN support. Such patients, who do not enter randomised controlled trials, appear to have fewer complications when managed by specialist nutrition teams.⁸

Conclusions

Malnutrition is common in acute care and has detrimental effects on clinical outcome. All doctors have a responsibility to identify patients at nutritional risk and to take appropriate action.⁹ The MUST screening tool can identify such individuals; a care plan can then be implemented according to local policy and resources. The exact management will depend on the underlying problem but options include:

- physical help for patients with feeding difficulties
- menu modification or supplementary oral sip feeds
- enteral tube feeding, and
- PN if no other options are available.

Many patients admitted to hospital are also overweight/obese or have special nutritional needs such as diabetic or gluten-free diets.

References

- 1 Lattimore JD, Celermajer DS, Wilcox I. Obstructive sleep apnea and cardiovascular disease. Review. *J Am Coll Cardiol* 2003; 41:1429–37.

- 2 Stratton RJ, Ceri J, Green CJ, Elia M (eds). *Disease-related malnutrition. An evidence-based approach to treatment*. Oxford: CAB International Publishing, 2003.
- 3 Keys A, Brozek J, Henschel A, Mickelson O, Taylor HL. *The biology of human starvation*, vol 2. Minneapolis, MN: University of Minnesota Press, 1950.
- 4 Finch SA, Doyle W, Lowe C, Bates CJ *et al*. *National Diet and Nutrition Survey: people aged 65 years and over*. London: The Stationery Office, 1998.
- 5 Elia M (ed). *The 'MUST' report. Nutritional screening for adults: a multidisciplinary responsibility. Development and use of the 'Malnutrition Universal Screening Tool' ('MUST') for adults*. A report by the Malnutrition Advisory Group of the British Association for Parenteral and Enteral Nutrition, 2003:127 (www.bapen.org.uk to download charts, tables and the procedures).
- 6 Stroud M, Duncan H, Nightingale J; British Society of Gastroenterology. Guidelines for enteral feeding in adult hospital patients. *Gut* 2003;52(Suppl 7):vii1–vii12.
- 7 Hearing SD. Refeeding syndrome. *BMJ* 2004;328:908–9.
- 8 Lennard-Jones JE (ed). *A positive approach to nutrition as treatment*. King's Fund Report. London: Kings Fund Centre, 1992.
- 9 Royal College of Physicians. *Nutrition and patients: a doctor's responsibility*. A report of a working party of the Royal College of Physicians. London: RCP, 2002.