

Strategies to improve nutrition in elderly people

Key Reviewers: **Professor Tim Wilkinson**,
Associate Dean, Christchurch School of Medicine
and Health Sciences, University of Otago

Dr Sandy Macleod, Medical Director, Nurse
Maude Hospice, Christchurch

www.bpac.org.nz keyword: elderlynutrition

Defining malnutrition

Malnutrition is both a “cause and a consequence of ill-health”.¹ The term malnutrition can apply to various states – under-nutrition, over-nutrition or deficiencies of specific nutrients. This article will concentrate on under-nutrition and the term malnutrition when used will refer to this state.

Key concepts

- The best option for treating malnutrition is to enhance normal eating and drinking
- Routine use of oral nutritional supplements is not recommended
- Nutritional support is recommended for use in people who are malnourished and who are unable to maintain body weight with a normal balanced diet

Causes of under-nutrition

The “anorexia of ageing”^{2,3}

Appetite and food intake often decline with ageing. Older people tend to be consistently less hungry than younger people, eat smaller meals, have fewer snacks between meals and also eat more slowly.² Between the ages of 20 and 80 there is on average, a decrease in energy intake of approximately 30%. When this decline in energy intake is more than the decrease in energy use that is also normal with ageing, then there is loss of weight.²

Most people lose weight as they age, but the amount lost is variable and those that are already lean, also lose weight. The problem with this weight loss is that it is not only unwanted adipose tissue that is lost but lean skeletal muscle.⁴ The loss of lean tissue is associated with reductions in muscle function, bone mass and cognitive function, anaemia, dysfunction of the immune system, slow wound healing and recovery from surgery, and consequentially an increase in both morbidity and mortality.^{2,4} Although lean muscle can be regained in younger people this is often not so for elderly people.

This means that being underweight, becomes more of a health problem in older age, than being overweight. Early nutritional intervention in elderly people who are at risk is recommended.

Increasing age has several effects on gastrointestinal function. Secretion of gastric acid, intrinsic factor and pepsin is decreased, which then reduces the absorption of vitamin B6, B12, folate, iron and calcium. Other gastrointestinal problems such as gastritis and gastrointestinal cancers can reduce nutritional status.¹⁰

A hypermetabolic state where there is increased resting energy use can be caused by acute respiratory or urinary infections, sepsis, cirrhosis of the liver, hyperthyroidism and the hyperactive state found in some people with dementia or Parkinson's.¹⁰ COPD can cause anorexia and physical problems related to shortness of breath.

In addition to the "anorexia of ageing", there are physical, social, cultural, environmental and financial reasons for an inadequate diet.^{1,2}

Prevalence of under-nutrition

Table 1. Estimates of prevalence of under-nutrition in elderly people

Prevalence	Type of population
5–10%	Non-institutionalised elderly people ^{1,5}
10–40%	Hospitalised for acute illness ^{6,7}
10–60%	Long care units or nursing homes ^{1,8,9}

These multiple reasons can be grouped under four headings:¹

Impaired intake

Poor appetite: illness, pain or nausea when eating; depression or anxiety; social isolation or living alone; bereavement or other significant life event; food aversion; resistance to change; lack of understanding linking diet and health; beliefs regarding dietary restrictions; alcoholism; reduced sense of taste or smell; smoking.

Inability to eat: confusion, diminished consciousness; dementia; weakness or arthritis in the arms or hands; dysphagia; vomiting; COPD; painful mouth conditions, poor oral hygiene or dentition; restrictions imposed by surgery or investigations; lack of assistance with eating for those in hospitals and rest homes.

Lack of food: poverty, poor quality diet (home, hospital or rest home); problems with shopping and cooking; ethnic preferences not catered for particularly in hospitals and rest homes.

Medications: Many medications alter nutritional status in numerous ways (e.g. anorexia, decreased or altered taste, dry mouth, confusion, gastrointestinal upsets including nausea, vomiting, diarrhoea, constipation, dyspepsia). Incorrect use of medications may also cause problems (e.g. hypermetabolism with thyroxine and theophylline).¹⁰

Impaired digestion and/or absorption

Medical and surgical problems affecting stomach, intestine, pancreas and liver, cancer, infection, alcoholism.

Altered requirements

Increased or changed metabolic demands related to illness, surgery, organ dysfunction or treatment.

Excess nutrient losses

Vomiting, diarrhoea, fistulae, stomas, losses from nasogastric tube and other drains.

How do we detect under-nutrition?

The onset of nutritional problems is often gradual and therefore hard to detect. However there are features found in the history and examination that may help identify those at risk. Generally people don't present complaining of malnutrition. It is more likely that they will present with a variety of problems that may be vague or non-specific.

A malnourished state is defined as any of the following:¹

- BMI < 18.5kg/m²
- Unintentional weight loss > 10% within the last 3–6 months
- BMI < 20kg/m² and unintentional weight loss > 5% within the last three to six months

Assessment tools

Clinical judgment is usually sufficient to diagnose under-nutrition in most cases. However, not everyone who

is malnourished is thin. Special assessment tools are necessary when the diagnosis is uncertain.⁶

The UK National Institute of Clinical Excellence (NICE) guidelines rely on the Malnutrition Universal Screening Tool (MUST) which includes BMI, unintentional weight loss (over three to six months) and an acute illness or lack of adequate food for more than five days.^{1,11}

Laboratory testing

Laboratory testing is not useful for diagnosis, however some tests may be required to detect specific deficiencies such as iron, folate and vitamin B12.^{1,10} Albumin has been suggested in the past as a marker of nutritional status but it is now regarded as unhelpful.¹² However if tested, haemoglobin, albumin, lymphocytes and cholesterol can often be low in those who are malnourished.⁶

Table 2: Ways to optimise oral nutrition in elderly people^{10,13}

Problem	Solution
Loss of appetite	Check medications; select favourite foods; provision of a variety of foods; provision of culturally acceptable foods; small energy rich meals; more frequent meals and snacks; improve ambiance surrounding mealtimes – company, quietness, comfortable seating, avoid interruptions or rushing; avoid strong unpleasant smells; avoid naps around mealtimes; keep active; take medications in middle or at end of meal
Chewing problems	Adequate dental and mouth care; food of correct texture and consistency; meat cuts chosen and prepared well
Swallowing difficulties	Speech therapy; alter consistency of foods
Difficulties obtaining or preparing food	Enlist family and carer support; physiotherapy; occupational therapy; provision of ready to eat meals
Mobility problems	Physiotherapy; occupational therapy; family, friends or carers to assist with feeding
Chronic pain	Find and treat cause where possible; check analgesic use
Depression	Check medication use; counselling; support from family, friends and support groups
Social isolation	Meals on wheels; family, friends and social services

What can we do to improve nutrition?

The best option is to enhance normal eating and drinking (see side bar). Referral to a dietitian may be required. Ways to help elderly people maintain adequate oral nutrition are summarised in Table 2.

Indications for nutritional support

Nutritional support is recommended for use in people who are malnourished and who are unable to maintain body weight with a normal balanced diet.

In addition, nutritional support may also be considered in those who have:¹

- Eaten little or nothing for more than five days or are likely to eat little or nothing for the next five days or longer
- A poor absorptive capacity or high nutrient losses or increased nutritional needs from causes such as breakdown of muscle

Oral nutritional supplements

There is a lack of consensus regarding the benefits of oral nutritional supplements for elderly people. A Cochrane Review in 2006 of 55 trials concluded that there was little evidence of effectiveness in improving nutrition in elderly people living in the community.¹⁴ There was some evidence of improvement for hospital and rest home patients but the reviewers noted that the data was limited and of poor quality.

The success of oral nutritional supplement use can be limited by a lack of compliance often due to low palatability, adverse effects (e.g. nausea and diarrhoea) and by cost.¹⁵ Some studies have shown that there can be a decrease in the consumption of normal foods when oral nutritional supplements are given.^{15,16} Wastage of up to 35% of these products is also reported.¹⁷

Best results are seen when people are offered a variety of different flavours and consistencies and also when

Practical food suggestions for people who are malnourished

In normal circumstances GPs promote low fat and low sugar food choices. For patients who are malnourished or losing weight unintentionally, these concepts may need to be reversed. The best options may be foods which are high in fat and sugar, although this advice may not be suitable for people with diabetes or high cholesterol.

General suggestions may include:

- Three small meals and three in-between snacks every day
- Two courses for each of the three meals
- Add oils, butter, margarine, cream, cheese, salad dressing, honey or sugar to meals to increase calorie intake
- Drink 7–8 glasses of fluid a day but choosing milky drinks, soups, fruit juices or products such as Complan or Vitaplan instead of water or tea
- Make dessert a regular option rather than a treat

Specific food suggestions could include:

- Breakfast: porridge with milk and sugar or honey, followed by scrambled eggs with bacon or cheese
- Light meal: sandwiches with meat, egg, cheese fillings or a baked potato with butter and cheese and a salad with dressing
- Main meal: meat, fish or eggs and include potato, rice or pasta, vegetables or salad complete with butter and dressings
- Dessert: custard or ice cream with fruit, milk based desserts or baked desserts such as rice pudding with cream
- Snacks: milky drinks or fruit juices accompanied by cake, biscuits, pastries, scones, cheese or nuts

Which oral nutritional supplement for malnutrition should be used?

There are a range of oral nutritional supplements available on prescription (initiated by a specialist) subsidised for up to 500ml a day. Examples include Ensure, Fortisip and Fortijuce (suitable for those who do not like milky drinks). They are usually dispensed from a hospital pharmacy although some community pharmacies have a special foods contract. These supplements can also be purchased from pharmacies without a prescription but are often not kept in stock and need to be ordered for individual patients. Powdered products such as Complan and Vitaplan can also be used to supplement the diet and are available in most supermarkets.

the temperature at which the products are consumed is varied.¹⁵ Oral nutritional supplements should be given between meals, not at meal times. They are not a food replacement but a supplement.*

Oral nutrition supplements for malnourished elderly people have to be initiated by a specialist. GPs are able to renew prescriptions provided the treatment remains appropriate and the patient is benefiting from the treatment.

Considerations may include:

- Is the patient gaining weight?
- Could the patient be encouraged to adopt a diet that meets their energy needs, through the use of supermarket products or prepared meals?
- Is there a plan in place to gradually replace use of the supplement with a regular diet?
- Is the patient using the supplement? Is there any wastage?

* occasional use as a complete food

Enteral tube feeding

Enteral nutrition is a method of providing food via a tube placed in the nose (nasogastric), the stomach (gastrostomy) or the small intestine (percutaneous endoscopic gastrostomy, PEG).¹⁵

Tube feeding can be considered when people cannot maintain an adequate diet from normal food and fluids or oral supplements, or in people who cannot eat and drink safely. The most common indication is for people with dysphagia following stroke.

If tube feeding is likely to be required for more than four weeks, then insertion of a PEG tube may be required.¹⁵ The main benefit of a PEG tube over a nasogastric tube is patient comfort. It is also less likely to be displaced and can be hidden under clothes.¹ However a PEG is invasive and the risk of aspiration remains with both nasogastric and PEG feeding.^{18,19}

Tube feeding should be stopped if adequate oral intake is re-established.¹

The use of tube feeding in people who are chronically unwell is controversial, especially when used for people with dementia. The debate focuses on the selection of who will benefit from this form of nutritional supplementation.²⁰ Both oral supplements and tube feeding can improve the nutritional state of people with dementia. European Society Parenteral and Enteral Nutrition (ESPEN) guidelines recommend that its use be considered in early and moderate dementia, however not in terminal dementia.**

The decision regarding the use of tube feeding must always be made on an individual basis with input from relatives, caregivers, GP, therapists and if required, legal representation.¹⁵

Considerations for the use of long term tube feeding may include:¹⁵

- Does the patient suffer from a condition likely to benefit from enteral feeding?
- Will nutritional support improve outcome and/or accelerate recovery?
- Does the patient suffer from an incurable disease, but one in which quality of life and wellbeing can be maintained or improved by enteral nutrition?
- Does the anticipated benefit outweigh the potential risks?
- Does the use of enteral nutrition agree with the expressed or presumed will of the patient or in the case of incompetent patients of his/her legal representative?
- Are there sufficient resources available to manage enteral nutrition properly? If long term enteral nutrition implies a different living situation (e.g. home vs institution) will the change benefit the patient overall?

** terminal dementia is irreversible, the patient is immobile, unable to communicate, completely dependent and has a lack of physical resources

! Caution Medicines and enteral feeds should not be mixed. Temporarily stop the tube feed to give medicines and flush the tube before and after.

Parenteral nutrition

Parenteral nutrition is a method of providing nutrition directly into the venous system, usually via a central line therefore avoiding the digestive system. It is referred to as total parenteral nutrition (TPN) and in general is used in a hospital setting. Its use in the community is mainly reserved for people with severe Crohn's disease, those with vascular damage to the bowel and some people with cancer.²¹ Home parenteral nutrition is expensive and requires careful patient selection and training. It is not widely used in New Zealand.

Further reading

For further information on assessment tools for malnutrition the following websites may be useful;

The British Association for Parental and Enteral Nutrition website includes a guide to the use of "MUST", BMI charts, weight loss tables and instructions for alternative measurements when measurements of height and weight are unable to be done to calculate BMI.

www.bapen.org.uk/pdfs/must/must_full.pdf

The Mini Nutritional Assessment (MNA) was developed specifically to assess the risk of malnutrition in elderly people and is widely used in the United States. The MNA includes 18 items covering anthropometry, a global assessment of lifestyle, medication and mobility and a dietary history. A short form version for screening uses the first six questions and takes approximately four minutes to complete.

www.mna-elderly.com

High energy/high protein food ideas:

Energy boosters:

Milk, fruit juice, yoghurt, sour cream, cream cheese, ice cream, butter, vegetable oils, jam, syrup, honey, museli with dried fruit.

Protein boosters:

Eat plenty of cheese, eggs, meat, fish, poultry, beans and legumes. Add skim milk powder to regular milk to create high protein milk. Add soy or whey protein powder to milkshakes or soups. Eat plenty of nuts and seeds including butters e.g. peanut butter, tahini (sesame butter). Add tofu to soups, stews or stir fry.

High energy/high protein snacks:

Crackers and cheese, scones with butter, jam and cream, museli bars, corn chips and avocado dip, cakes, biscuits, hot chocolate.

Non-solid food options:

Milkshakes, cream soups, buttermilk, porridge, yoghurt smoothies, mashed potatoes, scrambled eggs.

References:

1. Nutritional support in adults. February 2006. National Institute for Health and Clinical Excellence. Available from www.nice.org.uk/Guidance/CG32 Accessed June 2008.
2. Chapman IP. Endocrinology of anorexia of ageing. *Best Pract Res Clin Endocrinol Metab.* 2004;18(3):437-452.
3. Donini LM, Savina C, Cannella C. Eating Habits and Appetite Control in the Elderly: The Anorexia of Aging. *Int Psychoger.* 2003;15(1):73-87.
4. Nowson C. Nutritional challenges for the elderly. *Nutr Diet* 2007; 64(4):s150-S155.
5. Margetts BM, Thompson RL, Elia M, Jackson AA. Prevalence of risk of undernutrition is associated with poor health status in older people in the UK. *Eur J Clin Nutr.*2003;57:69-74.
6. Venzin RM, Kamber N, Keller WCF, Suter PM & Reinhart WH. How important is malnutrition? A prospective study in internal medicine. *Eur J Clin Nutr.* Advance online publication, 2007; 7 Nov [Epub ahead of print]
7. Babineau J, Villalon L, Laporte M, Payette H. Outcomes of Screening and Nutritional Intervention among Older Adults in Healthcare Facilities. *Can J Diet Pract Res.* 2008;69(2) 89-94.
8. Pauly L, Stehle P, Volkert D. Nutritional situation of elderly nursing home residents. *Z Gerontol Geriatr.* 2007;40:3-12
9. Ruxton CHS, Gordon J, Kirkwood L et al. Risk of malnutrition in a sample of acute and long-stay NHS Fife in-patients:an audit. *J Hum Nutr Diet* 2008;21:81-90.
10. Pirlich M, Lochs H. Nutrition in the elderly. *Best Pract Res Clin Gastroenterol.* 2001; 15(6): 869-884
11. Harris DG, Davies C, Ward H, Haboubi NY. An observational study of screening for malnutrition in elderly people living in sheltered accommodation. *J Hum Nutr Diet.* 2008;21:3-9.
12. Feldblum I, German L, Castel H, et al. Characteristics of undernourished older medical patients and the identification of predictors for undernutrition status. *Nutr J.* 2007; Nov 7.[Epub ahead of print]
13. Nitenberg G, Raynard B. Nutritional support of the cancer patient: issues and dilemmas. *Crit Rev Oncol Haematol.* 2000;34:137-168.
14. Milne A, Avenell A, Potter J. Meta-Analysis: Protein and Energy Supplementation in Older People. *Ann Intern Med.* 2006;144:37-48.
15. ESPEN. The European Society for Clinical Nutritional and Metabolism. Guidelines on adult enteral nutrition. Guidelines and Position Papers. Available from <http://www.espen.org/espenguidelines.html> (accessed June 2008).
16. Dunne JL, Dahl WJ. A Novel Solution is Needed to correct Low Nutrient Intakes in Elderly Long-Term Care Residents. *Nutr Rev.* 2007;65(3):135-138.
17. Remsburg R, Sobel T, Cohen A, et al. Does a liquid supplement improve energy and protein consumption in nursing home residents? *Geriatr Nurs* 2001;22(6):331-5.
18. Rosin D. To Peg or not to Peg? Feeding the Incompetent Patient. *Isr Med Assoc J.* 2007;9:881-882.
19. McMahon MM, Hurley DL, Kamath PS, Mueller PS. Medical and ethical aspects of long-term enteral tube feeding. *Mayo Clin Proc* 2005;80(11):1461-1476.
20. Brotherton AM, Judd PA. Quality of life in adult tube feeding patients. *J Hum Nutr Diet.* 2007;20:513-522
21. Jones BJM. Recent developments in the delivery of home parental nutrition in the UK. *Proc Nutr Soc.* 2003;62:719-725.
22. Kaushal MV, Farrer K, Anderson ID. Nutritional Support. *Surgery (Oxford).* 2008;26(2):54-59.
23. Caro MM, Laviano A, Pichard C. Nutritional intervention and quality of life in adult oncology patients. *Clin Nutr.* 2007;26:289-301.
24. van Bokhorst-de van der Schueren M. Nutritional support strategies for malnourished cancer patients. *Eur J Oncol Nurs.* 2005;9(2):S74-S83.
25. Barber MD, Fearon KCH. Should cancer patients with incurable disease receive parenteral or enteral nutritional support? *Eur J Cancer.* 1998;34(3):279-282.

Special circumstances can alter nutritional needs

Surgery

The metabolic changes caused by surgery, the increased demands required for successful healing, sepsis and the stress of the surgical procedure itself, all increase energy needs.²² To supply this energy, protein stored as muscle is broken down and amino acids released. A septic state will increase this muscle breakdown further. Nutritional requirements must meet these increased needs. Furthermore, patients may already be malnourished due to the illness that led to their surgery.

Once discharged, there will be ongoing higher nutritional needs during the recovery phase, although muscle lost may never be regained. Oral nutritional supplements may be useful during the recovery period.

Cancer

People with cancer are often malnourished. Physical and metabolic changes can be compounded by social and psychological problems.²³ Cancer may result in cachexic syndrome which is a state of complex metabolic changes associated with anorexia, progressive weight loss and depletion of reserves of adipose tissue and skeletal muscle.¹⁵

Nutritional advice tailored on an individual basis should be given at an early stage to help prevent nutritional deficiencies.²⁴ High energy, high protein foods are ideal for maintaining strength and wellbeing (see previous sidebar). Loss of appetite, pain, nausea and vomiting all contribute to poor oral intake. Prednisone is used to stimulate appetite, but its effect tends to be short lived.²⁵

Oral nutritional supplements can be beneficial when a normal balanced diet cannot be tolerated. These supplements help prevent malnutrition but eventually cannot halt the cachexic state associated with many end-stage cancers.

Chronic renal failure

Nutritional requirements for people with chronic renal failure vary widely.¹⁵ In general, they require a diet that promotes adequate nutrition, minimises uraemic toxicity and delays the progression of renal disease.

The requirements therefore are for a low protein diet with high energy content. The diet should be low in phosphorus which means limiting foods of animal origin that are rich in phosphorus (such as dairy, egg yolks and meat). In addition, supplementation of water soluble vitamins may be required (e.g. thiamine, riboflavin, pyridoxine and ascorbic acid). The fat soluble vitamins A, E & K do not need to be supplemented, however vitamin D does.

Those requiring haemodialysis have some differing needs – they require additional protein, low potassium and phosphate and high energy but low volume supplements.

There are specialised protein reduced nutritional supplements available on the pharmaceutical schedule that can be initiated by a specialist. These include Renilon and Nepro.