



Counting the Cost of Malnutrition and its Management



Definition of malnutrition

- **Malnutrition is a state of nutrition in which a deficiency, excess or imbalance of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form (body shape, size, and composition) and function, and clinical outcome¹**
- **While malnutrition can refer to either over or undernutrition this presentation refers specifically to undernutrition**

References:

1. The 'MUST' report. Nutritional screening for adults: a multidisciplinary responsibility. Elia M, editor. 2003. Redditch, UK, BAPEN.
<https://www.bapen.org.uk/pdfs/must/must-report.pdf>



Malnutrition is costly

Malnutrition costs the UK health and social care system:

- more than **£23 billion** each year¹
- this equates to **15%** of total expenditure on health and social care
- the amount corresponds to approximately **£370** per capita of the population¹
- older adults **>65 years** account for **52%** of total costs¹

In comparison the government currently spends **>£4.2bn** a year on the direct medical costs of conditions related to being overweight or obese¹

The huge costs of both conditions (malnutrition and obesity) both to the UK health system and wider society highlight the importance of tackling nutritional problems in our society

References:

1. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018.
<https://www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf>



Malnutrition is costly

Cost per nation

Country	Cost	% of population ²
England	£19.6 billion ¹	84.3%
Scotland	£1.9 billion*	8.2%
Wales	£1.1 billion*	4.7%
Northern Ireland	£0.7 billion*	2.8%

Reference:

1. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018 www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf
2. Office for National Statistics. Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2020 <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2020>

* Costs estimated from 2020 population estimates - total population 67,081,000



Cost comparison - nourished vs malnourished individuals

- **Estimated annual health and social care costs:**
 - **3 x greater for a patient with malnutrition = £7,408^{1,2}**
 - **Compared to a similar patient without malnutrition = £2,155^{1,2}**

References:

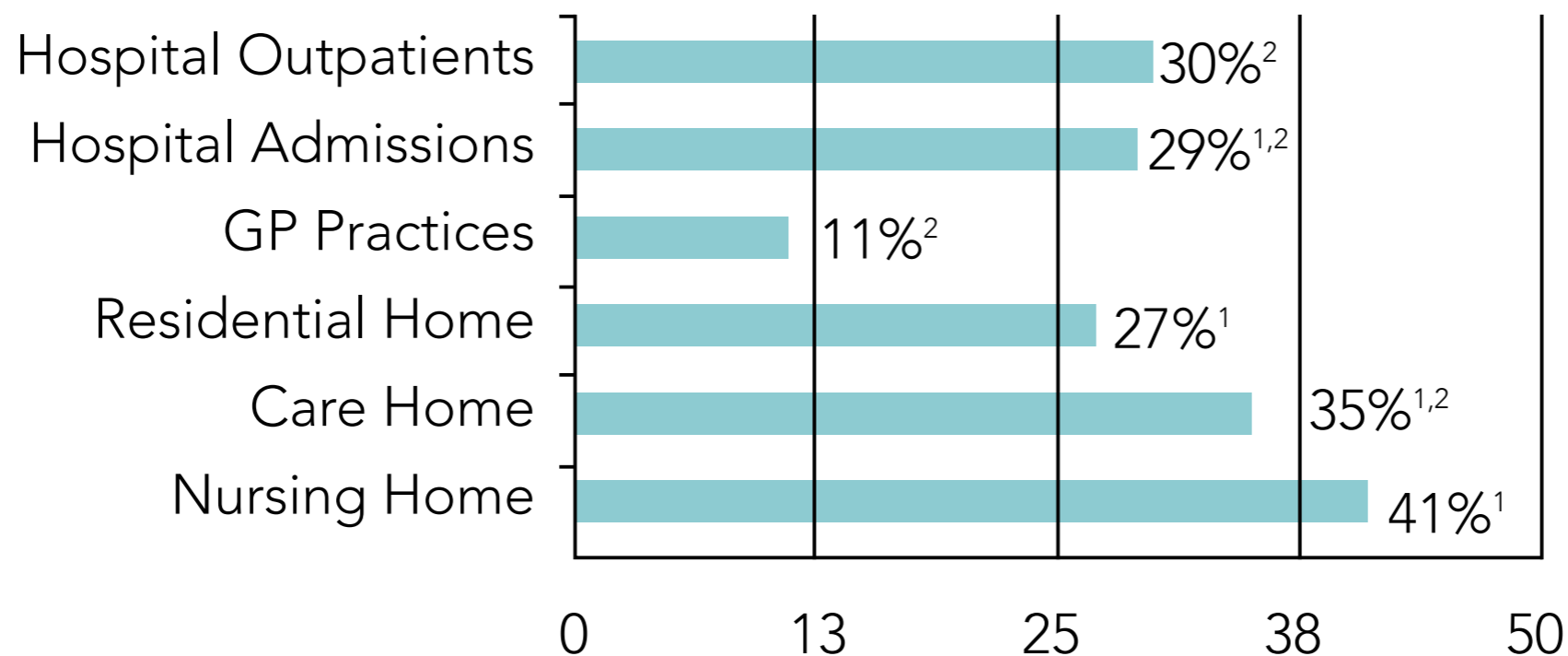
1. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018. <https://www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf>
2. Holdoway et al. Managing Adult Malnutrition in the Community. 2021 www.malnutritionpathway.co.uk



Costs are high as malnutrition is common - especially in the community

Malnutrition is common across health and social care settings in those with disease and in older people

Malnutrition Prevalence %



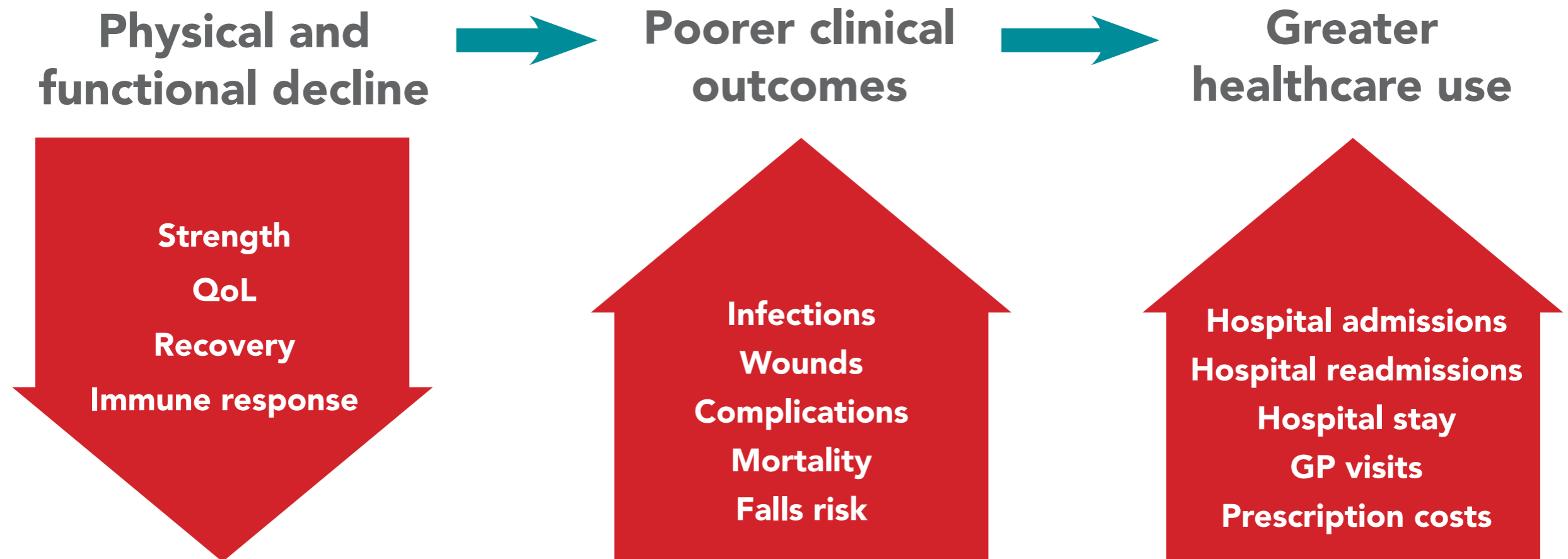
References:

1. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018. <https://www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf>

2. Holdoway et al. Managing Adult Malnutrition in the Community. 2021 https://www.malnutritionpathway.co.uk/library/managing_malnutrition.pdf



Unidentified and untreated malnutrition has costly adverse consequences



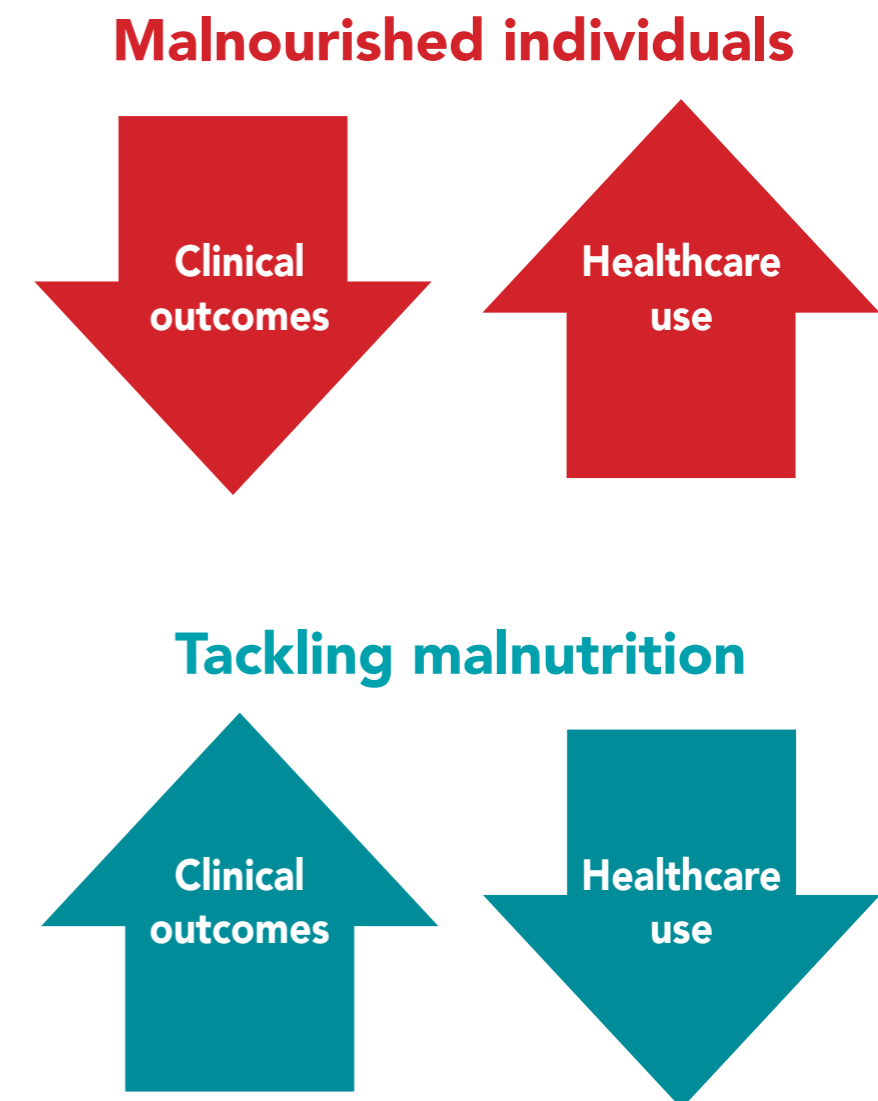
References:

1. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018 www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf
2. Holdoway et al. Managing Adult Malnutrition in the Community. 2021 www.malnutritionpathway.co.uk



Tackling malnutrition can reduce costs and improve outcomes

- **Malnourished individuals** have poorer clinical outcomes and **greater healthcare use**, impacting on the **health economy**^{1,2}
- Tackling malnutrition can **improve nutritional status, clinical outcomes** and **reduce healthcare use**³
- Expenditure on **treatments and strategies** to identify and manage malnutrition is a very small proportion of the overall cost (**<2.5%**)³



References:

1. National Institute for Health and Care Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical Guideline 32. 2006. (Updated 2017)
2. National Institute for Health and Care Excellence (NICE). Nutrition support in adults. Quality Standard 24. 2012
3. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018 www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf



How do we cut the cost of malnutrition?

- **Screening and appropriate management can tackle the problem**
- **The evidence shows it is more cost effective to treat malnutrition than not to treat**

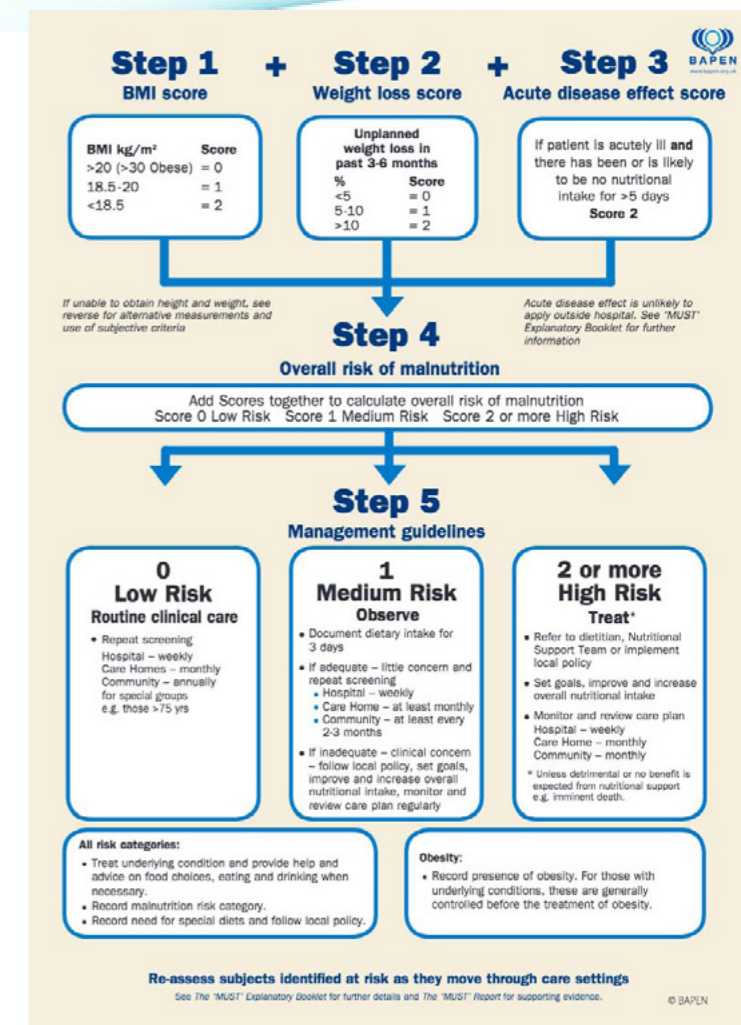
Screening: prompt identification of malnutrition is a 'MUST'



Screening with a validated screening tool such as the Malnutrition Universal Screening Tool ('MUST') is recommended by BAPEN¹, NICE², DHSC³, CQC⁴.

'MUST' is a five-step screening tool to identify adults, who are malnourished, at risk of malnutrition (undernutrition), or obese¹.

NICE² recommends "People in care settings (including inpatients, outpatients, care homes and GP surgeries) are screened for the risk of malnutrition using a validated screening tool".



References:

1. The 'MUST' report. Nutritional screening for adults: a multidisciplinary responsibility. Elia M, editor. 2003. Redditch, UK, BAPEN. <https://www.bapen.org.uk/pdfs/must/must-report.pdf>
2. National Institute for Health and Care Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical Guideline 32. 2006. (Updated 2017)
3. Department of Health. Improving Nutritional Care. A joint Action Plan from the Department of Health and Nutrition Summit stakeholders. 2007
4. Care Quality Commission (CQC) Health and Social Care Act 2008 (Regulated Activities) Regulations: Regulation 14.2014.



Malnutrition screening: identifying the most vulnerable groups

Screening should be undertaken :

- Opportunistically (e.g. on first contact with care setting)
- Upon clinical concern (e.g. unplanned weight loss, poor wound healing)
- Amongst groups at high malnutrition risk: e.g.

– Those with acute and chronic disease:

- cancer
- neurological diseases
- frailty
- respiratory disease (e.g. COPD)
- musculoskeletal conditions
- neuro-disability
- gastrointestinal conditions
- renal and liver disease

– Those undergoing:

- Prehabilitation - to optimise nutritional status prior to surgery
- Rehabilitation - to provide on-going support in the community after an acute episode of care e.g. after surgery, stroke, injury, cancer treatment, hospital admission

– Poor or socially isolated

- **Results of screening should be documented and linked to an action plan (NICE QS24)¹:**
- **NICE recommends “People who are malnourished or at risk of malnutrition have a management care plan that aims to meet their complete nutritional requirements”**

Reference:

1. National Institute for of Health and Care Excellence (NICE). Nutrition support in adults. Quality Standard 24. 2012.



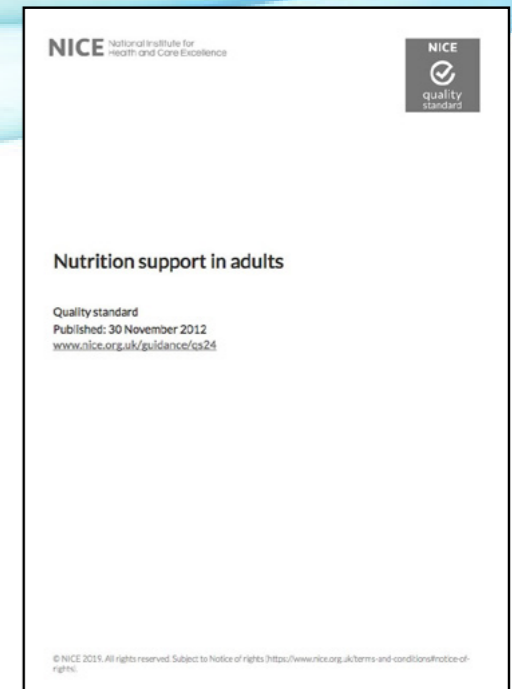
Appropriate and timely management is key

NICE recommendations for oral nutrition support

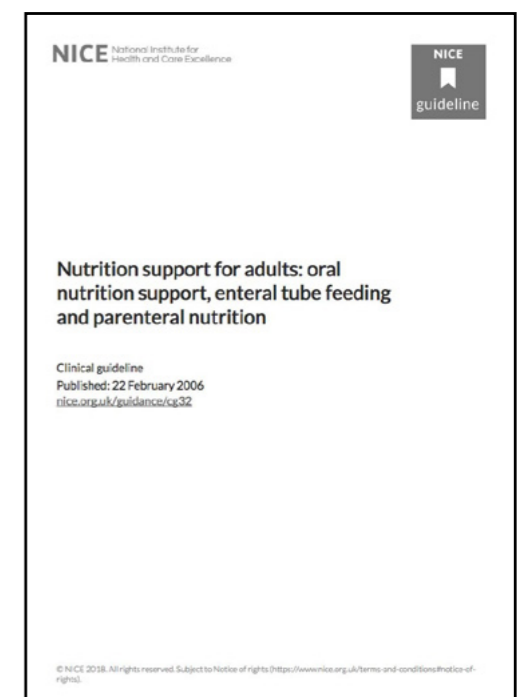
- Healthcare professionals should consider oral nutrition support to improve nutritional intake for people who can swallow safely and are malnourished or at risk of malnutrition (A grade)
- Oral nutritional support includes ONS, support for people unable to feed themselves, advice from a dietitian, altered meal patterns and fortified food (with all nutrients)
- Nutritional support should contain a balanced mixture of nutrients
- Nutrition support should continue until the patient is established on adequate oral intake from normal food
- Care is needed when using food fortification as this tends to supplement energy and not other nutrients

Reference:

National Institute for Health and Care Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical Guideline 32. 2006. (Updated 2017)



NICE QS24



NICE CG32

Appropriate and timely management is key: dietary advice



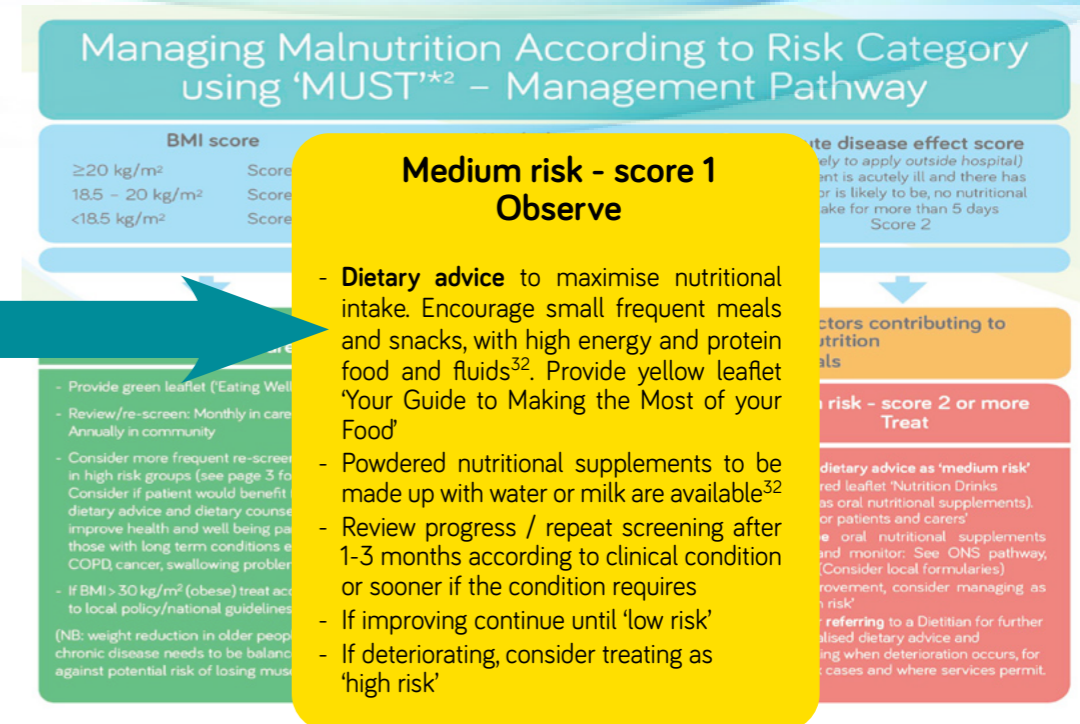
- In patients at medium risk of malnutrition dietary intake should be maximised

Dietary advice to optimise nutritional intake

- Check with local dietitian or local policy and guidance
- Give Yellow leaflet - 'Your Guide to Making the Most of Your Food'
- Encourage small, frequent meals and snacks with a focus on nutrient rich foods and drinks
- Care should be taken when using food fortification to ensure that requirements for all nutrients including protein and micronutrients are met
- Consider a multivitamin and mineral supplement
- Advise on the following to increase energy and protein content without increasing volume of food consumed e.g.:
 - adjusting portions at a meal to increase intake of nutrient dense foods
 - choosing higher rather than lower calorie foods, fortifying milk with milk powder aiming to increase energy and protein content without increasing volume of food consumed
- Dietary restrictions e.g. low fat, low sugar previously advised upon to manage co-morbidities may need to be relaxed to increase the energy (Calorie) content of the diet particularly when appetite is poor
- If in doubt about the suitability of dietary advice because the patient has a number of medical conditions that require dietary modification e.g. swallowing problems, diabetes, seek further advice from a Dietitian

Reference:

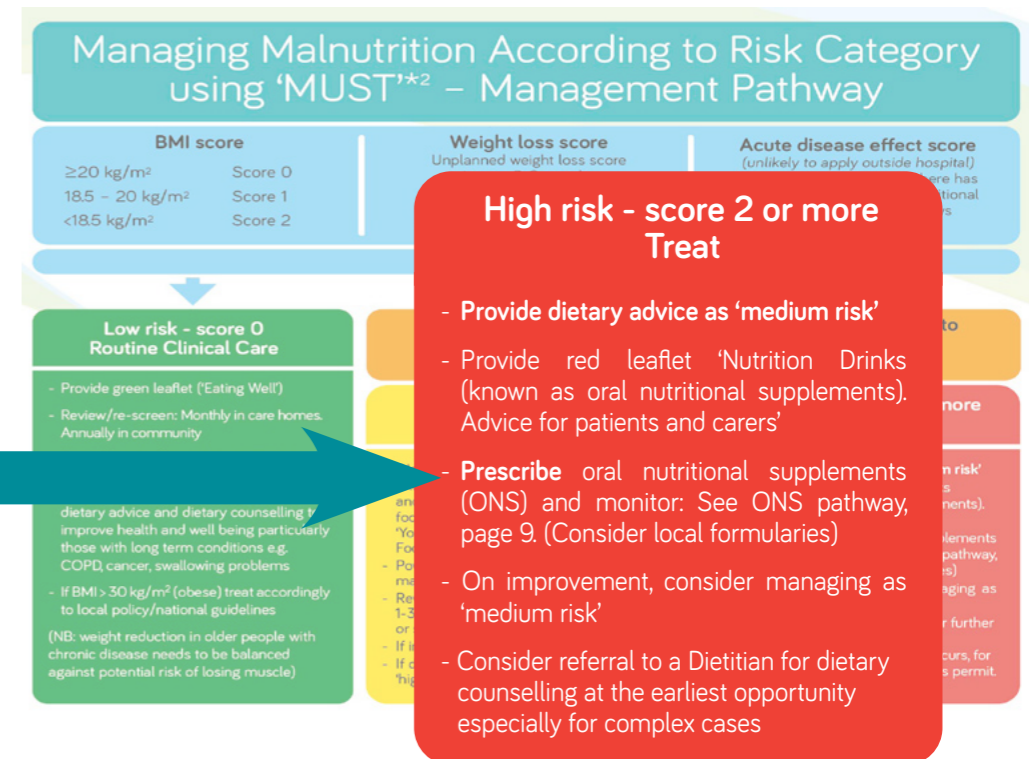
Holdoway et al. Managing Adult Malnutrition in the Community. 2021 www.malnutritionpathway.co.uk





Appropriate and timely management is key: oral nutritional supplements

- In patients at high risk of malnutrition, dietary intake should be maximised, ONS prescribed and ONS pathway followed



- ONS are typically used to supplement the diet when diet alone is insufficient to meet daily nutritional requirements. They are not intended as a food replacement
- ONS should be given in accordance with an evidence-based pathway
- A patient should be encouraged to take ONS when they most feel like taking them; this may be between meals, like a snack, first thing in the morning or before bed. Alternatively, ONS can be incorporated into everyday foods e.g. in jellies and sauces

Reference:

Holdoway et al. Managing Adult Malnutrition in the Community. 2021 www.malnutritionpathway.co.uk



Oral Nutritional Supplements: the evidence

- NICE CG32 recommends considering oral nutrition support to improve nutritional intake for people who can swallow safely and are malnourished or at risk of malnutrition (based on high quality/A-grade evidence)³⁰
- NICE QS24 emphasises the need for all care services to take responsibility for the identification of people at risk of malnutrition, to provide nutritional support for everyone who needs it and to take an integrated approach to the provision of services³¹

Clinical studies, systematic reviews and meta-analysis in malnourished patients, demonstrate:

- *ONS increase energy, protein and micronutrient intake*^{30,41}
- *The additional multi-nutrient intake from ONS improved weight and contributed to functional benefits (e.g. improved hand grip strength and quality of life)*^{14,30,41-45}
- *ONS did not reduce intake of normal food over a 12-week period*^{14,41}
- *ONS are a clinically and cost-effective way to manage malnutrition particularly amongst those with a low BMI (BMI < 20 kg/m²)*^{30,43,46}
- *Clinical benefits of ONS include reductions in complications (e.g. pressure ulcers, poor wound healing, infections)^{43,47}, mortality (in acutely ill older people)^{30,41} hospital admissions and readmissions^{43,45,46,48}*
- *Clinical benefits of ONS are often seen with 300-900kcal/day (1-3 ONS servings per day) with benefits seen in the community typically with 2-3 months' supplementation^{30,41,43}. Supplementation periods may be shorter, or longer (up to 1 year) according to clinical need*
- *The use of ONS in those with malnutrition e.g. 'MUST' score of 2 or more, have demonstrated the cost effectiveness of ONS in the community setting*^{44,45,48,49}
- *The majority of studies used ready to drink ONS. There is currently insufficient data to demonstrate whether similar outcomes as listed above are achieved through the use of powdered ONS compared with ready to drink ONS and therefore adherence to powdered ONS is particularly important*
- *Whilst there is some evidence for managing malnutrition (MUST ≥ 2) with dietary advice alone, data on clinical outcomes or cost is limited and further high quality studies are required in this area*^{30,47}

Reference:

Holdoway et al. Managing Adult Malnutrition in the Community. 2021 www.malnutritionpathway.co.uk

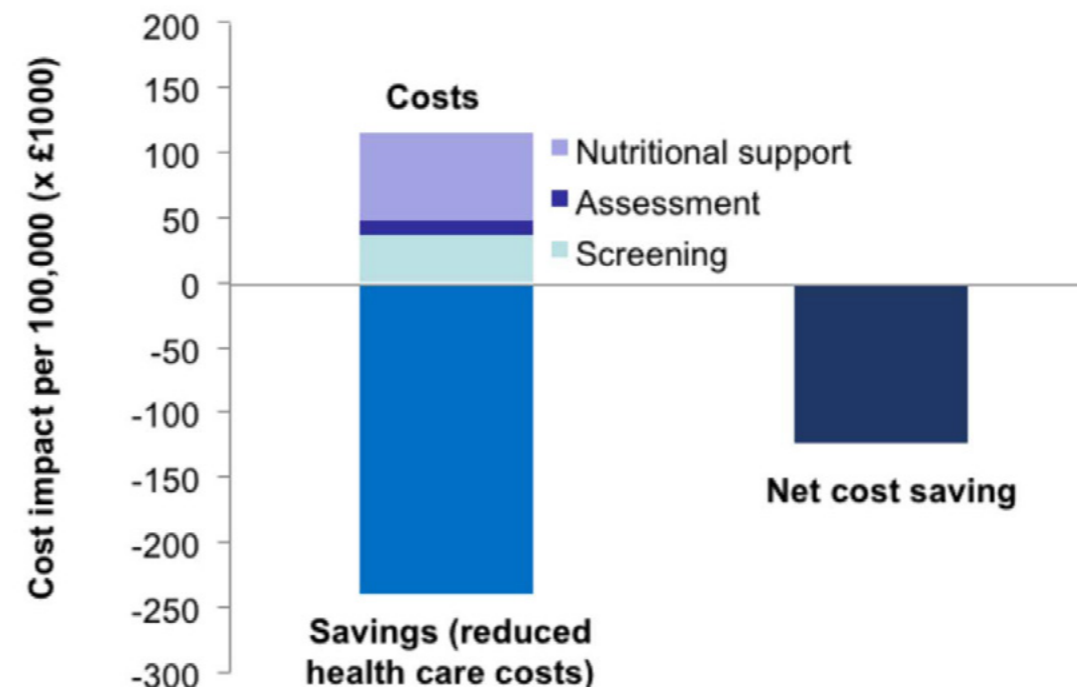


Identification and management = Major cost savings

In order to reduce the cost of malnutrition, prompt identification and management is key:

- "If NICE CG32 was fully implemented and resulted in better nourished patients this would lead to reduced complications such as secondary chest infections, pressure ulcers, wound abscesses and cardiac failure"¹

Annual estimated costs and cost savings of managing malnutrition with nutritional support (per 100,000)¹



The benefits of treating malnutrition with nutritional support (reductions in health care use) more than offset the costs - with an overall cost saving

References:

1. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018. <https://www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf>
2. NHS England. Guidance – Commissioning excellent nutrition and hydration 2015-18. Leeds; 2015.
3. National Institute for Health and Care Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical Guideline 32. 2006. (Updated 2017)



NICE recommendations

NICE CG32¹ recommends:

- oral nutrition support to manage malnutrition (A-grade evidence)
- 2 common oral nutrition support strategies are:
 - dietary advice to increase nutrient content of diet
 - oral nutritional supplements (ONS)

NICE QS24² emphasises the need for all care services to:

- take responsibility for the identification of people at risk of malnutrition
- provide nutritional support for everyone who needs it
- take an integrated approach to the provision of services

References:

1. National Institute for Health and Care Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical Guideline 32. 2006. (Updated 2017)
2. National Institute for of Health and Care Excellence (NICE). Nutrition support in adults. Quality Standard 24. 2012.



Dietary advice to optimise oral intake

A number of dietary strategies can be considered for patients who are at medium and high risk of malnutrition¹ including:

- Encourage small, frequent meals and snacks with a focus on nutrient rich foods and drinks
- Care should be taken when using food fortification to ensure that requirements for all nutrients including protein and micronutrients are met². Consider a multivitamin and mineral supplement
- Advise on the following to increase energy and protein content without increasing volume of food consumed e.g.:
 - adjusting portions at a meal to increase intake of nutrient dense foods
 - choosing higher rather than lower calorie foods, fortifying milk with milk powder aiming to increase energy and protein content without increasing volume of food consumed
- Dietary restrictions e.g. low fat, low sugar previously advised upon to manage co-morbidities may need to be relaxed to increase the energy (Calorie) content of the diet particularly when appetite is poor
- Provide patients and carers with the yellow leaflet 'Your Guide to Making the Most of your Food'
- Consider obtaining diet advice leaflets on common problems e.g. taste changes, from your local nutrition and dietetic team or malnutrition pathway website
- If in doubt about the suitability of dietary advice because the patient has a number of medical conditions that require dietary modification e.g. swallowing problems, diabetes, seek further advice from a Dietitian



References:

1. Holdoway et al. Managing Adult Malnutrition in the Community. 2021.
2. National Institute of Health and Care Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical Guideline 32. 2006. (Updated 2017)



The Importance of Protein

A number of dietary strategies can be considered for patients who are at medium and high risk of malnutrition¹ including:

- Multiple studies have indicated that at least 25–30 g of high-quality protein is necessary at each meal to optimally build or maintain muscle in older people and those who are unwell:
 - during illness and in older age actual intakes of protein are frequently inadequate
- Left unaddressed the shortfall of protein (and energy), contributes to loss of muscle with a subsequent decline in immunity, strength and the ability to perform everyday activities:
 - this can lead to a loss of independence, falls, and increase risk of mortality
- Patients should be encouraged to eat 3-4 portions of high protein foods per day
 - for further information/ideas on protein see www.malnutritionpathway.co.uk/proteinfoods
- For patients with sarcopenia (loss of muscle mass and strength) emphasise the importance of protein rich foods and drinks
- For patients with sarcopenic obesity focus on protein intake and resistance exercises with a goal of gaining muscle (lean) mass as opposed to fat mass; i.e. the goal will be weight maintenance, not weight gain:
 - see www.malnutritionpathway.co.uk/library/factsheet_sarcopenia.pdf for further information

Reference:

Holdoway et al. Managing Adult Malnutrition in the Community. 2021.

PROTEIN

Why it is important and where to find it

This leaflet has been created to provide information about the importance of eating enough protein and about how to get enough protein from your diet.

Protein plays an important role in your body:

- keeping muscles strong
- repairing injuries such as wounds and broken bones
- supporting our immune system to fight infections

A daily intake of protein from regular meals and snacks can help keep us in the best of health. Eating too little protein, particularly for long periods of time, may lead to muscle weakness, frailty and slow recovery from illness and injury.

As we get older, our bodies don't use the protein we eat as well as they used to, so we need to eat more protein to help overcome this. Illnesses and long term conditions such as cancer, COPD, pressure ulcers and recovery from surgery also increase our need for protein.

Foods high in protein should be included in 2 or 3 meals each day. If your appetite is poor, eating 3 smaller meals along with snacks or milky drinks in between may be easier to manage.

Good sources of protein include meat, fish, eggs, and dairy foods such as milk, yogurt and cheese. Plant-based sources of protein include soy and tofu, beans, pulses, nuts and seeds (see pages 2 & 3).

Tips for increasing your protein intake

- Try to have a portion of poultry, meat, fish, eggs, beans, pulses or cheese at each meal. If you are vegetarian/vegan, there are more ideas on plant-based protein foods you can include at each meal (see page 3 for further ideas)
- Try to have a milky dessert such as yogurt, custard or rice pudding after or between your meals
- Use fortified milk for drinks and on cereals - to make fortified milk take 4 heaped tablespoons of skimmed milk powder, mix to paste with a small amount of milk then whisk into a pint of milk
- Choose drinks such as milk, hot chocolate or malted drinks made with milk (these all count as fluid but are more nourishing than other fluids such as water, squash and tea).
- Some products, for example yogurts, ice cream, plant-based milks (eg. nut and oat milks), bread, pasta and cereals, have extra protein added to their ingredients - look out for the words "high protein" on the label
- If you are struggling with your appetite or are worried you aren't getting enough protein from your food, speak to your doctor, nurse or a dietitian who will be able to give you more advice.
- In some cases your healthcare professional may prescribe oral nutritional supplements to help. For more information about getting the most from your food and oral nutritional supplements, visit www.malnutritionpathway.co.uk/leaflets-patients-and-carers

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Management strategies

Oral nutritional supplements (ONS) to optimise oral intake

For patients at high risk of malnutrition dietary advice plus ONS has been shown to be effective:

- Evidence from systematic reviews including work by NICE demonstrate ONS in addition to diet are a clinically and cost effective way to manage malnutrition particularly in those with a low BMI (<20kg/m²)¹
- ONS used in the community produce an overall cost advantage often in association with clinically relevant outcomes (e.g. reduction in complications, mortality and hospital admissions/re-admissions) suggesting cost effectiveness²
- ONS increase energy, protein and micronutrient intakes, improve weight, and have functional benefits (e.g. improved hand grip strength and quality of life)¹

Nutrition Drinks (known as Oral Nutritional Supplements) Advice for patients and carers

The importance of good nutrition

- We need food and water to give us the essential nutrients (e.g. energy, protein, vitamins) to keep us active and well.
- If you are unwell or recovering from an illness you may not feel like eating and drinking
- Your illness, medicines and/or treatment may make things taste different, affect your appetite and make you feel full more quickly
- You have been prescribed nutrition drinks (oral nutritional supplements) in addition to your diet to help meet your energy and nutrient needs
- Ideas on how to boost your usual diet are given in a separate information sheet 'Your Guide to Making the Most of your Food'

If you continue to lose weight please see your GP or Dietitian

What are oral nutritional supplements?


Oral nutritional supplements are specially made to contain energy, protein, vitamins and minerals. They are available in drinks, soups and desserts to help people who are finding it difficult to eat enough to get the nutrition they need. Oral nutritional supplements can help you gain weight or stay at a healthy weight. They may also help you to cope better with an illness, tolerate treatments or recover from illness.

How many oral nutritional supplements should I take and how do I take them?

- Everybody is different. Your healthcare professional can give advice on how many oral nutritional supplements you need to take each day and which types might be best for you. Prescriptions are often between 1 and 3 oral nutritional supplements a day

Oral nutritional supplement/s: _____ Number of bottles/pots/sachets to take per day: _____

- Oral nutritional supplements will help improve your dietary intake. It is important that you take the recommended number/dose each day but if you have trouble managing the amount recommended do let your healthcare professional know
- In general, people take oral nutritional supplements when they most feel like drinking or eating them. This could be between meals, like a snack, first thing in the morning or before bed time. Others find that taking small amounts of their supplements regularly throughout the day helps. Oral nutritional supplements can also be included in some of your favourite recipes too (see section on next page)
- Most oral nutritional supplements (drinks & desserts) taste best cold but can be heated if you prefer. Soup and savoury styles are better warm
- You should shake nutrition drinks well before opening
- You can drink most oral nutritional supplements straight from the bottle using a straw if provided or you can pour it into a glass or cup



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References:

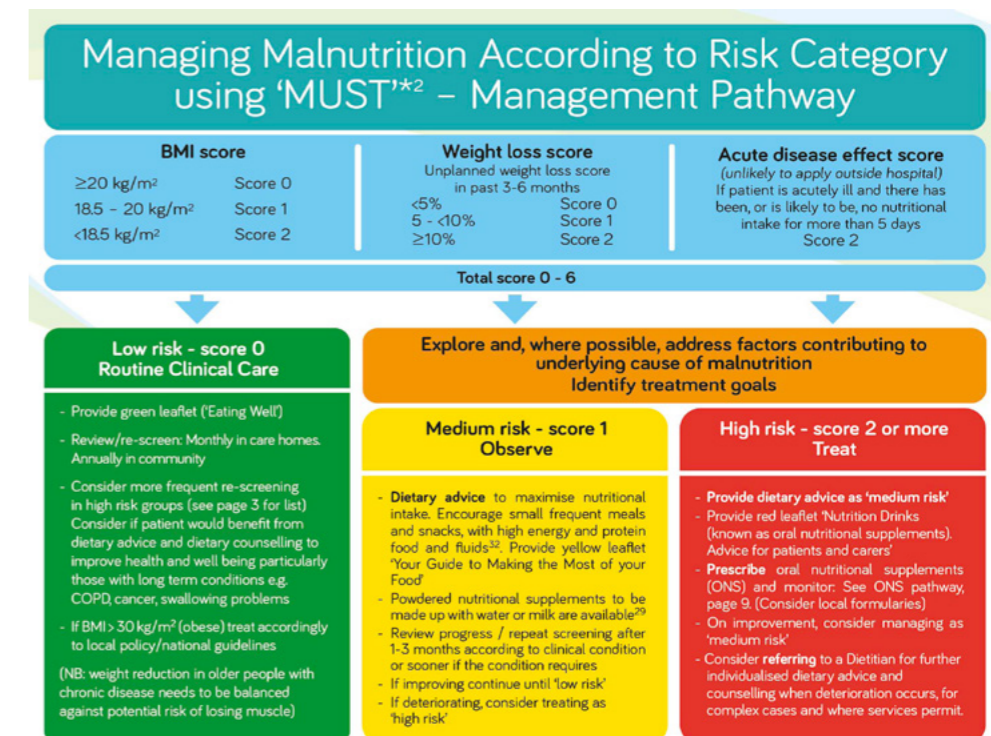
1. Holdaway et al. Managing Adult Malnutrition in the Community. 2021.
2. Elia M et al. A systematic review of the cost and cost effectiveness of using standard oral nutritional supplements in community and care home settings. Clin Nutr. 2016 Feb;35(1):125-37

Can implementing managing malnutrition pathways make a difference?



Oral nutritional supplements (ONS) to optimise oral intake

- NICE highlights the need for screening and management of malnutrition
 - implementing these guidelines will have a high impact for savings (estimated savings of at least £308,820 per 250,000 people)¹
- Implementing the malnutrition pathway in GP practices, including provision of dietary advice and ONS to those at high risk has demonstrated significant reductions in healthcare use²:
 - hospital admissions (49%)
 - GP visits (21%)
 - antibiotic prescriptions (30%)
 - length of stay (48%)
- Costs to manage malnutrition (HCP time, ONS) have been found to be more than offset by the savings associated with these reductions in health care use² with cost savings demonstrated of:
 - up to -£395.64 per person for medium and high risk patients combined
 - up to -£997.02 for high risk patients alone



*The 'Malnutrition Universal Screening Tool' ('MUST') is used here with the permission of BAPEN (British Association for Parenteral and Enteral Nutrition)

References:

1. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018. <https://www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf>
2. Brown F et al. Economic Impact of Implementing Malnutrition Screening and Nutritional Management in Older Adults in General Practice. J Nutr Health Aging. 2020; 24(3):305-311



Counting the cost of malnutrition and its management: summary

- **Malnutrition costs more than £23bn each year - 15% of total expenditure on health and social care**
- **Costs are high as malnutrition is common, and consequences of untreated malnutrition are costly (increased readmissions, GP visits, prescription costs, complications)**
- **Doing nothing will continue to impact on costs; managing a malnourished patient costs more than 3x more than a non-malnourished patient**
- **Prompt identification and timely management is key to reduce the costs; expenditure on strategies to identify and manage malnutrition is a small proportion of the overall costs (<2.5%)**



Counting the cost of malnutrition and its management: summary

- Tackling malnutrition can improve outcomes and reduce costs - saving at least £123,530 per 100,000 population
- Research confirms the benefit of managing malnutrition with nutrition support such as the use of ONS alongside diet:
 - improved function
 - improved clinical outcomes
 - improved quality of life
 - reductions in healthcare use
- Identifying malnutrition (with screening) and effectively managing this condition can improve lives and save money

Further reading



1. Elia M, on behalf of the Malnutrition Action Group (BAPEN) and the National Institute for Health Research Southampton Biomedical Research Centre. The cost of malnutrition in England and potential cost savings from nutritional interventions (full report). 2015. <http://www.bapen.org.uk/pdfs/economic-report-full.pdf>
2. National Institute for Health and Clinical Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical Guideline 32. 2006. (Updated 2017)
3. National Institute for Health and Care Clinical Excellence (NICE). Nutrition support in adults. Quality Standard 24. 2012.
4. Stratton R, Smith T, Gabe S. Managing malnutrition to improve lives and save money. BAPEN. October 2018. <https://www.bapen.org.uk/pdfs/reports/mag/managing-malnutrition.pdf>

