Micronutrient malnutrition in older adults: A practical guide for General Practice

This article:

- Highlights the prevalence and impact of micronutrient malnutrition ("hidden hunger") in older adults
- Explores key physiological, clinical and social factors that increase nutritional risk in ageing populations, including multimorbidity and polypharmacy
- Outlines practical approaches for identification and screening in primary care, including use of MUST and brief consultation questions
- Provides evidence-based management strategies, from food-first advice to appropriate supplementation and dietetic referral

The cost of malnutrition

Malnutrition in older adults is under-detected and under-treated.[1,2]

Approximately 1.3 million people aged 65 and over in England are malnourished or at risk, equating to around one in ten of this age group.[3] With 93% of these individuals living in the community, general practice is the frontline for identification and intervention.[3]

Malnutrition costs the NHS an estimated £23.5 billion annually, with malnourished individuals costing two to three times more than their well-nourished counterparts (£7,408 vs £2,155 per year in combined health and social care costs).[4]

Malnourished older people are twice as likely to visit their GP and have more frequent and longer hospital admissions when compared to well-nourished people.[3] Yet investment in nutritional support represents less than 2.5% of total malnutrition expenditure suggesting significant opportunity for cost-effective intervention.[4]

General practice is uniquely placed to make 'every contact count' as every consultation with an older adult is an opportunity to consider nutritional status.[5,6]

Identification and interventions e.g. dietary advice, supplementation when appropriate and timely referral, can help improve outcomes and quality of life.[4,7]

Micronutrient malnutrition

While protein-energy malnutrition is increasingly recognised, micronutrient deficiency, sometimes termed 'hidden hunger', remains under-detected.[8,9]

These deficiencies contribute directly to poor wound healing, increased risk of falls, impaired immunity, cognitive decline, frailty and increased morbidity and mortality.[8]

- Amongst community-dwelling older adults, six micronutrient deficiencies have been identified as a public health concern.[10] For more information, please see page 4 for common micronutrient deficiencies.
- Across institutionalised older adults, approximately 40–70% experienced deficiencies in key micronutrients such as zinc, selenium, and iron.[11]

The patient: who is at risk?

The UK population aged 65 and over is approximately 12.7 million (19% of the total population) and is projected to reach 22.1 million (27%) by 2072.[12] As this population grows, so does the challenge of preventing and managing nutritional deficiencies.

Micronutrient malnutrition in older adults can be complex and multifactorial, and can create a self-perpetuating cycle of poor health in older adults.[8]

Physiological factors

Ageing is associated with reduced appetite and gastrointestinal changes, which over time can impair the ability to supply adequate nutrients to the body.[7,13,14] Poor oral health and altered taste can further limit dietary intake and variety. Cognitive impairment and neurological conditions can also affect eating.[3,7,14-16]

Multimorbidity and polypharmacy

Approximately 65% of people aged 65 and 90% of those aged 85 live with one or more long-term conditions.[3]

In England, 8.4 million patients regularly take >5 medicines (defined as 'polypharmacy') which is a globally recognised problem, particularly amongst older adults.[17] Polypharmacy in older adults increases the risk of malnutrition as multiple medications can interact with nutrients, impairing appetite, digestion, absorption or metabolism,[14,16] whilst certain medications may also alter taste and smell, further compromising dietary intake.[18,19]

Social and practical factors

Over one million older people in the UK are chronically lonely.[3,20] Social isolation, bereavement and reduced confidence with cooking and shopping all diminish dietary variety and quality.[3] Financial pressures further constrain food choices with 3 million people over the age of 60 having reported skipping meals to cut back on food costs.[3,20]

Identification: what to look for

Malnutrition and micronutrient malnutrition often present as mild and unspecific and may not be the primary reason for consultation.[15]

Visual and clinical cues[2,4,8]

- Unintentional weight loss
- Loose clothing/ jewellery
- Fragile skin
- Poor wound healing
- Falls
- Frequent infections
- Delayed recovery
- Fatigue

Patients who are overweight/obese can also be malnourished.[4]

A greater percentage of older people living with obesity vs. healthy-weight older people were at risk of inadequate magnesium, calcium, vitamin B6 and vitamin D intakes.[21]

In these cases, look for unexplained weight loss and impaired intake.[4,22]

Screening

Quick screening questions for a 10-minute consultation

The 'Managing Adult Malnutrition in the Community' pathway recommends these simple questions that can be incorporated into any consultation:[4]

1. How is your appetite lately? How are you managing with eating and drinking?
2. How would you describe your weight? What is a usual weight for you?
3. Do you feel your weight has changed in the last few weeks or months?
4. How are your clothes and jewellery fitting? Do they feel different to usual?

MUST screening

The Malnutrition Universal Screening Tool (MUST) is a validated tool for nutritional screening in all care settings and uses a five-step process assessing BMI, unplanned weight loss (past 3-6 months) and acute disease effect, resulting in a score of 0 (low risk), 1 (medium risk) or 2+ (high risk). It takes minutes to complete.[23,24]

How is it useful for micronutrient malnutrition?

Whilst the Malnutrition Universal Screening Tool (MUST) was not designed to detect micronutrient deficiencies directly, it represents a practical and validated tool for identifying patients at risk of malnutrition in a primary care consultation who may warrant nutritional intervention or dietetic referral.[25]

The biological and dietary causes of protein-energy malnutrition are similar to those that deplete micronutrient status: reduced dietary intake, malabsorption, chronic disease and ageing all effect macronutrient and micronutrient sufficiency.[7,26,27]

Visit the MUST tool on the British Association for Parenteral and Enteral Nutrition (BAPEN) website for full details and additional information.

Common micronutrient deficiencies in older adults

Research has shown that micronutrient status is often suboptimal in older adults.

A 2024 prospective, German observational study of 156 malnourished older hospital inpatients aged 65 years and above, found the most prevalent deficiencies were:[15]

- Vitamin C: **75%**
- Vitamin D: **65%**
- Folic acid: **37%**
- Zinc: **36%**
- Selenium: **35%**
- Iron: **31%**

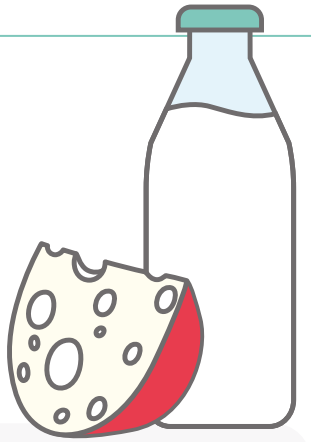
Additional studies have also shown that in community dwelling older adults, vitamins B1, B2 and D, calcium, magnesium and selenium were also considered as a possible public health concern.[10]

Micronutrients in ageing

Vitamin C	Essential for wound healing, with supplementation shown to improve healing outcomes in older adults.[28]
Calcium, vitamin D, magnesium and vitamin K	Integral to bone health, particularly as we age, helping to support bone strength and reduce fracture risk.[29,30]
Iron	Critical for maintaining physical function, with low intakes being associated with reduced capacity for activity, worsening cognitive function and long-term behavioural changes.[31,32]
Insufficient selenium and zinc	Associated with greater risk of cardiovascular disease and impaired immune function,[33] which may leave older adults more susceptible to infection.
Deficiencies in vitamin B1, B2 and folic acid	Linked to cognitive decline and the development of neurodegenerative disorders, including Alzheimer's.[34,35]

Practical management strategies

Food-first approach



Where appetite and intake allows, dietary modification should be the first-line intervention. BAPEN recommends a 'food first' approach, encouraging meals, snacks, nourishing drinks and food fortification.[36] Practical advice for patients includes:

- **Little and often:** aim for three small meals plus two to three nourishing snacks.
- **Choosing full fat and sugar products** rather than low fat/low sugar/sugar free.
- **Nourishing drinks** can be a simple way of increasing calorie intake e.g. milkshakes, enriched soups.
- **Food Enrichment:** involves using everyday food items to enrich the diet with energy and protein.

Patient leaflets are also available from the Malnutrition Pathway where a traffic light system of green (eating well), yellow (making the most of food) and red (nutrition drinks) guides can be downloaded for patients and carers. To access these leaflets click here (external link)

Vitamin and mineral supplementation

In instances where dietary modifications and intake alone are not expected to be able to correct identified micronutrient deficiencies, supplementation with relevant micronutrients is also a management option and may be beneficial in appropriate patients. This is especially relevant in older adults, who may face challenges in meeting their nutritional needs through diet alone due to factors such as reduced appetite, altered absorption or limited food variety, and for whom targeted supplementation may provide health benefits.[4,7,13,14,37]

Vitamin D

The Scientific Advisory Committee on Nutrition (SACN) recommend that all adults should take 10 µg daily during the autumn and winter. People whose skin has little or no exposure to the sun, such as those who are frail or housebound, or are in an institution such as a care home so are not often outdoors, should take a supplement of 10 µg (400 IU) daily throughout the year.[38]

Multivitamin and minerals

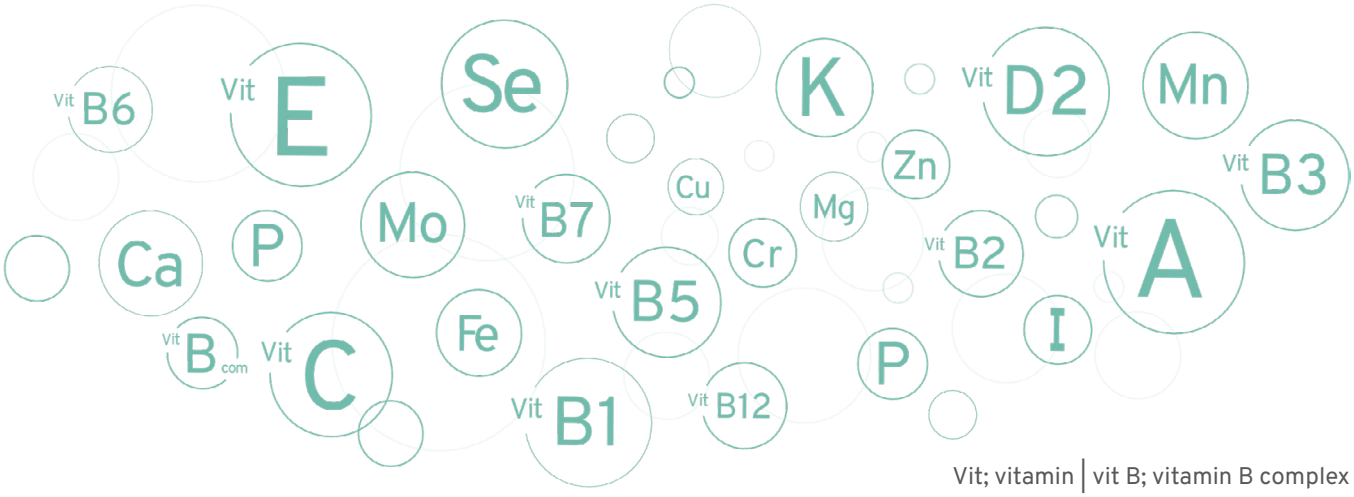
Vitamin and mineral deficiencies rarely occur in isolation and physiological processes are the result of micronutrients working in combination, highlighting the importance of providing a comprehensive range of micronutrients to eligible patients requiring nutritional support.[15,33]

Addressing each micronutrient individually may also be challenging due to the excess pill burden (polypharmacy) already common within the older population.[39] Multivitamin tablets may consolidate several micronutrients into one dose, reducing the number of individual supplement pills, with the potential to improve adherence.[40]

Appropriate micronutrient supplementation is acknowledged in clinical guidelines for nutrition support for adults with, or at risk of, malnutrition.[23]

NICE guideline CG32 - Nutrition Support for Adults

"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."[23]



Vit; vitamin | vit B; vitamin B complex

Oral nutritional supplements (ONS)

ONS are sterile liquids, semi-solids or powders, which provide macronutrients and micronutrients and can be used when optimised food intake has been insufficient, or when it is anticipated that food alone will not meet nutritional requirements.[4,37] For appropriate patients where malnutrition or the risk of malnutrition is a concern, healthcare professionals should consider initiating oral enteral or parenteral nutrition support, alone or in combination as per individual requirements, with any swallowing issues taken into account.[23]

When to consider a referral to a dietitian

Referral considerations[4,41]

- MUST score ≥2 (high risk of malnutrition)
- Inadequate response to initial food-first interventions and/or supplementation after 4-6 weeks
- Complex nutritional needs
- Multiple health conditions e.g. diabetes
- Swallowing difficulties requiring texture-modified diets (joint referral with Speech and Language Therapy)
- Need for ONS as a sole source of nutrition
- Patients with persistent, unexplained weight loss despite intervention

Unintentional weight loss is a red flag for underlying pathology e.g. cancer and it is important that alongside referral for further investigation, that the unintentional weight loss which may result in malnutrition is also treated.[41,42]

Summary: every contact counts

Malnutrition and micronutrient deficiency in older adults are common and usually manageable in primary care.[4,8,23,41,42] Key steps include:

- **Think** nutrition at every consultation with an older adult - use the four quick screening questions or apply MUST
- **Look** for clinical cues: unexplained weight loss, fatigue, poor wound healing, oral signs, recurrent infections, falls
- **Act** on red flags promptly
- **Advise** on food-first approaches and consider a multivitamin/mineral supplement if there is concern regarding micronutrient intake/absorption
- **Refer** to dietetics for high-risk or complex cases

By integrating brief nutritional assessment into routine consultations and to 'make every contact count', GPs can identify at-risk older adults early, intervene effectively and improve health outcomes - all within the constraints of a busy general practice.[5-7]

References

1. British Geriatrics Society. Malnutrition, 2019: A significant threat to our health as we age. Available at: https://www.bgs.org.uk/blog/malnutrition-a-significant-threat-to-our-health-as-we-age
2. National Institute for Health and Care Excellence Clinical Knowledge Summaries. Adult malnutrition. Available at: https://cks.nice.org.uk/topics/adult-malnutrition/
3. Malnutrition Task Force. State of the Nation 2025: Older People and Malnutrition in the UK Today. Available at: https://www.malnutritiontaskforce.org.uk/sites/default/files/2025-08/State%20of%20the%20Nation%202025%20revised.pdf
4. Holdoway A, et al (consensus panel). Managing Adult Malnutrition in the Community. 3rd edition, 2021. Available at: www.malnutritionpathway.co.uk/library/managing_malnutrition.pdf
5. Greenbook S. British Geriatrics Society 2019. Healthier for longer. Available at: https://www.bgs.org.uk/resources/healthier-for-longer-how-healthcare-professionals-can-support-older-people
6. Public Health England, NHS England and Health Education England, April 2016. Making Every Contact Count (MECC): Consensus statement. Available at: https://www.england.nhs.uk/wp-content/uploads/2016/04/making-every-contact-count.pdf
7. Cruz-Jentoft AJ, Volkert D. N Engl J Med. 2024;392:2244–2255.
8. Norman K, et al. Nutrients 2021;13:2764. https://doi.org/10.3390/nu13082764
9. Eggersdorfer M et al. Nutrients. 2018; 10(9):1210.
10. Borg S t, et al. Br J Nutr. 2015;113(8):1195–1206.
11. Vural Z, et al. Nutrients. 2020;12(4):1072.
12. Barton C, et al. House of Commons Library 2024. The UK's changing population. 2024. Office for National Statistics population estimates. Available at: https://commonslibrary.parliament.uk/the-uks-changing-population/
13. Rudzińska A, et al. Nutrients. 2023 Jun 29;15(13):2966.
14. Cristina NM, Lucia D. Nutrients. 2021 Nov 30;13(12):4337.
15. Yilmaz K, et al. J Nutr Health Aging. 2024;28(2):100039.
16. Drake V. Subpopulations at risk for micronutrient inadequacy or deficiency. Linus Pauling Institute, Oregon State University. 2018. Available at: https://lpi.oregonstate.edu/mic/micronutrient-inadequacies/subpopulations-at-risk
17. Tarrant C, et al. BMJ Qual & Safety. 2023; 32:121-124.
18. Halasabalu Kalgeri S, et al. Front. Dent. Med 2026. 7:1758771.
19. Izco-Cubero M, et al. Front. Public Health 2025;13:1554459.
20. Yu, D. British Dietetic Association. Loneliness and malnutrition. 2020. Available at: https://www.bda.uk.com/resource/loneliness-and-malnutrition.html
21. Jun S et al. Public Health Nutr. 2020 September ; 23(13): 2268–2279.
22. Malnutrition Pathway. Subjective indicators of malnutrition risk. Available at: https://www.malnutritionpathway.co.uk/pcn/pcn_library/subjective_indicators.pdf
23. National Institute for Health and Care Excellence. Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition. NICE clinical guideline CG32 2006 (last updated 2017). Available at: www.nice.org.uk/guidance/cg32.
24. British Association for Parenteral and Enteral Nutrition (BAPEN). Malnutrition Universal Screening Tool (MUST). Available at: www.bapen.org.uk/must-and-self-screening/must-calculator.
25. Todorovic V, et al. 2011. The 'MUST' explanatory booklet. Available at: https://www.bapen.org.uk/pdfs/must/must_explan.pdf
26. World Health Organisation. Evaluating the public health significance of micronutrient malnutrition 2016. Available at: https://www.who.int/docs/default-source/micronutrients/gff-part-2-en.pdf?sfvrsn=ed5bbbb7_2
27. Alvarez-Nuncio MDC, Ziegler TR. Curr Opin Gastroenterol. 2024 Mar 1;40(2):99-105.
28. Bechara FG, et al. Antioxidants. 2022;11(8):1605
29. Aaseth J, et al. Nutrients. 2024;16(15):2420.
30. Groenendijk I, et al. Adv Nutr. 2023;14(1):1–15.
31. Haas J, et al. J Nutr. 2001;131(2):676S–690S.
32. Jáuregui-Lobera I. Neuropsychiatr Dis Treat. 2014.;10: 2087–2095.
33. Berger M, et al. Clin Nutr. 2022;41(6): 1357–1424.
34. Jia W, et al. J Trans Med 2024; 22:165 2024;22:165.
35. Tao Z, et al. Front. Neurol. 2025; 16:1663136.
36. British Association for Parenteral and Enteral Nutrition (BAPEN). Food First/Food Enrichment. Available at: www.bapen.org.uk/nutrition-support/nutrition-by-mouth/food-first-food-enrichment
37. British Association for Parenteral and Enteral Nutrition (BAPEN). Oral Nutritional Supplements (ONS). Available at: www.bapen.org.uk/education/nutrition-support/nutrition-by-mouth/oral-nutritional-supplements-ons
38. Scientific Advisory Committee on Nutrition. SACN statement on nutrition and older adults living in the community. Available at: https://assets.publishing.service.gov.uk/media/6007fdc78fa8f50d8f210fb9/SACN_Nutrition_and_older_adults.pdf
39. British Geriatrics Society. Malnutrition: Polypharmacy in the elderly: Are addressing the medication burden? Available at: https://www.bgs.org.uk/polypharmacy-in-the-elderly-are-addressing-the-medication-burden
40. Qiran W, et al. Frontiers. 2023;14
41. Malnutrition Pathway. Top 10 tips for implementing the malnutrition pathway. Available at: https://www.malnutritionpathway.co.uk/tipsheets/tipsheet_gp.pdf
42. Malnutrition Pathway Primary Care Network Portal. Resources for General Practitioners. Available at: https://www.malnutritionpathway.co.uk/pcn/general_practitioner.html
43. Forceval Summary of Product Characteristics. Available at: https://www.medicines.org.uk/emc/product/3911/smpc

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JB-003939 / May 2026