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Title: Disease-related malnutrition in the 21st century: from best evidence to best practice

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Disease-related malnutrition in the 21st century: from best evidence to best practice

“How will history judge the 21st century? If things go on as they are, the verdict will be dismay and condemnation, that wealthy societies and established social protection systems could allow the tragedy of malnutrition to occur in such a large segment of the population. This is just not tolerable.....”

El Read, former member of the European Parliament¹

Malnutrition is a syndrome that results from intake of nutrients that do not conform with physiological requirements. Malnutrition indiscriminately affects individuals across various stages in life right from infants and children to adolescents and older adults, and includes under- and over-nutrition. Whilst undernutrition was once associated with developing countries and overnutrition with developed countries, many parts of the world experience a dual burden.

Three landmark papers on malnutrition published in the 20th century include:

- *“Human starvation and its consequences”* by Ancel Keys (1946) demonstrated that when deprived of adequate nutrition healthy volunteers developed severe physiological and psychological disorders, which improved with the reintroduction of adequate feeding²;
- *“The skeleton in the hospital closet”* by Charles Butterworth (1974) was the first to highlight that despite a noticeable prevalence, hospital-based medical teams failed to identify malnutrition in patients³;

- *“What supports nutritional support”* by Ronald Koretz (1984) highlighted knowledge-deficit in making evidence-based decisions regarding when acute care patients should be offered nutrition support⁴.

These works led to the inception of a huge body of clinical research into malnutrition. Depending on the method of assessment, malnutrition is prevalent in approximately 20-50% of adult acute care patients⁵; 20-70% of nursing home residents⁶; and 5-30% of community-dwelling adults⁷. Research has provided compelling evidence associating malnutrition with frequent readmissions to hospitals; prolonged length of hospital stay; increased risk of infections, falls, and pressure ulcers; delayed convalescence; increased healthcare costs; and mortality^{8,9}. Nutrition screening and assessment tools have been developed and validated to identify and diagnose malnutrition across the continuum of care⁹ with research informing the development of nutrition support and care strategies to manage malnutrition⁹. Working parties and task forces from around the world have compiled, collated and summarised evidence into guidelines to inform best practice amongst clinical staff for the management of malnutrition, which have been endorsed by dietetic associations and societies⁹⁻¹³.

The basic premise of evidence-based practice guidelines is to improve and ensure best practice for patient care. Guidelines emerging from clinical research are usually accepted by practitioners at an academic level¹⁴. Therefore, it is logical that practice would align with evidence-based guidelines. On the contrary, substantive data reflects that practice diverges from evidence-based guidelines¹⁵⁻¹⁷. So where lies the problem?

When evidence does not translate into best practice: the case of malnutrition screening and diagnosis

Nutrition screening, as defined by A.S.P.E.N., is the “process to identify an individual who is malnourished or who is at risk for malnutrition to determine if a detailed nutrition assessment is indicated”¹⁸. Therefore, nutrition screening is an important ‘trigger’ to the nutrition care process which begins with nutrition assessment and diagnosis for malnutrition¹⁹. Nutrition assessment is a systematic process of defining nutritional status using information including medical and nutritional histories, anthropometric measurements, biochemical assays and a physical examination (to determine loss of subcutaneous fat and/or muscle mass) to make a malnutrition diagnosis⁹. Nutrition screening should be simple and quick to perform and can be completed by anyone including healthcare/non-technical staff members, friends/family members or patients themselves, whereas nutrition assessment is a comprehensive in-depth process and must be completed by a trained dietitian/clinician⁹.

Nutrition screening also identifies patients who are obese but have protein-energy malnutrition and/or ongoing poor dietary intake and requiring nutritional intervention²⁰. Nutrition screening tools perform well in predicting health-related outcomes in adult hospital patients²¹. In the absence of nutrition screening, more than half of the hospital patients at risk of malnutrition are not identified and unlikely to receive appropriate and timely nutrition support²². Unless identified, malnutrition will go undiagnosed, undocumented and therefore untreated¹⁵. Within the last decade, large multicentre studies in different parts of the world have reported nutrition screening practices in acute care hospitals indicating that the translation of nutrition screening into practice has been less than ideal¹⁵⁻¹⁷. The literature cites several barriers at the organisational-,

healthcare personnel-, and patient-level that prevent integration of nutrition screening into routine practice (Figure 1). Although identifying and diagnosing malnutrition will not directly improve patient outcomes, resultant appropriate nutritional intervention is likely to commence, which is likely to have a positive influence on health-related outcomes^{9,17,23,24}. Recent reports from multicentre studies reflect disparity in malnutrition diagnosis in medical charts and malnutrition prevalence. Potential reasons to explain this deficit are that there is a lack of understanding regarding malnutrition amongst healthcare staff members; malnutrition is not routinely identified, diagnosed and/or documented in medical charts; and malnutrition is perceived as an outcome rather than a medical condition by healthcare staff members²⁵⁻²⁸.

When evidence translates into best practice: the case of falls and pressure injury prevention programs

Pressure injuries and falls are a frequent occurrence in the acute care setting and are associated with prolonged hospital stay, reduced quality of life, and increased healthcare costs^{29,30}. Two recent reviews assessed the multicomponent strategies in falls and pressure ulcers prevention programs and found that multicomponent initiatives have high level evidence for reducing risk of in-hospital falls by 30% and moderate level evidence of reducing pressure injury rates and improving processes of care^{29,31}. The reviews also highlighted that the key components for the successful implementation of the guidelines included leadership support, involvement and guidance by a multidisciplinary committee, engaging front-line staff during intervention design, pilot testing the intervention, ongoing audits and staff education^{29,31}.

Pressure injuries, falls and malnutrition have several similarities: (a) they are common whilst largely preventable in the hospital setting; (b) they are associated with adverse health-related outcomes and increased cost of care; (c) early screening and management demonstrates improved outcomes and cost savings; (d) have evidence-based guidelines to inform management. One potential difference between is that evidence-based guidelines for prevention of falls and pressure injuries have better compliance within the hospital setting than do those for malnutrition management.

Translating evidence into practice

Evidence-based guidelines are ‘systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances’³². The benefits of using guidelines to inform practice include improved effectiveness and efficiency of healthcare, avoiding inappropriate variations in practice, improved patient outcomes, and increased job satisfaction³³. Four stages are involved in the evidence-to-practice process for clinicians: to be aware of, agree with, adopt, and adhere to the evidence¹⁴. However, a steady decline or loss of information is observed at each stage of the process¹⁴ leading to a delay of up to 17 years for scientific evidence to translate into clinical practice³⁴. Research indicates that up to 40% of patients do not receive evidence-based care with as much as 25% of the care provided being unnecessary or potentially harmful^{35,36}.

Organisational culture, or “how things are done here” is defined by leadership support, communication, teamwork, and conflict resolution³⁷. Existing malnutrition management guidelines focus on practice recommendations for individual healthcare providers and

do not take into consideration the organisational culture where individual healthcare providers work. The successful implementation of evidence-based guidelines for pressure injury and falls prevention were attributable to a positive and supportive organisational culture^{29,31} and could explain the disparity in their uptake versus malnutrition management guidelines.

The responsibility of malnutrition management across the continuum of care should move beyond the role of dietitians and integrated into team effort. A more supportive leadership is required at an inter-professional level, increased delivery of integrated care (through the development and implementation of nutrition care protocols), and improved quality management through continuous quality improvement initiatives³⁷. In countries such as the United Kingdom, the Netherlands and United States, it is mandatory for hospitals to screen patients for malnutrition risk at the time of hospital admission, and participate in audits to determine compliance with nutrition screening recommendations for satisfactory hospital accreditation²². In Australia, only those hospitals that use the Australian Council of Healthcare Standards (ACHS) for accreditation must have a nutrition policy that includes malnutrition risk screening on admission and at regular intervals during hospital stay³⁸.

Conclusion

Disease-related malnutrition will continue to adversely affect our patients- the most important benefactors of the health care system. The 20th century made remarkable strides in providing framework for an evidence-based approach to manage malnutrition. In the 21st century we must imbibe lessons from guidelines that have successfully

translated into practice; receive the required leadership support; acknowledge and use the accumulated experience of multidisciplinary team members to vigorously translate evidence-based guidelines for malnutrition management into practice. If not now, then when?

Figure 1. Expressed barriers to nutrition screening^{16,39-42}

Organisational context:

- Not mandatory and/or supported by ward managers
- Staff shortage
- Responsibility not clearly defined

Professional context:

- Inadequate:
 - time due to competing priorities
 - resources (instruments such as weighing scales, height measures)
 - training and education regarding the use of tools
- Perception that tool is “too difficult” or “complicated” to use
- Confusion between screening and assessment
- Preference for other parameters to determine nutritional status:
 - Visual assessment of physical appearance
 - Clinical judgment
 - Biochemical markers (serum albumin)
- Accepting malnutrition as an inevitable outcome of old age and/or disease
- Prioritising medical treatment over nutritional support

Patient context:

- Accepting malnutrition as an inevitable outcome of old age and/or disease
- Prioritising medical treatment over nutritional support

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