High energy, high protein, small volume

Nestlé HealthScience

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Malnutrition in the hospital

Malnutrition is often referred to as the "skeleton in the hospital closet" as it's often overlooked, undiagnosed and untreated. The largest study conducted in Australia and New Zealand looking at nutritional status in the hospital setting, reported a **32% prevalence of malnutrition**.[1]

Impact on the patient

Malnutrition has a large and varied impact, causing impairment at many levels, including:

- Cellular – leading to suppressed immune function, increased risk of infection, and delays in wound healing
- Physical – leading to a loss of muscle and fat mass, as well as atrophy of visceral organs
- Psychological – leading to fatigue and apathy which exacerbates anorexia and increases convalescence time.

Ultimately, all of which will lead to a **poor quality of life** for the individual.[2,3]

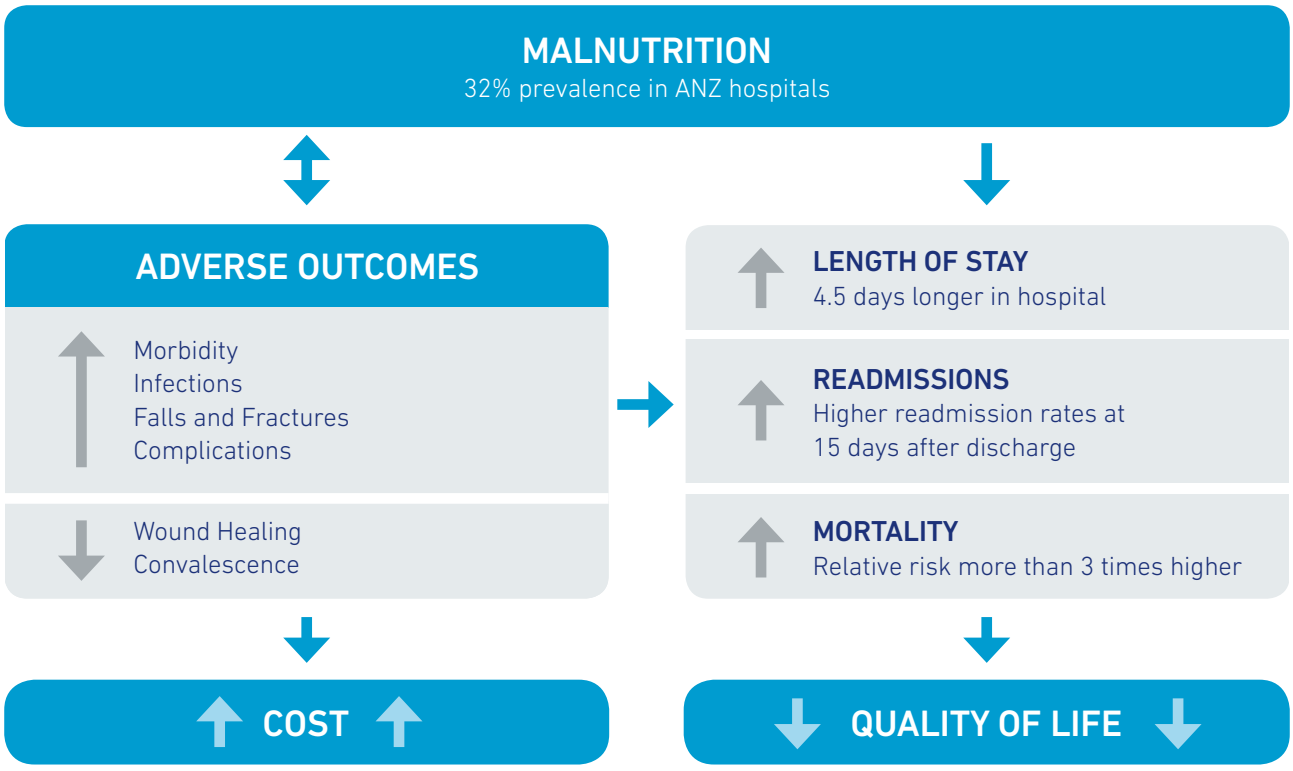
Malnutrition is also a significant predictor of mortality. Hospitalised malnourished patients have been found to have **more than 3 times greater risk of death** than that of well-nourished patients at 1-year and 2-years post discharge.[4] Additionally, in-hospital mortality at 90-days has been shown to be double for malnourished patients.[5]

Impact on the hospital

Malnutrition in the hospital setting has been demonstrated to lead to:

- An **increased length of stay** (LOS), by an average of 4.5 days [6]
- **Higher readmission rates** of up to 60% at 15 days, 90 days and 6 months.[4,5]

Prognostic impact of malnutrition

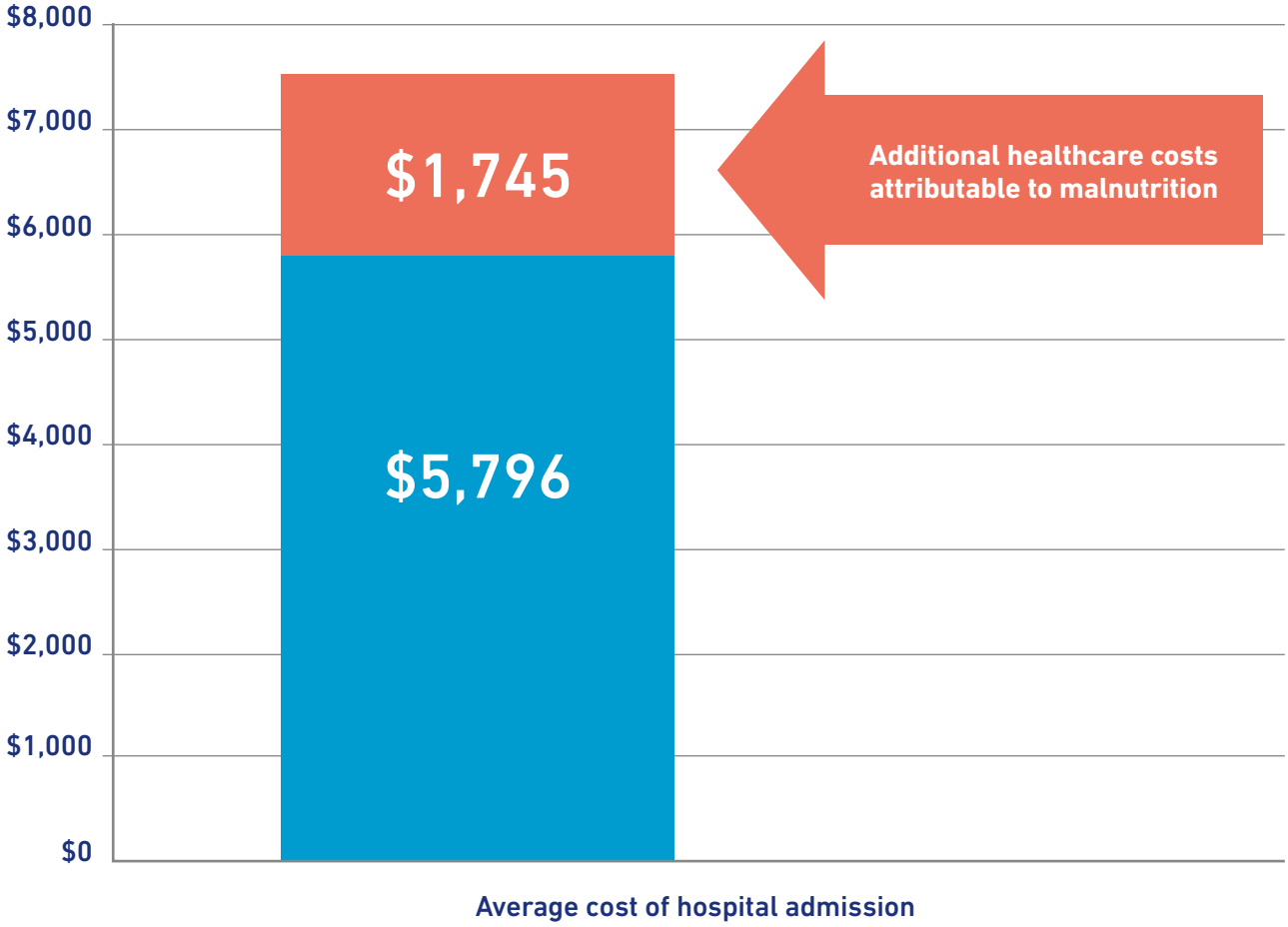


Adapted from Norman 2008[7]

Impact on healthcare costs

Malnutrition can have a significant effect on the cost of hospital stay. It can be the underlying cause of many other health complications that can worsen the reason for hospital admission and prolong hospital stay. All of these issues combined can impact on healthcare costs.

Malnutrition has been estimated to add an extra $1,745 to the healthcare costs for each patient admission.[8] This is approximately a 30% increase on the average patient admission cost of $5,796.[9]



The total cost of coded malnutrition is estimated to add at least $10.7 million AUD to the cost of healthcare.[8]

"... consequences of unrecognised and untreated malnutrition are substantial, not only for patients' quality of care but also from a cost perspective."[10]

A solution - Oral nutrition supplements (ONS)

Economic benefits of ONS in the hospital setting

ONS can play a significant role in improving the nutritional status and therefore quality of life of the patient, as well as helping to reduce healthcare costs associated with malnutrition.

The use of ONS in the hospital setting has been associated with:

- LOS from between 2 to 33 days, dependent on patient type [11]
- Readmissions by 30% [12]
- Complications (such as infections and pressure ulcers) by 14% [13]
- Hospital costs – related cost of resources as well as bed-day costs [14]

"... addressing hospital malnutrition has the potential to improve quality of patient care and clinical outcomes, and reduce costs."[10]

The Nestlé Health Science 2 kcal/mL range – High energy high protein ONS

Nutritional requirements may be elevated in circumstances such as poor health or surgery. High energy and protein oral nutrition supplements can help in meeting these increased nutrition demands and minimise the impact of malnutrition on the patient and the hospital.

As part of an extensive range of ONS, Nestlé Health Science offers a 2 kcal/mL range to meet high energy and high protein requirements.

RESOURCE® 2.0 + Fibre

- Nutritionally dense, high energy and protein
- 5 great tasting flavours
- Added benefit of fibre (FOS & GOS).

RESOURCE® 2.0 + Fibre can:

- Assist in the management of malnutrition
- Improve patient compliance and reduce taste fatigue
- Assist in improving gastrointestinal health.

1 bottle (200mL) of RESOURCE® 2.0 + Fibre provides:

400 kcal	Vitamin D (27% of RDI)
18g Protein	Calcium (27% of RDI)
5g Fibre (FOS & GOS)	Iron (38% of RDI)
Vitamin C (76% of RDI)	

Flavour	Product Code
Vanilla Flavour	12100787
Neutral Flavour	12100782
Strawberry Flavour	12100786
Apricot Flavour	12100772
Coffee Flavour	12100781

RESOURCE® 2.0

- Nutritionally dense, high energy and protein
- Low in sodium.

RESOURCE® 2.0 can:

- Assist in the management of malnutrition
- Benefit patients with fluid restrictions
- Be used as an oral nutrition supplement, or as a tube feed.

1 Tetra Pak (237mL) of RESOURCE® 2.0 provides:

475 kcal	Vitamin D (35% of RDI)
19.7g Protein	Calcium (18% of RDI)
Vitamin C (73% of RDI)	Iron (71% of RDI)

Flavour	Product Code
Vanilla Flavour	12358321
Coffee Flavour	12358619

RDI – Recommended Dietary Intake (adults >70 years).[15] **FOS** – Fructooligosaccharides. **GOS** – Galacto-oligosaccharides.

MedRound with RESOURCE® 2.0 or RESOURCE® 2.0 + Fibre

The Nestlé Health Science 2 kcal/mL range can be used as part of a MedRound Program to provide small volumes of a nutrient-dense supplement, which can help to boost nutrient intake between meals without affecting appetite at meal times.

Administering a 2.0 kcal/mL formula with medication is associated with:[16,17]

- Improved patient compliance
- Increased energy and protein intake
- Weight gain
- Improved wound management

4 x 50mL/day
= 400 kcal and
18g protein

4 x 60mL/day
= 480 kcal and
20g protein

References: 1. Agarwal E, et al. Nutritional status and dietary intake of acute care patients: results from the Nutrition Care Day Survey 2010. Clin Nutr 2012; 31(1):41-47. **2.** Holmes, S. The effects of undernutrition in hospitalised patients. Nurs. Stand. 2007; 22: 35-38. **3.** Kubrack C & Jensen L. Malnutrition in acute care patients. Int. J. Nurs. Stud. 2007; 44: 1036-1054. **4.** Lim SL, et al. Malnutrition and its impact on cost of hospitalization, length of stay, readmissions and 3-year mortality. Clin Nutr. 2012; 31: 345-350. **5.** Agarwal E. et al. Malnutrition and poor food intake are associated with prolonged hospital stay, frequent readmissions, and greater in-hospital mortality: Results from the Nutrition Care Day Survey 2010. Clin Nutr. 2013; 32(5): 737-745. **6.** Gout B.S, Barker L.A, Crowe TC. Malnutrition identification, diagnosis and dietetic referrals: Are we doing a good enough job? Nutr. Diet. 2009; 66: 206-211. **7.** Norman K, et al. Prognostic impact of disease-related malnutrition. Clin Nutr. 2008; 27: 5-15. **8.** Rowell DS, et al. Additional costs of inpatient malnutrition, Victoria, Australia, 2003-2004. Eur J Health Econ, 2011; 12(4): 353-361. **9.** Australian Institute of Health and Welfare, Canberra. Health Expenditure Australia 2010-11. Health and Welfare Expenditure Series, Number 47. **10.** Tappenden KA, et al. Critical role of nutrition in improving quality of care: an interdisciplinary call to action to address adult hospital malnutrition. Medsurg Nurs. 2013; 22(3): 147-165. **11.** Stratton RJ, et al. Disease-related Malnutrition: An Evidence Based Approach to Treatment. Wallingford, Oxon.: CABI Publishing. 2003. **12.** Cawood AL, Elia M, Stratton RJ. Systematic review and meta-analysis of the effects of high protein oral nutritional supplements. Ageing Res Rev 2012; 11(2):278-296. **13.** Milne AC, et al. Protein and energy supplementation in elderly people at risk of malnutrition. Cochrane Database Syst Rev. 2009; 2:CD003288. **14.** Elia M, Stratton RJ, Russell C, Green CJ, Pang F. The cost of disease-related malnutrition in the UK and economic considerations for the use of oral nutritional supplements (ONS) in adults. Redditch, BAPEN. 2005. **15.** NHMRC Nutrient Reference Values, 2006. **16.** Jukkola K and MacLennanP. Australian J Aging. 2005; 24:119-24. **17.** Doll-Shankaruk M et al. J Gerontol Nurs 2008; 34(5).

RESOURCE® 2.0 and RESOURCE® 2.0 + Fibre are food for special medical purposes specifically formulated for medical conditions where nutritional needs cannot be met through diet modification alone. Must be used under medical supervision.

For more information call **1800 671 628** or visit **www.nestlehealthscience.com.au.**

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