MALNUTRITION QUALITY IMPROVEMENT INITIATIVE

Briefing: The Value of Quality Malnutrition Care

Burden of Malnutrition in Hospitalized Adults

Malnutrition is a leading cause of morbidity and mortality, especially among older adults. Evidence suggests that 20% to 50% of all patients are at risk for malnutrition or are malnourished at the time of hospital admission.[1] Yet national surveillance data reported by the Healthcare Cost and Utilization Project (HCUP) suggest that only 8% of patients are typically diagnosed with malnutrition during their hospital stay, leading to millions of cases left undiagnosed and potentially untreated.[2] Up to 31% of these malnourished patients and 38% of well-nourished patients experience nutritional decline during their hospital stay.[3] Significantly, many patients continue to lose weight after discharge, and patients with weight loss are at increased risk for readmission,[4] with data demonstrating that malnourished hospitalized adults have 54% higher likelihood of 30-day hospital readmissions than those who are well nourished.[5]

Malnutrition or "poor nutrition" is the inadequate intake of nutrients, particularly protein, over time and it includes both undernutrition and overnutrition. Malnutrition may contribute to chronic illness and acute disease or illness and infection. People can be underweight or overweight (obese) and malnourished when they lack sufficient nutrients needed to promote healing, rehabilitation, and reduce the risk of medical complications. Malnutrition and weight loss can also contribute to sarcopenia, the age-associated loss of skeletal muscle mass and function, which can impact recovery, mobility, and independence.[6] While most prevalent in the hospital setting, malnutrition affects individuals (and their families/caregivers) across all settings of care (Figure 1), with significant implications for their health, well-being, and ability to heal from other conditions.

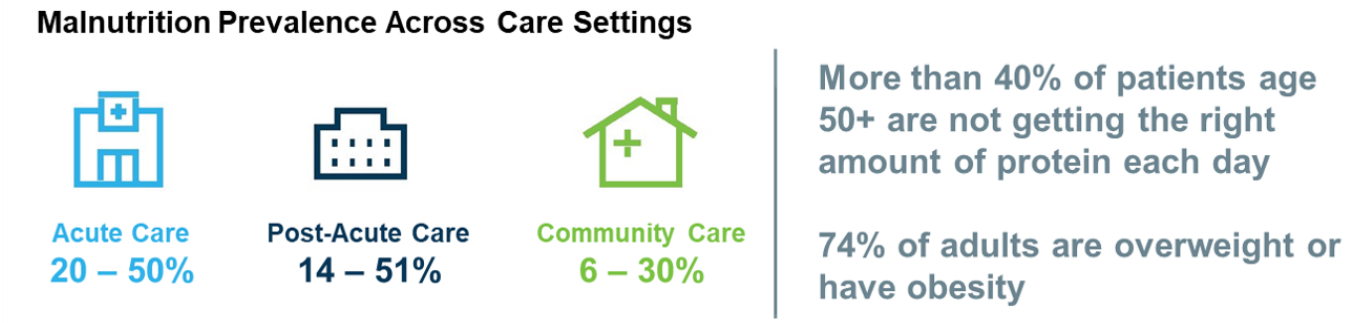

Figure 1: Nutrition and the US Population[1,7,8,9,10,11]

Contributing Factors that Lead to Malnutrition Among Older Adults

There are many contributing factors that can lead to malnutrition among older adults (see Figure 2). Chronic diseases such as cancer, stroke, diabetes, gastrointestinal, pulmonary, and heart disease and their treatments can result in changes in nutrient intake and utilization, which can lead to malnutrition.[12,13] Indeed, the risk of malnutrition is estimated to be 79% among patients with heart failure and is independently associated with 30-day mortality.[32] Malnourished surgical patients are 2 to 3 times more likely to experience post-operative complications and increased mortality than their more well-nourished counterparts.[15] Disease-associated malnutrition is often multifactorial, including inflammatory responses that can increase metabolic demand, decrease appetite, and cause gastrointestinal problems and difficulty chewing and swallowing, leading to decreased nutrient intake that can diminish immune response and wound healing as well as increase infection rates.[14] Such changes can increase risks for functional disability, frailty, and falls.[12]

Hospitalized patients are vulnerable to nutritional decline for many reasons, including dietary restrictions imposed by testing, treatments, and medical conditions, as well as poor appetite and gastrointestinal problems. One study noted that one-fifth of hospitalized patients aged 65+ had an average nutrient intake of less than 50% of their calculated maintenance energy requirements. Nutritional status is also considered an important factor in the recently identified “post-hospital syndrome,” which can result from the stress of hospitalization.[16]

Figure 2: Contributing Factors that Lead to Malnutrition Among Older Adults[17]

The Cost of Malnutrition

Patients who are malnourished while in the hospital have a greater risk of complications, falls, pressure ulcers, infections, readmissions, and length of stay, which is associated with up to a 300% increase in costs.[18] A 2016 analysis of U.S. hospital discharges reported that average hospital costs

for all non-neonatal and non-maternal hospitals stays were $12,500, while patients diagnosed with malnutrition had hospital costs averaging up to $25,200 (depending on the type of malnutrition indicated).[2] A recent study of more than 1,000 patients across 18 hospitals found that costs for patients with malnutrition were between 31% and 34% higher than for well-nourished patients with similar patient characteristics.[19]

When looking at costs of each readmission associated with malnutrition, average cost per readmission is $16,900 per patient for those with protein-calorie malnutrition and $17,900 per patient for those with post-surgery non-absorption. These are 26% and 34% higher, respectively, than readmission costs for patients without malnutrition.[5]

Patients with malnutrition may experience longer lengths of stay by up to 4 to 6 days.[1] Studies have also shown hospitalized older adults at risk for malnutrition are more likely to be discharged to another facility or require ongoing health services after leaving the hospital than patients who are not malnourished.[2] Furthermore, malnutrition during the hospital stay is associated with up to 5 times higher likelihood of in-hospital death.[2]

Overall, it is estimated that the economic burden of the morbidity, mortality, and direct medical costs associated with disease-related malnutrition in the U.S. totals $157 billion, with $51.3 billion attributed to those aged 65 years and older who are the most at-risk.[9]

Gaps in Malnutrition Care Quality

Malnutrition is an independent predictor of negative patient outcomes including mortality, length of hospital stay, readmissions, and costs.[9,20,21,22] Despite the evidence that demonstrates the benefits of nutrition for healing, recovery, and chronic disease management, significant variation and gaps in care processes remain that can negatively impact time to screening, assessment, diagnosis, intervention, monitoring, and care coordination for malnourished and at-risk adults.[23,24] The gap in risk identification and diagnosis occurs for a number of reasons, including lack of provider visibility into patients' nutritional status and how malnutrition information is communicated and tracked in institution medical record systems.

Given the prevalence and costs of disease-related malnutrition, it is important to promptly implement clinical strategies to address malnutrition and to coordinate care for malnourished and at-risk patients. Because malnutrition care is an area that has largely remained unaddressed, it presents an opportunity for improved quality of care at a low cost as evidence has demonstrated nutrition interventions are a highly cost-effective means of improving patient outcomes.[22,25]

How Quality Malnutrition Care Aligns with Provider and CMS Value-BasedHealthcare Priorities

Addressing malnutrition directly aligns with the Triple Aim and US Department of Health and Human Services' national quality strategy priorities related to patient safety, care coordination, patient and family-centered care, population health, and affordability. Patients who are malnourished during a hospital stay have an increased risk of adverse events and complications, a 54% higher likelihood of hospital 30-day readmissions, up to 2 timeslonger length of stay, and are up to 5 times more likely to have an in-hospital death than non-malnourished patients.[5]

Clinical consensus recommendations underscore that early identification and systematic nutrition care coupled with interdisciplinary, team-based care are critical in remediating malnutrition in the hospital, community, and post-acute care settings.[26,27] Patient and family engagement in their own nutrition care plans during hospitalization and upon discharge is important to facilitate recovery. Studies have consistently demonstrated that implementation of a comprehensive nutrition pathway from inpatient admission to post-discharge provided for improved identification of high-risk patients and decreased time to nutrition consult, length of hospital stay, and 30-day readmission rate.[6,28,29] For example, 1 study found that optimizing nutrition care in multiple hospitals in a large accountable care organization (ACO) could help reduce 30-day readmission rates by 27% and the average hospital stay by almost 2 days for malnourished patients.[30] A more recent evaluation of a multipronged intervention to improve malnutrition care led to a 25% reduction in length of stay and 36% decrease in infection rates among patients who were malnourished or at-risk.[33] Further, implementation of malnutrition-focused quality improvement practices across 27 hospitals increased rates of screening, assessment, diagnosis, and interventions, with patients aged 65 years and older with a malnutrition diagnosis and nutrition care plan having a 24% lower likelihood of 30-day readmission and a longer average stay (likely because they received a necessary intervention) than did those without a care plan.[34]

These types of risk reduction have the potential to result in substantial savings to the healthcare system. Moreover, a recent study conducted at Advocate Health Care reported more than $4.8 million in cost savings following the implementation of a nutrition-focused quality improvement program at 4 of its Chicago hospitals. The majority of savings resulted from decreased readmission rates and shorter patient length of stay. Savings averaged approximately $3,800 per patient.[31]

In the 2017 Inpatient Prospective Payment System (IPPS) rule, the Centers for Medicare & Medicaid Services (CMS) recognized the prevalence and negative consequences of malnutrition and the performance gaps and opportunities for improvement in screening, assessment, and diagnosis. The agency is currently considering future adoption of clinically relevant malnutrition electronic clinical quality measures (eCQMs) in the hospital Inpatient Quality Reporting (IQR) Program to improve outcomes and decrease healthcare costs for malnourished and at-risk older adults.[32] The malnutrition

eCQMs for hospitalized older adults assess the alignment of care with nutrition best practices while minimizing administrative burden through electronic reporting. A recent study showed that they provide a useful guide for malnutrition quality improvement, leading to improved identification and treatment of patients and ultimately improved patient outcomes.[33]

Implementing malnutrition care best practices can improve care delivery, potentially support the need for additional staff focused on nutrition care, enhance patient outcomes, and reduce the burden of undiagnosed, malnourished patients on the health system. A companion interdisciplinary toolkit is available to help hospitals implement evidence-based best practices and an optimal malnutrition-focused clinical workflow to decrease clinical variation in care. To access the malnutrition eCQMs and the toolkit, visit www.mqii.today.

References

1. Barker LA, Gout BS, Crowe TC. Hospital malnutrition: Prevalence, identification, and impact on patients and the healthcare system. Int J Environ Res Public Health. 2011;8:514-527.

2. Barrett ML, Bailey MK, Owens PL. Non-maternal and Non-neonatal Inpatient Stays in the United States Involving Malnutrition, 2016. ONLINE. August 30, 2018. U.S. Agency for Healthcare Research and Quality. Available: www.hcup-us.ahrq.gov/reports/ataglance/HCUPMalnutritionHospReport_083018.pdf

3. Braunschweig C et al. Impact of declines in nutritional status on outcomes in adult patients hospitalized for more than 7 days. J Am Diet Assoc 2000; 100 (11): 1316-1322.

4. Beattie AH, et al: A randomised controlled trial evaluating the use of enteral nutritional supplements postoperatively in malnourished surgical patients. Gut 2000; 46:813-818.

5. Fingar KR, Weiss AJ, Barrett ML, et al. All-cause readmissions following hospital stays for patients with malnutrition, 2013. HCUP Statistical Brief #218. December 2016. Agency for Healthcare Research and Quality, Rockville, MD. https://www.hcup- us.ahrq.gov/reports/statbriefs/sb218-Malnutrition-Readmissions- 2013.pdf.

6. Loose C, Bell J, Partridge J, Nelson J, Goates S. Health system quality improvement: Impact of prompt nutrition care on patient outcomes and health care costs. Journal of Nursing Care Quality. 2016;31(3):217-223.

7. National Resource Center on Nutrition Physical Activity and Aging. Malnutrition and Older Americans.

8. Guigoz Y. The Mini Nutritional Assessment (MNA) review of the literature—What does it tell us? J Nutr Health Aging. 2006;10:466-487.

9. Snider JT, Linthicum MT, Wu Y, et al. Economic burden of community-based disease-associated malnutrition in the United States. J Parenter Enteral Nutr. 2014:38(2 Suppl):77S-85S.

10. Estimated (Age-Adjusted) Percentage of US Adults with Overweight and Obesity by Sex. 2013-2014 NHANES data. NHANES data from 2007-2008.

11. Fryar CD, Carroll MD, Afful J. Prevalence of overweight, obesity, and severe obesity among adults aged 20 and over: United States, 1960–1962 through 2017–2018. NCHS Health E-Stats. 2020.

12. Norman K, Pichard C, Lochs H, Pirlich M. Prognostic impact of disease-related malnutrition. Clin Nutr. 2008;27(1):5-15.

13. Jensen GL, Mirtallo J, Compher C, et al. Adult starvation and disease-related malnutrition: a proposal for etiology-based diagnosis in the clinical practice setting from the International Consensus Guideline Committee. Clin Nutr. 2010;29(2):151-153.

14. Fearon KC, Luff R: The nutritional management of surgical patients: Enhanced recovery after surgery. Proc Nutr Soc 2003; 622:807-811.

15. Krumholz, Post-hospital syndrome — An acquired, transient condition of generalized risk. N Eng J Med Jan 10, 2013; 368:2.

16. The Malnutrition Quality Collaborative. National Blueprint: Achieving Quality Malnutrition Care. Washington, DC: Avalere and Defeat Malnutrition Today. March 2017.

17. Correia MI, Waitzberg DL. The impact of malnutrition on morbidity, mortality, length of hospital stay and costs evaluated through a multivariate model analysis. Clin Nutr. 2003;22(3):235-9

18. Curtis LJ, Bernier P, Jeejeebhoy K, et al. Costs of hospital malnutrition. Clin Nutr (Edinburgh, Scotland). 2016.

19. Su Lin Lim, et al: Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3-year mortality. Clin Nutr. 2012:31:345-350.

20. Kissova, V. et al: Ten-Year all-cause mortality in hospitalized non-surgical patients based on nutritional status screening. Public Health Nutr. 2015;18:2609-2614

21. Deutz NE, Matheson EM, Matarese LE, et al. Readmission and mortality in malnourished, older, hospitalized adults treated with a specialized oral nutritional supplement: A randomized clinical trial. Clin Nutr. 2016;35(1):18-26.

22. Patel V, Romano M, Corkins MR, et al. Nutrition screening and assessment in hospitalized patients: A survey of current practice in the United States. Nutr Clin Pract. 2014;29(4):483-490.

23. Tobert CM, Mott SL, Nepple KG. Malnutrition diagnosis during adult inpatient hospitalizations: Analysis of a multi-institutional collaborative database of Academy Medical Centers. J Acad Nutr Diet. 2017. https://doi.org/10.1016/j.jand.2016.12.019.

24. Zhong Y, Cohen JT, Goates S, et al. The cost-effectiveness of oral nutrition supplementation for malnourished older hospital patients. Appl Health Econ Health Policy. 2017;15(1):75-83.

25. Mueller C, Compher C, Druyan ME & the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. A.S.P.E.N. clinical guidelines: Nutrition screening, assessment, and intervention in adults. J Parenter Enteral Nutr. 2011;35(1):16-24. Available at: http://pen.sagepub.com/content/35/1/16.full.pdf+html. Accessed March 18, 2016.

26. Tappenden et al. Critical role of nutrition in improving quality of care: an interdisciplinary call to action to address adult hospital malnutrition, J Acad Nutr Diet. 2013.

27. Brugler L, et al. The five-year evolution of a malnutrition treatment program in a community hospital. Jt Comm J Qual Improv, 1999 Apr; 25(4): 191-206.

28. Somanchi M, et al. The facilitated early enteral and dietary management effectiveness trial in hospitalized patients with malnutrition. JPEN J Parenter Eneral Nutr. 2011; 35: 209-216.

29. Sriram K, Sulo S, VanDerBosch G, et al. A comprehensive nutrition-focused quality improvement program reduces 30-day readmissions and length of stay in hospitalized patients. J Parenter Enteral

Nutr. 2017;41(3):384-391.

30. Sulo S, Feldstein J, Partridge J, et al. Budget impact of a comprehensive nutrition-focused quality improvement program for malnourished hospitalized patients. Am Health Drug Benefits. 2017;10(5):262- 270.

31. Centers for Medicare & Medicaid Services (CMS), HHS. Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Proposed Policy Changes and Fiscal Year 2018 Rates; Quality Reporting Requirements for Specific Providers; Medicare and Medicaid Electronic Health Record (EHR) Incentive Program Requirements for Eligible Hospitals, Critical Access Hospitals, and Eligible Professionals; Provider-Based Status of Indian Health Service and Tribal Facilities and Organizations; Costs Reporting and Provider Requirements; Agreement Termination Notices. Vol 82 FR 19796. Baltimore, MD: Federal Register; 2017:19796-20231.

32. Martín-Sánchez FJ, et al. Effect of risk of malnutrition on 30-day mortality among older patients with acute heart failure in Emergency Departments. Eur J Intern Med. 2019;65:69-77.

33. Pratt KJ, et al. Impact of an interdisciplinary malnutrition quality improvement project at a large metropolitan hospital. BMJ Open Qual. 2020;9(1).

34. Valladares AF, et al. How a malnutrition quality improvement initiative furthers malnutrition measurement and care: results from a hospital learning collaborative. J Parenter Enteral Nutr. Published online April 13, 2020.