



Effectiveness of the Malnutrition Quality Improvement Initiative on Practitioner Malnutrition Knowledge and Screening, Diagnosis, and Timeliness of Malnutrition-Related Care Provided to Older Adults Admitted to a Tertiary Care Facility: A Pilot Study



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ABSTRACT

Background Malnutrition is present in 30% to 50% of hospitalized patients aged 60 years or older. As few as 3.2% of patients identified as high risk have a malnutrition diagnosis documented by medical providers. The Malnutrition Quality Improvement Initiative (MQii) aims to reduce the burden of hospital malnutrition by improving the process and delivery of care.

Objective To evaluate implementing the MQii toolkit of best practice resources for screening, diagnosis, documentation, and timeliness of malnutrition care.

Design This 6-month prospective pilot included a 3-month intervention with training and education modules tailored to type of practitioner and integrated into existing teaching and clinical workflow.

Participants/setting Forty-five health care professionals from geriatric, general medicine, and general surgery units at Vanderbilt University Hospital during January to June 2016.

Main outcome measures Malnutrition knowledge by 30-item questionnaire; electronic medical record (EMR) documentation; and timeliness of malnutrition screening, diagnosis, intervention, and discharge planning.

Statistical analyses Analysis of variance was used to test change over time.

Results Malnutrition knowledge score increased 14%, from 39% to 53% ($P=0.009$). All patients whose nutrition screen indicated they were malnourished/high risk had registered dietitian nutritionist diagnosis of malnutrition documented in the EMR. The proportion who had medical provider (physician, nurse practitioner, or physician assistant) malnutrition diagnosis documented in the EMR increased 11.6%, from 26.7% to 38.3% ($P=0.08$). About 95% of malnourished/high risk patients had a documented intervention addressing malnutrition. Inclusion of malnutrition care in the discharge plan increased 4.8%, from 70.0% to 74.8% ($P=0.13$).

Conclusions This pilot study demonstrated feasibility of implementing the MQii resources to improve malnutrition knowledge and professionals' skills relevant to screening, diagnosis, intervention, and timeliness of malnutrition care. By optimizing the process and delivery of malnutrition care, it is expected that the quality of clinical care provided to older adults with malnutrition or at high malnutrition risk will improve.

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CURRENT ATTENTION TO MALNUTRITION ORIGINATED with a landmark article published by Harvard surgeon Charles Butterworth in 1974.¹ Now more than 40 years later, malnutrition—either present at

admission or acquired during hospital stay—is estimated to be present in 30% to 50% of adult patients aged 60 years and older, depending on the criteria used to identify and document its existence.^{2,3} However, fewer than 7% of those

identified as high risk receive diagnosis of malnutrition by medical providers (ie, physicians, nurse professionals, or physician assistants).⁴⁻⁶ The lack of identification contributes to delayed or inadequate intervention. Consequently, malnutrition promotes development of immune system impairment, infections, poor wound healing and pressure ulcers, falls and fractures, impaired cognitive status, pharmaceutical treatment intolerance, prolonged hospitalization and intensive care admission, readmissions, and worse mortality prognosis.^{7,8} Moreover, lack of diagnosis by medical providers results in reduced coding for reimbursement, which contributes to the financial burden of malnutrition on health care systems.

A critical barrier to identification and diagnosis of malnutrition in hospital settings is the continued lack of nutrition education and training received by medical providers despite evidence that malnutrition is highly prevalent and affects health outcomes and health care costs. Results from a 2010 survey of medical schools reveal that an average curriculum includes <20 hours of nutrition education across the 4 years of medical school, mostly occurring during the first 2 years.⁹ Moreover, medical licensing examination contains few nutrition questions¹⁰ and accreditation documents for graduate medical education typically show no specific requirements for nutrition education.¹¹ Although nutrition content may be better incorporated in nursing school curricula, formal nutrition competencies are not required in undergraduate or graduate nursing education.¹²

Another crucial factor contributing to the lack of identification and diagnosis of malnutrition is the widespread prevalence of overweight and obesity now affecting more than 2 billion individuals globally.¹³ Despite chronic high caloric intake, overweight/obese individuals have high rates of malnutrition—particularly in the form of micronutrient deficiencies and/or sarcopenia (ie, low muscle mass with low muscle function).^{14,15} Indeed, nationally representative data indicate sarcopenic obesity is present in 25% of community-residing adults older than age 60 years.¹⁶ As a form of malnutrition, sarcopenic obesity is an independent predictor of physical functional impairment, tumor progression, and mortality.¹⁷ Like other forms of malnutrition, sarcopenic obesity influences hospitalization and health care costs. Recognizing that malnutrition occurs at any body weight or body mass (BMI), the malnutrition workgroup of the Academy of Nutrition and Dietetics and the American Society for Parenteral and Enteral Nutrition consensus statement defined adult malnutrition as “insufficient calories, protein, or other nutrients needed for tissue maintenance and repair.”²

In response to a 3-year assessment to identify gaps in existing malnutrition care, the Academy of Nutrition and Dietetics collaborated with Avalere Health (an Inovalon Company, Washington, DC) and other stakeholders to form the Malnutrition Quality Improvement Initiative (MQii). The overarching goal of the MQii is to reduce the burden of malnutrition in hospitals by improving the process and delivery of nutrition care.¹⁸ Specifically, the aim of the MQii is to advance evidence-based care for hospitalized older adults (aged 65 years or older) who have or are at risk for malnutrition. To achieve this goal, the MQii developed a toolkit of evidence-based best practice resources for use by health care professionals, caregivers, and patients.¹⁹⁻²³ The purpose of

the present study was to evaluate implementation of the MQii toolkit and associated resources with regard to practitioner’s malnutrition knowledge and the malnutrition quality indicators identified in the toolkit that target screening, diagnosis, electronic medical record (EMR) documentation, and timeliness of malnutrition care for hospitalized patients aged 65 years and older. An additional aim was to explore and generate hypotheses on potential influence of the pilot intervention on hospital length of stay and readmission rate in these patients, which may serve as surrogate indicators for malnutrition-associated health care costs.

METHODS

Study Setting and Participants

Vanderbilt University Hospital (VUH) is an 834-bed tertiary care facility within the campus of the Vanderbilt University Medical Center in Nashville, TN. The study was approved by the Vanderbilt University Medical Center Institutional Review Board. An e-mail announcement including description of the MQii and request for participation in the pilot study was sent to the 49 health care professionals who would be providing daily clinical care in three hospital units (geriatric medicine, general medicine, and general surgery) during the study intervention time period. Critical care, specialty, and step-down units were excluded due to the acuity of illness, specialization of care, and intensive monitoring provided. Part-time and float pool nurses were also excluded. Forty-five of 49 (91.8%) health care professionals (15 attending physicians, 25 unit registered nurses, four unit registered dietitian nutritionists [RDNs], and one unit doctor of pharmacy) provided written informed consent and completed the study.

Design and Intervention

The MQii intervention was conducted by five RDNs from the Vanderbilt Diet, Body Composition, and Human Metabolism Research Core prospectively over a 6-month period that included a 3-month intervention phase from mid-March through mid-June 2016. Six weeks before the intervention phase (see [Figure 1](#)), the research core team convened two focus group sessions with the physician and nurse directors of each of the three targeted units to review the contents of the MQii toolkit and make recommendations for revisions that would enhance ease of use and clinical applicability. During the intervention phase, practitioner specific (physician, registered nurse, and RDN) education and training modules were integrated into existing teaching and clinical practice activities. These modules were developed by the research core team using an instructional design model that provides a systematic step-by-step methodology to design lesson plans that promote effective teaching and learning (analyze, state objectives, select strategies, utilize technology, require learner participation, evaluate).²⁴ For the physicians and pharmacist, three modules were designed to focus on the six primary clinical characteristics of malnutrition outlined in the consensus statement,²⁵ the International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM)²⁶ diagnosis codes used for classifying malnutrition, the prevalence of sarcopenic obesity as a type of malnutrition, and the role of the RDNs in malnutrition care. One-hour presentations were provided by the research core team during each of the 3 months of the intervention phase. In addition to

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