

Malnutrition Measures Specification Manual

Version 2.0 – March 2021

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Background

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 or are malnourished at the time of hospital admission¹ and up to 31% of these malnourished patients and 38% of well-nourished patients experience nutritional decline during their hospital stay.² In addition, as many as 39% of older adult patients age 65 and older admitted to the hospital may be malnourished or at-risk.³

Malnutrition is the inadequate intake of nutrients, particularly protein over time, and may contribute to, chronic illness, and acute disease or illness and infection. People can be underweight or overweight 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.

Hospitalized patients are vulnerable to nutritional decline for many reasons, including dietary restrictions because of tests, 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. Patients who are malnourished while in the hospital have a greater risk of complications, readmissions, and length of stay, which is associated with up to a 300% increase in costs.⁴ Nutritional status is also considered an important factor in the recently identified “post-hospital syndrome,” which can result from the stress of hospitalization.⁵

Gaps in Malnutrition Care Quality

Despite the evidence that demonstrates the benefits of nutrition for healing and recovery and a clinical consensus model for implementing optimal nutrition care, significant variation and gaps remain with respect to nutrition screening, assessment, intervention, monitoring, and overall care for malnourished and at-risk hospitalized older adults.

Research demonstrates that there is significant room to improve identification, diagnosis, and treatment of malnutrition in hospitalized patients. Nutrition screening is the first step in optimal malnutrition care, and triggers a nutrition assessment for patients found to be at risk. The nutrition assessment is the basis upon which diagnosis, care plans, and treatments are made for malnourished patients.⁶

Current estimates of the prevalence of adult malnutrition range from 15%–60% depending on the patient population and criteria used to identify its occurrence.⁷ However, a review of nationally-representative data on cost and utilization indicated that, in 2016, only 8% of patients had a diagnosis of malnutrition, this suggests that malnutrition may be severely under-recognized and underdiagnosed in the hospital setting.⁸ This may be due to clinical practice gaps in numerous aspects of nutrition care.

¹ Barker LA, Gout BS, and Crowe TC. Hospital malnutrition: Prevalence, identification, and impact on patients and the healthcare system. *International Journal of Environmental Research and Public Health*. 2011;8:514-527.

² Braunschweig C et al. *J Am Diet Assoc* 2000; 100 (11): 1316-1322

³ Pereira GF, Bulik CM, Weaver MA, Holland WC, Platts-mills TF. Malnutrition among cognitively intact, noncritically ill older adults in the emergency department. *Ann Emerg Med*. 2015;65(1):85-91.

⁴ Isabel TD and Correia M. The impact of malnutrition on morbidity, mortality, length of hospital stay and costs evaluated through a multivariate model analysis. *Clinical Nutrition*. 2003;22(3):235–239.

⁵ Krumholz, *N Eng J Med* Jan 10, 2013; 368:2.

⁶ Nutrition care process and model part I: the 2008 update. *J Am Diet Assoc*. 2008;108(7):1113-7

⁷ Mueller C, Compher C & Druyan ME and 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: 16-24.

⁸ 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.hcupus.ahrq.gov/reports.jsp.

For instance, a national survey of hospital-based professionals in the United States found that only 36.7% reported completing nutrition screening at admission, 50.8% reported doing so within 24 hours, and 69% reported documenting the findings in the medical record.⁹ Consequently, this gap in identification of malnutrition risk affects the ability of dietitians to complete nutrition assessments for the at-risk patient population since many remain unidentified. In addition, no national benchmarking of malnutrition in acute care hospitals exists in the United States. For this type of benchmarking to be instituted, malnutrition screening and assessment must be standardized to track and monitor malnutrition rates and identify the appropriate rate of diagnosis that follow.⁹

Appropriate identification and assessment of patients at risk for malnutrition, and communication of these results to the physician, are critical to ensure patients receive a malnutrition diagnosis and the necessary follow-on malnutrition care they require. One study of 395 patients to determine if they were provided appropriate malnutrition care after being identified as at-risk for malnutrition via nutrition screening. Regarding appropriate nutritional intervention for malnourished patients, when a dietitian was consulted during a malnourished patient's case, 80.6% of patients were provided additional feeding and/or vitamin supplements compared to 13.2% and 27.9% respectively by medical doctors.¹⁰ In conclusion, addressing these performance gaps can facilitate optimal malnutrition care and address the adverse malnutrition-associated outcomes discussed above.

How Malnutrition Intervention Can Help Improve Health Outcomes and Lower Costs

Addressing malnutrition directly aligns with the Triple Aim of healthcare focused both on reducing costs and improving patient outcomes. Clinical consensus recommendations underscore that early identification and systematic nutrition care coupled with interdisciplinary team-based care are critical in remediating malnutrition across multiple settings.¹¹ Patient and family engagement in their nutrition care plan during hospitalization and upon discharge is important to facilitate recovery. Studies have demonstrated that implementation of a comprehensive nutrition pathway from inpatient admission to post-discharge improved identification of high-risk patients and decreased time to nutrition consult, length of hospital stay, and 30-day readmission rate.^{12, 13} Further evidence demonstrates that use of the malnutrition eCQMs can help health systems identify gaps in quality of care for malnourished patients¹⁴ and when used as part of comprehensive quality improvement efforts may lead to improved patient outcomes.¹⁵

The Academy of Nutrition and Dietetics

The Academy of Nutrition and Dietetics (Academy) is committed to advancing the profession through a variety of quality strategy initiatives in every practice area for nutrition and dietetics practitioners. This includes member engagement, development, and utilization of quality improvement tools, resources, and education materials. Most notably, the Academy's development and stewardship of de novo electronic clinical quality measures (eCQMs) will ultimately improve patient outcomes, reduce cost burden, and advance the role of registered dietitian nutritionists. For more information about the Academy, please visit <http://www.eatrightpro.org/resources/about-us>

⁹ 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.

¹⁰ Bavelaar JW, Otter CD, Van bodegraven AA, Thijs A, Van bokhorst-de van der schueren MA. Diagnosis and treatment of (disease-related) in-hospital malnutrition: the performance of medical and nursing staff. *Clin Nutr*. 2008;27(3):431-8.

¹¹ Tapenden 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; 113:1219-1237.

¹² 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.

¹³ Somanchi M, Tao X, Mullin GE. The facilitated early enteral and dietary management effectiveness trial in hospitalized patients with malnutrition. *JPEN J Parenter Enteral Nutr*. 2011;35(2):209-16.

¹⁴ Wills-Gallagher J, Kerr KW, Macintosh B, Valladares AF, Kilgore KM, Sulo S. Implementation of malnutrition quality improvement reveals opportunities for better nutrition care delivery for hospitalized patients. *Journal of Parenteral and Enteral Nutrition*. Published online March 18, 2021:jpen.2086. doi:10.1002/jpen.2086

¹⁵ Valladares AF, Kilgore KM, Partridge J, Sulo S, Kerr KW, McCauley S. How a malnutrition quality improvement initiative furthers malnutrition measurement and care: results from a hospital learning collaborative. *JPEN J Parenter Enteral Nutr*. 2021;45(2):366-371. doi:10.1002/jpen.1833

Overview of Malnutrition Measures Set

Malnutrition Quality Improvement Initiative (MQii)

This set of electronic clinical quality measures (eCQMs) is focused on older adults (ages 65 and older) who face a significantly higher impact from malnutrition. The eCQMs are just one component of a broader multi-stakeholder initiative known as the Malnutrition Quality Improvement Initiative (MQii) with a mission to advance evidence-based, high-quality and patient-driven care for hospitalized older adults (age 65 and older) who are malnourished or at-risk for malnutrition. The objectives of the initiative are to:

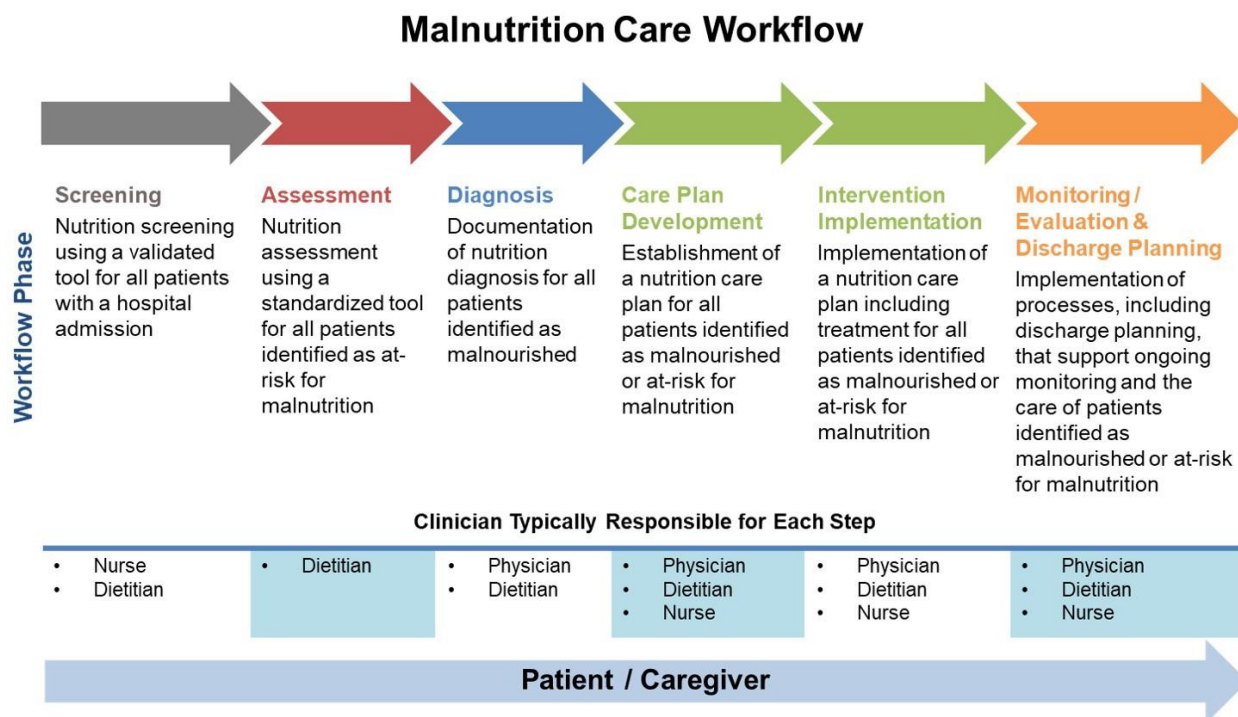
- Improve malnutrition care with an interdisciplinary care team roadmap (toolkit) focused on decreasing time to identification and treatment of malnourished and at-risk hospitalized older adults
- Develop malnutrition quality measures “that matter” – to help improve outcomes that are important to patients and clinicians
- Advance tools that can be integrated into electronic health record (EHR) systems to improve care quality while minimizing administrative burden

The MQii includes two parallel tracks that serve to advance malnutrition care for the older adult population in the inpatient hospital setting:

- A pilot demonstration and learning collaborative of hospitals focused on reducing clinical practice variability in malnutrition care through the implementation of a standardized toolkit, and
- Electronic clinical quality measure (eCQMs) development and implementation to advance the measurement of malnutrition care in hospitals.

The Malnutrition Care Workflow

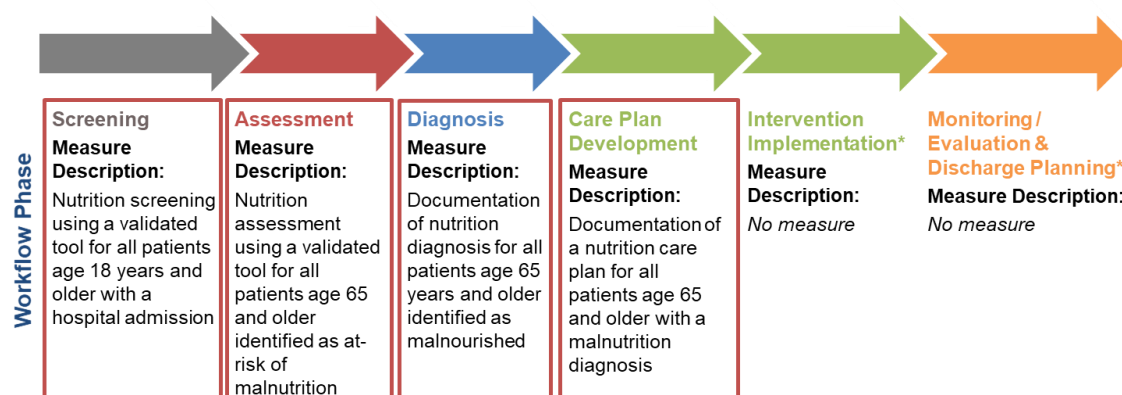
Figure 1. Malnutrition Care Workflow



The eCMS are intended to assess provider performance on following the recommended malnutrition workflow which is supported by a combination of stakeholder consensus and clinical guidance established by systematic review of the evidence. The malnutrition workflow is rooted in patient-driven

nutrition efforts that incorporate patient preferences and risk factors (See Figure 1). The four malnutrition eQMs included in this specification manual represent four measure constructs that demonstrated feasibility for development and use in real world clinical settings. They currently assess the first four stages of the malnutrition care workflow, spanning from screening to the development of a nutrition care plan and documentation of a diagnosis for patients who are identified as malnourished after the completion of a nutrition assessment. Figure 2 outlines the steps of the malnutrition care workflow and alignment of the malnutrition eQMs along the workflow:

Figure 2. Malnutrition eQMs Align with the Malnutrition Care Workflow



* Measures for monitoring and evaluation, and discharge planning were not technically feasible due to limitations in availability of measure data.

Overview of Malnutrition eQMs

Table 1 below outlines a high-level description of each of the four malnutrition, measure title, description, and the applicable data sources the measure are specified for:

Table 1. Malnutrition eQM Description and Applicable Data Source

Measure #	Measure Title	Description	Data Source
eQM #1	Completion of a Malnutrition Screening within 24 hours of Admission	Completion of a malnutrition screening to determine if a patient age 18 years and older is at-risk for malnutrition, within 24 hours of admission to the hospital	Fully-specified for electronic health record
eQM #2	Completion of a Nutrition Assessment for Patients Identified as At-Risk for Malnutrition within 24 hours of a Malnutrition Screening	Patients age 65 years and older identified as at-risk for malnutrition based on a malnutrition screening who have a nutrition assessment documented in the medical record within 24 hours of the most recent malnutrition screening	Fully-specified for electronic health record
eQM #3	Appropriate Documentation of a Malnutrition Diagnosis	Appropriate documentation of a malnutrition diagnosis for those patients age 65 years and older who are found to be malnourished based on a nutrition assessment	Fully-specified for electronic health record
eQM #4	Nutrition Care Plan for Patients with a Malnutrition Diagnosis	A documented nutrition care plan for those patients aged 65 years and older who are diagnosed with clinical malnutrition	Fully-specified for electronic health record

Additional Measure Specification Resources

The specifications for the malnutrition eQMs are all fully specified for use in electronic health records (EHRs). As part of the resources generated for implementation of these eQMs, there are documents that measure users may take advantage of to implement these measures into their EHR. The resources are outlined below:

- *XML-Based Specifications*: an XML document in [Health Quality Measure Format \(HQMF\)](#) which is a standards-based representation of quality measures as electronic documents.
- *Human-Readable Specifications*: generated from the XML-based specifications is a human-readable HTML document that allows the XML to be viewed in a web browser.
- *Value Set Codes Inventory*: an excel spreadsheet that contains all value sets included in the measure, with additional information containing the value set developer, their identifiers (OIDs), descriptive names, revision date, code system, code system version used, and all of the concepts in each value set as codes with descriptors.

These additional measure resources are available on the Academy website:

<http://www.eatrightpro.org/eMeasures>

Disclaimer and Copyright Information

These performance measures are not clinical guidelines and do not establish a standard of medical care, and have not been tested for all potential applications. The measures and specifications are provided without warranty and are in the public domain.

These measures contain SNOMED Clinical Terms (R) (SNOMED CT(C)) copyright 2004-2015 International Health Terminology Standards Development Organization. All rights reserved.

Completion of a Malnutrition Screening within 24 hours of Admission

Description: Completion of a malnutrition screening to determine if a patient is at-risk for malnutrition, within 24 hours of admission to the hospital

Rationale: Patients who are malnourished while in the hospital have been associated with important adverse patient safety outcomes such as increased risk of complications, readmissions, and length of stay. Patients who experience these increased risks are also associated with a significant increase in costs. Malnutrition is also associated with many adverse outcomes including depression of the immune system, impaired wound healing, muscle wasting, and increased mortality. Referral rates for dietetic assessment and treatment of malnourished patients have proven to be suboptimal, thereby increasing the likelihood of patients developing such aforementioned complications (Gomes, 2016, Cereda et al., 2015, Corkins, 2014, Barker et al., 2011, Lim et al., 2012, Amaral et al., 2007, Kruizenga et al., 2005).

Screening for the risk of malnutrition in care settings is important to enable early and effective interventions for patients who are malnourished or at-risk of malnutrition. These screenings are the first step in providing optimal, evidence-based malnutrition care for patients. Although a review of nationally-representative data on cost and utilization indicated that in 2013, 7% of patients had a diagnosis of malnutrition (Weiss, 2016), this may be a severely underreported figure identified in other research studies which have estimated that 4-19 million cases are left undiagnosed and untreated. For example, Patel et al. (2014) conducted a national survey of hospital-based professionals in the United States focused on nutrition screening and assessment practices and associated gaps in knowledge of nutrition care. Out of 1,777 unique respondents, only 36.7% reported completing nutrition screening at admission, and 50.8% reported doing so within 24 hours. Only 69% reported documenting the findings in the medical record. Finally, it is important that malnutrition screening tools are validated to ensure that screening is as accurate and reliable as possible (NICE, 2012).

Type of Measure: Process

Improvement Noted As: An increase in rate

Initial Population: All patients age 18 years and older at time of admission who are admitted to an inpatient hospital

Denominator: All patients age 18 years and older at time of admission who are admitted to an inpatient hospital

Included Populations: Patients admitted to acute inpatient care.

Excluded Populations: None

Data Elements:

- *Inpatient Admission Time*
- *Birthdate*
- *Inpatient Discharge Time*

Numerator: Patients in the denominator who have a completed malnutrition screening documented in the medical record within 24 hours of admission to the hospital. For the purposes of this measure, it is recommended that a malnutrition screening be performed using a validated screening tool, which may include but is not limited to, one of the following validated tools:

Malnutrition Screening Tool (MST) (Wu, 2012), Nutrition Risk Classification (NRC) (Kovacevich, 1997), Nutritional Risk Index (NRI) (Honda, 2016), Nutritional Risk Screening 2002 (NRS-2002) (Bauer, 2005), Short Nutrition Assessment Questionnaire (SNAQ) (Pilgrim, 2016).

Bauer JM, Vogl T, Wicklein S, Trögner J, Mühlberg W, Sieber CC. Comparison of the Mini Nutritional Assessment, Subjective Global Assessment, and Nutritional Risk Screening (NRS 2002) for nutritional screening and assessment in geriatric hospital patients. *Z Gerontol Geriatr.* 2005;38(5):322-7.

Kovacevich DS, Boney AR, Braunschweig CL, Perez A, Stevens M. Nutrition risk classification: a reproducible and valid tool for nurses. *Nutr Clin Pract.* 1997;12(1):20-5.

Honda Y, Nagai T, Iwakami N, et al. Usefulness of Geriatric Nutritional Risk Index for Assessing Nutritional Status and Its Prognostic Impact in Patients Aged ≥65 Years With Acute Heart Failure. *Am J Cardiol.* 2016;

Pilgrim AL, Baylis D, Jameson KA, et al. Measuring Appetite with the Simplified Nutritional Appetite Questionnaire Identifies Hospitalised Older People at Risk of Worse Health Outcomes. *J Nutr Health Aging.* 2016;20(1):3-7.

Wu ML, Courtney MD, Shortridge-baggett LM, Finlayson K, Isenring EA. Validity of the malnutrition screening tool for older adults at high risk of hospital readmission. *J Gerontol Nurs.* 2012;38(6):38-45.

Included Populations: Patients with a completed malnutrition screening, as defined by value set OID: 2.16.840.1.113762.1.4.1095.40.

Excluded Populations: None

Data Elements:

- *Completed Malnutrition Screening*
- *Completed Malnutrition Screening Time Stamp*

Risk Adjustment: No

Data Collection Approach: This measure is specified for use with electronic health records. It has XML-based specifications which are mapped onto the hospital's EHR data warehouse to extract the necessary data elements for the measure specifications. Data elements should be labeled with nationally-standardized coding terminology included in the value sets built into the measure specifications.

Data Accuracy: Variation may exist at the level of documentation of appropriate data for the required data elements. Since the data elements represent the completion of discrete care processes, the accuracy of the data is dependent on the initial documentation by hospital staff.

Measure Analysis Suggestions: None

Sampling: None

Data Reported As: Aggregated rate generated from count data reported as a proportion (numerator/denominator)

References:

Amaral TF, Matos LC, Tavares MM, Subtil A, Martins R, Nazaré M, et al. The economic impact of disease-related malnutrition at hospital admission. *Clin Nutr.* 2007 Dec;26(6):778–84.

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British Association for Parenteral and Enteral Nutrition. Malnutrition matters, a toolkit for clinical commissioning groups and providers in England. Published 2012. Retrieved from: http://www.bapen.org.uk/pdfs/bapen_pubs/bapen-toolkit-for-commissioners-and-providers.pdf.

Cereda E, Klersy C, Pedrolli C, et al. The Geriatric Nutritional Risk Index predicts hospital length of stay and in-hospital weight loss in elderly patients. *Clin Nutr*. 2015;34(1):74-8.

Corkins MR, Guenter P, DiMaria-Ghalili RA & Resnick HE. Malnutrition diagnoses in hospitalized patients: United States, 2010. *JPEN J Parenter Enteral Nutr*. 2014;38(2):186-95.

Gomes F, Emery PW, Weekes CE. Risk of malnutrition is an independent predictor of mortality, length of stay, and hospitalization costs in stroke patients. *J Stroke Cerebrovasc Dis*. 2016;25(4):799-806.

Guerra RS, Sousa AS, Fonseca I, et al. Comparative analysis of undernutrition screening and diagnostic tools as predictors of hospitalisation costs. *J Hum Nutr Diet*. 2016;29(2):165-73.

Kondrup J, Allison SP, Elia M, Vellas B, Plauth M. ESPEN guidelines for nutrition screening 2002. *Clin Nutr*. 2003;22(4):415-21.

Khalatbari-soltani S, Marques-vidal P. Impact of nutritional risk screening in hospitalized patients on management, outcome and costs: A retrospective study. *Clin Nutr*. 2016; pii: S0261-5614(16)00069-8.

Kruizenga HM, Van Tulder MW, Seidell JC, Thijs A, Ader HJ, Van Bokhorst-de van der Schueren MAE. Effectiveness and cost-effectiveness of early screening and treatment of malnourished patients. *Am J Clin Nutr*. 2005 Nov;82(5):1082-9.

Lew CCH, Yandell R, Fraser RJL, Chua AP, Chong MFF, Miller M. Association between malnutrition and clinical outcomes in the intensive care unit: a systematic review. *JPEN J Parenter Enteral Nutr*. 2017;41(5):744-758.

Lim SL, Ong KC, Chan YH, Loke WC, Ferguson M, Daniels L. Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3-year mortality. *Clin Nutr*. 2012;31(3):345-50.

Mueller C, Compher C & Druyan ME and 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: 16-24.

National Institute for Health and Care Excellence. NICE Quality Standard [Q24] Nutrition Support in Adults. Retrieved from: <https://www.nice.org.uk/guidance/qs24/chapter/quality-statement-1-screening-for-the-risk-of-malnutrition>; Published November 2012.

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.

Volkert D, Saeglit C, Gueldenzoph H, Sieber CC, Stehle P. Undiagnosed malnutrition and nutrition-related problems in geriatric patients. *J Nutr Health Aging*. 2010;14(5):387-92.

Weiss AJ, Fingar KR, Barrett ML, Elixhauser A, Steiner CA, Guenter P, Brown MH. Characteristics of hospital stays involving malnutrition, 2013. HCUP Statistical Brief #210. September 2016. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb210-Malnutrition-Hospital-Stays-2013.pdf>.

White, J. V., Guenter, P., Jensen, G., Malone, A., & Schofield, M. (2012). Consensus statement of the academy of nutrition and dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). *Journal of the Academy of Nutrition and Dietetics*, 112(5), 730-738.

Completion of a Nutrition Assessment for Patients Identified as At-Risk for Malnutrition within 24 hours of a Malnutrition Screening

Description: Patients age 65 years and older identified as at-risk for malnutrition based on a malnutrition screening who have a nutrition assessment documented in the medical record within 24 hours of the most recent malnutrition screening

Rationale: Patients who are malnourished while in the hospital have been associated with important adverse patient safety outcomes such as increased risk of complications, readmissions, and length of stay. Malnutrition is also associated with many adverse outcomes including depression of the immune system, impaired wound healing, muscle wasting, and increased mortality. Referral rates for dietetic assessment and treatment of malnourished patients have proven to be suboptimal, thereby increasing the likelihood of developing such complications (Corkins, 2014), (Barker et al., 2011), (Amaral, et al., 2007), (Kruizenga et al. 2005). Although a review of nationally-representative data on cost and utilization indicated that in 2013, 7% of patients had a diagnosis of malnutrition (Weiss, 2016), this may be a severely underreported figure identified in other research studies which have estimated that 4-19 million cases are left undiagnosed and untreated. For example, Patel et al. (2014) conducted a national survey of hospital-based professionals in the United States focused on nutrition screening and assessment practices and associated gaps in knowledge of nutrition care. Out of 1,777 unique respondents, only 23.1% reported using a validated assessment tool to help identify clinical characteristics for a malnutrition diagnosis. Nutrition assessments conducted for at-risk patients identified by malnutrition screening using a validated screening tool was associated with key patient outcomes including less weight loss, reduced length of stay, improved muscle function, better nutritional intake, and fewer readmissions (Mueller, 2011).

The use of validated nutrition assessments are important tools for the identification of physical findings that help clinicians determine the appropriate nutrition interventions and care plans that properly address impaired nutrition status. The identification of these malnutrition findings are independently associated with adverse patient outcomes. In a study of 409 patients with a median age of 68, researchers were able to demonstrate that declining nutritional status as assessed by the subjective global assessment (SGA), a validated assessment tool, was significantly associated with prolonged length of stay (Allard, 2016). Additionally, a study of 733 from more than a dozen hospitals identified that the completion of a validated assessment for patients who were hospitalized was able to detect predictors of outcomes for malnutrition such as length of stay and readmission within 30 days after discharge (Jeejeebhoy, 2015).

Type of Measure: Process

Improvement Noted As: An increase in rate

Initial Population: Patients age 65 years and older at time of admission who are admitted to an inpatient hospital

Denominator: Patients age 65 years and older who were identified as at-risk for malnutrition upon completing a malnutrition screening.

Included Populations: Patients with a malnutrition screening result of “at risk”, as defined by value set OID: 2.16.840.1.113762.1.4.1095.38.

Excluded Populations: Patients with a length of stay of <24 hours

Data Elements:

- *Inpatient Admission Time*
- *Birthdate*
- *Completed Malnutrition Screening*
- *Completed Malnutrition Screening Time Stamp*

- *Malnutrition Screening Result*
- *Inpatient Discharge Time*

Numerator: Patients in the denominator who have a nutrition assessment documented in the medical record within 24 hours of the most recent malnutrition screening. Recommended nutrition assessment tools include:

Subjective Global Assessment (Detsky, 1987), Patient Generated Subjective Global Assessment (Bauer, 2002), Nutrition-Focused Physical Exam (White, 2012)

Detsky AS, McLaughlin JR, Baker JP, et al. What is subjective global assessment of nutritional status? JPEN J Parenter Enteral Nutr. 1987;11(1):8-13.

Bauer J, Capra S, Ferguson M. Use of the scored Patient-Generated Subjective Global Assessment (PG-SGA) as a nutrition assessment tool in patients with cancer. Eur J Clin Nutr. 2002;56(8):779-85.

American Society for Parenteral and Enteral Nutrition and Academy of Nutrition and Dietetics: *Revised 2014 Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists* (Competent, Proficient, and Expert) in Nutrition Support, December 2014 Volume 114 Number 12.

Included Populations: Patients with a completed nutrition assessment, as defined by value set OID: 2.16.840.1.113762.1.4.1095.29.

Excluded Populations: None

Data Elements:

- *Completed Nutrition Assessment*
- *Completed Nutrition Assessment Time Stamp*

Risk Adjustment: No

Data Collection Approach: This measure is specified for use with electronic health records. It has XML-based specifications which are mapped onto the hospital's EHR data warehouse to extract the necessary data elements for the measure specifications. Data elements should be labeled with nationally-standardized coding terminology included in the value sets built into the measure specifications.

Data Accuracy: Variation may exist at the level of documentation of appropriate data for the required data elements. Since the data elements represent the completion of discrete care processes, the accuracy of the data is dependent on the initial documentation by hospital staff.

Measure Analysis Suggestions: None

Sampling: None

Data Reported As: Aggregated rate generated from count data reported as a proportion (numerator/denominator)

References:

Academy of Nutrition & Dietetics. CI: nutrition assessment of critically ill adults 2012. Academy of Nutrition & Dietetics Evidence Analysis Library. Published 2012. Retrieved from: <http://www.andeal.org/topic.cfm?menu=4800>.

Allard JP, Keller H, Jeejeebhoy KN, et al. Decline in nutritional status is associated with prolonged length of stay in hospitalized patients admitted for 7 days or more: A prospective cohort study. Clin Nutr. 2016;35(1):144-52.

Amaral TF, Matos LC, Tavares MM, Subtil A, Martins R, Nazaré M, et al. The economic impact of disease-related malnutrition at hospital admission. *Clin Nutr.* 2007;26(6):778–84.

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Jeejeebhoy KN, Keller H, Gramlich L, et al. Nutritional assessment: comparison of clinical assessment and objective variables for the prediction of length of hospital stay and readmission. *Am J Clin Nutr.* 2015;101(5):956-65.

Kruizenga HM, Van Tulder MW, Seidell JC, Thijs A, Ader HJ, Van Bokhorst-de van der Schueren MAE. Effectiveness and cost- effectiveness of early screening and treatment of malnourished patients. *Am J Clin Nutr.* 2005 Nov;82(5):1082–9.

Lew CCH, Yandell R, Fraser RJL, Chua AP, Chong MFF, Miller M. Association between malnutrition and clinical outcomes in the intensive care unit: a systematic review. *JPEN J Parenter Enteral Nutr.* 2017;41(5):744-758.

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Weiss AJ, Fingar KR, Barrett ML, Elixhauser A, Steiner CA, Guenter P, Brown MH. Characteristics of hospital stays involving malnutrition, 2013. HCUP Statistical Brief #210. September 2016. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb210-Malnutrition-Hospital-Stays-2013.pdf>.

Appropriate Documentation of a Malnutrition Diagnosis

Description: Appropriate documentation of a malnutrition diagnosis for those patients who are found to be malnourished based on a nutrition assessment

Rationale: Data analyzed from the Healthcare Cost and Utilization Project (HCUP), a nationally-representative data set describing U.S. hospital discharges, indicated that approximately 7% of hospital discharges included malnutrition as a diagnosis in 2013 (Weiss, 2016). However, as this same research article reported, past studies have used validated screening tools to indicate a substantially higher prevalence of malnutrition that has gone undiagnosed in the hospital ranging from 33% (Robinson, 2003) to 78% (Lew, 2017, Somanchi, 2011). Patients who are malnourished while in the hospital have been associated with important negative outcomes such as increased risk of complications, readmissions, and length of stay. Malnutrition is also associated with many adverse outcomes including depression of the immune system, impaired wound healing, muscle wasting, and increased mortality. Referral rates for dietetic assessment and treatment of malnourished patients have proven to be suboptimal, thereby increasing the likelihood of developing such complications (Corkins, 2014, Barker et al., 2011, Amaral, et al., 2007, Kruizenga et al., 2005).

Nutritional status and progress are often not adequately documented in the medical record. It can be difficult to tell when (or if) patients are consuming food and supplements. In addition, nutritional procedures and EHR-triggered care are often lacking in the hospital (Corkins, 2014). The current evidence supports the early and rapid identification of malnutrition status in order to allow for timely treatment of malnutrition in the hospital. Part of the recommended process for implementing nutrition care is appropriate recognition of the nutrition status, diagnosis, and documentation of that status and diagnosis to address their condition with an appropriate plan of care and communicate patient needs to other care providers. Identifying and addressing malnutrition early in the episode of care is associated with reduced lengths of stay, 30-day readmission rates, hospital-acquired conditions, and overall healthcare costs (Lew, 2017, Meehan, 2016, Fry, 2010).

A randomized controlled trial of 652 hospitalized, malnourished older adults aged 65 years and older evaluated the use of a high-protein oral nutritional supplements for its impact on patient outcomes. The study reported a significant reduction of 90-day mortality ($p = 0.018$) (Deutz, 2016). Additionally, a nutrition support intervention in patients identified by screening and assessment as at risk for malnutrition or malnourished may improve clinical outcomes (Mueller, 2011). Several research studies associated early nutritional care after risk identification with improved outcomes such as reduced length of stay, reduced risk of readmissions, and lower cost of care (Deutz, 2016, Lew, 2017, Meehan, 2016, Milne, 2009, Kruizenga, 2005).

Type of Measure: Process

Improvement Noted As: An increase in rate

Initial Population: Patients age 65 years and older admitted to inpatient care who have a completed nutrition assessment with findings of malnutrition documented in their medical record

Denominator: Patients age 65 years and older admitted to inpatient care who have a completed nutrition assessment documented in their medical record with a finding of malnutrition

Included Populations: Patients age 65 years and older admitted to inpatient care who have documented malnutrition findings from a completed nutrition assessment as defined by the following value set OIDs:

- Nutritional Status Moderately Malnourished (2.16.840.1.113762.1.4.1095.47)
- Nutritional Status Severely Malnourished (2.16.840.1.113762.1.4.1095.43)

Excluded Populations: Patients with a length of stay of less than 24 hours; Patients who left against medical advice (AMA); Patients discharged to hospice care;

Data Elements:

- *Inpatient Admission Time*
- *Inpatient Discharge Time*
- *Discharge Status: Left Against Medical Advice (AMA)*
- *Discharge Status: Discharged to Hospice*
- *Birthdate*
- *Completed Nutrition Assessment*
- *Nutrition Assessment Result*

Numerator: Patients with a documented diagnosis of malnutrition.

Included Populations: None

Excluded Populations: None

Data Elements:

- *Malnutrition Diagnosis*

Risk Adjustment: No

Data Collection Approach: This measure is specified for use with electronic health records. It has XML-based specifications which are mapped onto the hospital's EHR data warehouse to extract the necessary data elements for the measure specifications. Data elements should be labeled with nationally-standardized coding terminology included in the value sets built into the measure specifications.

Data Accuracy: Variation may exist at the level of documentation of appropriate data for the required data elements. Since the data elements represent the completion of discrete care processes, the accuracy of the data is dependent on the initial documentation by hospital staff.

Measure Analysis Suggestions: None

Sampling: None

Data Reported As: Aggregated rate generated from count data reported as a proportion (numerator/denominator)

References:

Academy of Nutrition & Dietetics. CI: nutrition assessment of critically ill adults 2012. academy of nutrition & dietetics evidence analysis library. Published 2012. Retrieved from: <http://www.andeal.org/topic.cfm?menu=4800>.

Amaral TF, Matos LC, Tavares MM, Subtil A, Martins R, Nazaré M, et al. The economic impact of disease-related malnutrition at hospital admission. *Clin Nutr*. 2007;26(6):778–84.

Banks M, Bauer J, Graves N, Ash S. Malnutrition and pressure ulcer risk in adults in Australian health care facilities. *Nutrition*. 2010;26(9):896-901.

Bavelaar JW, Otter CD, Van bodegraven AA, Thijs A, Van bokhorst-de van der schueren MA. Diagnosis and treatment of (disease-related) in-hospital malnutrition: the performance of medical and nursing staff. *Clin Nutr*. 2008;27(3):431-8.

British Association for Parenteral and Enteral Nutrition. Malnutrition Matters, A Toolkit for Clinical Commissioning Groups and providers in England. Published 2012. Retrieved from: http://www.bapen.org.uk/pdfs/bapen_pubs/bapen-toolkit-for-commissioners-and-providers.pdf.

Corkins MR, Guenter P, DiMaria-Ghalili RA & Resnick HE. Malnutrition diagnoses in hospitalized patients: United States, 2010. JPEN J Parenter Enteral Nutr. 2014;38(2):186-95.

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.

Fry DE, Pine M, Jones BL, Meimban RJ. Patient characteristics and the occurrence of never events. Arch Surg. 2010;145(2):148-51.

Kruizenga HM, Van Tulder MW, Seidell JC, Thijs A, Ader HJ, Van Bokhorst-de van der Schueren MAE. Effectiveness and cost- effectiveness of early screening and treatment of malnourished patients. Am J Clin Nutr. 2005 Nov;82(5):1082–9.

Lew CCH, Yandell R, Fraser RJL, Chua AP, Chong MFF, Miller M. Association between malnutrition and clinical outcomes in the intensive care unit: a systematic review. JPEN J Parenter Enteral Nutr. 2017;41(5):744-758.

Meehan A, 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. J Nurs Care Qual. 2016; 31(3):217-23.

Mueller C, Compher C & Druyan ME and 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: 16-24.

Nutrition care process and model part I: the 2008 update. J Am Diet Assoc. 2008;108(7):1113-7

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.

Robinson MK, Trujillo EB, Mogensen KM, Rounds J, McManus K, Jacobs DO. Improving nutritional screening of hospitalized patients: the role of prealbumin. JPEN J Parenter Enteral Nutr. 2003;27:389-395.

Somanchi M, Tao X, Mullin GE. The facilitated early enteral and dietary management effectiveness trial in hospitalized patients with malnutrition. JPEN J Parenter Enteral Nutr. 2011;35(2):209-16.

Weiss AJ, Finger KR, Barrett ML, Elixhauser A, Steiner CA, Guenter P, Brown MH. Characteristics of hospital stays involving malnutrition, 2013. HCUP Statistical Brief #210. September 2016. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb210-Malnutrition-Hospital-Stays-2013.pdf>.

White JV, et al. Consensus statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). JPEN J Parenter Enteral Nutr. 2012;36(3):275–283.

Nutrition Care Plan for Patients Identified as Malnourished after a Completed Nutrition Assessment

Description: A documented nutrition care plan for those patients who are found to be malnourished based on a completed nutrition assessment with findings of malnutrition

Rationale Patients who are malnourished while in the hospital have been associated with an increased occurrence of certain adverse patient outcomes such as increased risk of complications, readmissions, and prolonged length of stay. Malnutrition is also associated with other adverse occurrences including depression of the immune system, impaired wound healing, muscle wasting, and increased mortality. Referral rates for nutrition assessment and treatment of malnourished patients have proven to be suboptimal, thereby increasing the likelihood of developing such aforementioned complications (Corkins, 2014, Barker et al., 2011, Amaral, et al., 2007, Kruiženga et al., 2005). Nutritional status and progress are often not adequately documented in the medical record. It can be difficult to tell when (or if) patients are consuming food and supplements. In addition, nutritional procedures and EHR-driven care recommendations are often lacking in the hospital. Similarly, nutritional care plans and patient issues are poorly communicated to post-acute facilities and PCPs (Corkins, 2014). The current evidence supports the early and rapid identification of malnutrition in order to allow for timely treatment of malnutrition in the hospital. Part of the recommended process for implementing nutrition care is appropriate recognition, diagnosis, and documentation of the nutrition status of a patient in order to address their condition with an appropriate plan of care and communicate patient needs to other care providers. Identifying and addressing malnutrition early in the episode of care is associated with reduced lengths of stay, 30-day readmission rates, hospital-acquired conditions, and overall healthcare costs (Lew, 2017, Meehan, 2016, Fry, 2010).

A randomized controlled trial of 652 hospitalized, malnourished older adults aged 65 years and older evaluated the use of a high-protein oral nutritional supplements for its impact on patient outcomes. The study reported a significant reduction of 90-day mortality ($p = 0.018$) (Deutz, 2016). Additionally, a nutrition support intervention in patients identified by screening and assessment as at risk for malnutrition or malnourished may improve clinical outcomes (Mueller, 2011). Several research studies associated early nutritional care after risk identification with improved outcomes such as reduced length of stay, reduced risk of readmissions, and lower cost of care (Lew, 2017, Deutz, 2016, Meehan, 2016, Milne, 2009, Kruiženga, 2005).

Type of Measure: Process

National Quality Forum (NQF) Identification Number: 3089

Improvement Noted As: An increase in rate

Initial Population: Patients age 65 years and older admitted to inpatient care who have a completed nutrition assessment documented in their medical record

Denominator: Patients with a documented diagnosis of malnutrition.

Included Populations: None

Excluded Populations: Patients with a length of stay of less than 24 hours

Data Elements:

- *Inpatient Admission Time*
- *Inpatient Discharge Time*
- *Birthdate*
- *Malnutrition Diagnosis*

Numerator: Patients with a nutrition care plan documented in the patient's medical record.

Care plan components include, but are not limited to: Completed assessment results; data and time stamp; treatment goals; prioritization based on treatment severity; prescribed treatment/intervention; identification of members of the Care Team, timeline for patient follow-up.

Included Populations: Patients with malnutrition who have a documented nutrition care plan.

Excluded Populations: None

Data Elements:

- *Documented Nutrition Care Plan*

Risk Adjustment: No

Data Collection Approach: This measure is specified for use with electronic health records. It has XML-based specifications which are mapped onto the hospital's EHR data warehouse to extract the necessary data elements for the measure specifications. Data elements should be labeled with nationally-standardized coding terminology included in the value sets built into the measure specifications.

Data Accuracy: Variation may exist at the level of documentation of appropriate data for the required data elements. Since the data elements represent the completion of discrete care processes, the accuracy of the data is dependent on the initial documentation by hospital staff.

Measure Analysis Suggestions: None

Sampling: None

Data Reported As: Aggregated rate generated from count data reported as a proportion (numerator/denominator)

References:

Academy of Nutrition & Dietetics. CI: Nutrition Assessment of Critically Ill Adults 2012. Academy of Nutrition & Dietetics Evidence Analysis Library. Published 2012. Retrieved from: <http://www.andeal.org/topic.cfm?menu=4800>.

Amaral TF, Matos LC, Tavares MM, Subtil A, Martins R, Nazaré M, et al. The economic impact of disease-related malnutrition at hospital admission. *Clin Nutr.* 2007;26(6):778–84.

Bavelaar JW, Otter CD, Van bodegraven AA, Thijs A, Van bokhorst-de van der schueren MA. Diagnosis and treatment of (disease-related) in-hospital malnutrition: the performance of medical and nursing staff. *Clin Nutr.* 2008;27(3):431-8.

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(2):514-27.

British Association for Parenteral and Enteral Nutrition. malnutrition matters, a toolkit for clinical commissioning groups and providers in England. Published 2012. Retrieved from: http://www.bapen.org.uk/pdfs/bapen_pubs/bapen-toolkit-for-commissioners-and-providers.pdf.

Corkins MR, Guenter P, DiMaria-Ghalili RA & Resnick HE. Malnutrition diagnoses in hospitalized patients: United States, 2010. *JPEN J Parenter Enteral Nutr.* 2014;38(2):186-95.

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.

Fry DE, Pine M, Jones BL, Meimban RJ. Patient characteristics and the occurrence of never events. *Arch Surg*. 2010;145(2):148-51.

Kruizenga HM, Van Tulder MW, Seidell JC, Thijs A, Ader HJ, Van Bokhorst-de van der Schueren MAE. Effectiveness and cost- effectiveness of early screening and treatment of malnourished patients. *Am J Clin Nutr*. 2005 Nov;82(5):1082–9.

Lew CCH, Yandell R, Fraser RJL, Chua AP, Chong MFF, Miller M. Association between malnutrition and clinical outcomes in the intensive care unit: a systematic review. *JPEN J Parenter Enteral Nutr*. 2017;41(5):744-758.

Meehan A, 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. *J Nurs Care Qual*. 2016; 31(3):217-23.

Milne AC, Potter J, Vivanti A, Avenell A. Protein and energy supplementation in elderly people at risk from malnutrition. *Cochrane Database Syst Rev*. 2009;(2):CD003288.

Mueller C, Compher C & Druyan ME and 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: 16-24.

National Institute for Health and Care Excellence. NICE Quality Standard [CG32] Nutrition support in adults: Oral nutrition support, enteral tube feeding and parenteral nutrition. Retrieved from: <http://www.nice.org.uk/guidance/cg32/chapter/1-recommendations#screening-for-malnutrition-and-the-risk-of-malnutrition-in-hospital-and-the-community>; Published February 2006.

Nutrition care process and model part I: the 2008 update. *J Am Diet Assoc*. 2008;108(7):1113-7

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.

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

White JV, et al. Consensus statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). *JPEN J Parenter Enteral Nutr*. 2012;36(3):275–283.

Malnutrition Data Element Dictionary

Malnutrition Measure Set Table

Measure ID #	Measure Short Name
#1	Malnutrition Screening within 24 Hours of Admission
#2	Nutrition Assessment Completed for Patients At-Risk of Malnutrition
#3	Appropriate Documentation of Malnutrition Diagnosis
#4	Nutrition Care Plan Documented for Patients with a Malnutrition Diagnosis

Alphabetical Data Dictionary

Index

Element Name	Page #	Collected For:
<i>Admission Date</i>		All Measures
<i>Admission Time</i>		All Measures
<i>Birthdate</i>		All Measures
<i>Completed Malnutrition Screening</i>		#1, #2
<i>Completed Nutrition Assessment</i>		#2, #3
<i>Discharge Status</i>		#3, #4
<i>Hispanic Ethnicity</i>		All Measures
<i>Inpatient Admission Time Stamp</i>		All Measures
<i>Malnutrition Diagnosis</i>		#3, #4
<i>Malnutrition Screening Time Stamp</i>		#1, #2
<i>Malnutrition Screening Result</i>		#2
<i>Nutrition Assessment Time Stamp</i>		#2
<i>Nutrition Assessment Result</i>		#3
<i>Nutrition Care Plan</i>		#4
<i>Measure Category Assignment</i>		All Measures
<i>Race</i>		All Measures
<i>Sex</i>		All Measures

Data Element Name: *Admission Date*

Value Set Name: Hospital Measures-Encounter Inpatient

Value Set OID: 2.16.840.1.113883.3.666.5.625

Collected For: All Records

Definition: The month, day, and year of admission to acute inpatient care.

Suggested Data Collection Question: N/A, EHR-generated data element

Format:

Length: 10 – MM-DD-YYYY (includes dashes)

Type: Date

Occurs: 1

Allowable Values:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (20xx)

Suggested Data Sources:

See Inpatient Admission Time Stamp for details

Data Element Name: *Admission Time*

Value Set Name: Hospital Measures-Encounter Inpatient

Value Set OID: 2.16.840.1.113883.3.666.5.625

Collected For: All Records

Definition: The documented time (military time) of the patient's admission to inpatient acute care.

Suggested Data Collection Question: N/A, EHR-generated data element

Format:

Length: 5 - HH:MM (with or without colon) or UTD

Type: Time

Occurs: 1

Allowable Values:

HH = Hour (00-23)

MM = Minutes (00-59)

UTD = Unable to Determine

Time must be recorded in military time format.

With the exception of Midnight and Noon:

- If the time is in the a.m., conversion is not required
- If the time is in the p.m., add 12 to the clock time hour

Examples:

Midnight - 00:00

Noon - 12:00

5:31 am - 05:31

5:31 pm - 17:31

11:59 am - 11:59

11:59 pm - 23:59

Suggested Data Sources:

See Inpatient Admission Time Stamp for details

Data Element Name: *Birthdate*

Collected For: All Records

Definition: The month, day, and year the patient was born.

Note: Patient's age (in years) is calculated by *Admission Date* minus *Birthdate*. The algorithm to calculate age must use the month and day portion of admission date and birthdate to yield the most accurate age.

Format:

Length: 10 – MM-DD-YYYY (includes dashes)

Type: Date

Occurs: 1

Allowable Values:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (1880-Current Year)

Suggested Data Sources:

- Emergency Department record
- Face sheet
- Registration form
- UB-04

Data Element Name: *Completed Malnutrition Screening*

Value Set Name: Malnutrition Risk Screening

Value Set OID: 2.16.840.1.113762.1.4.1095.40

Collected For: #1, #2

Definition: Documentation that the patient completed a screening for malnutrition.

Note: It is recommended that a malnutrition screening be performed using a validated screening tool which may include but is not limited to one of the following validated tools:

Malnutrition Screening Tool (MST) (Wu, 2012), Nutrition Risk Classification (NRC) (Kovacevich, 1997), Nutritional Risk Index (NRI) (Honda, 2016), Nutritional Risk Screening 2002 (NRS-2002) (Bauer, 2005), Short Nutrition Assessment Questionnaire (SNAQ) (Pilgrim, 2016).

Bauer JM, Vogl T, Wicklein S, Trögner J, Mühlberg W, Sieber CC. Comparison of the mini nutritional assessment, subjective global assessment, and nutritional risk screening (NRS 2002) for nutritional screening and assessment in geriatric hospital patients. *Z Gerontol Geriatr.* 2005;38(5):322-7.

Kovacevich DS, Boney AR, Braunschweig CL, Perez A, Stevens M. Nutrition risk classification: a reproducible and valid tool for nurses. *Nutr Clin Pract.* 1997;12(1):20-5.

Honda Y, Nagai T, Iwakami N, et al. Usefulness of geriatric nutritional risk index for assessing nutritional status and its prognostic impact in patients aged ≥ 65 years with acute heart failure. *Am J Cardiol.* 2016;118(4):550-5.

Pilgrim AL, Baylis D, Jameson KA, et al. Measuring appetite with the simplified nutritional appetite questionnaire identifies hospitalised older people at risk of worse health outcomes. *J Nutr Health Aging.* 2016;20(1):3-7.

Wu ML, Courtney MD, Shortridge-baggett LM, Finlayson K, Isenring EA. Validity of the malnutrition screening tool for older adults at high risk of hospital readmission. *J Gerontol Nurs.* 2012;38(6):38-45.

Format:

Length: 1

Type: Alphanumeric

Occurs: 1

Allowable Values:

Y (Yes) Patient was screened for malnutrition risk.

N (No) Patient was not screened for malnutrition risk.

Suggested Data Sources:

- History and physical
- Admission form
- Intake form
- Nursing screen

Data Element Name: *Completed Nutrition Assessment*

Value Set Name: Malnutrition Assessment

Value Set OID: 2.16.840.1.113762.1.4.1095.29

Collected For: #2, #3

Definition: Documentation that the patient received a nutrition assessment.

Note: It is recommended that a nutrition assessment be completed using an evidence-based approach that includes one of the following nutrition assessment tools:

Subjective Global Assessment (Detsky, 1987), Patient Generated Subjective Global Assessment (Bauer, 2002), Nutrition-Focused Physical Exam (White, 2012)

Detsky AS, McLaughlin JR, Baker JP, et al. What is subjective global assessment of nutritional status?. JPEN J Parenter Enteral Nutr. 1987;11(1):8-13.

Bauer J, Capra S, Ferguson M. Use of the scored patient-generated subjective global assessment (PG-SGA) as a nutrition assessment tool in patients with cancer. Eur J Clin Nutr. 2002;56(8):779-85.

White JV, Guenter P, Jensen G, et al. Consensus statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). JPEN J Parenter Enteral Nutr. 2012;36(3):275-83.

Format:

Length: 1

Type: Alphanumeric

Occurs: 1

Allowable Values:

Y (Yes)	Patient was assessed for malnutrition and other nutrition physical findings by a registered dietitian.
N (No)	Patient was not assessed for malnutrition and other nutrition physical findings by a registered dietitian.

Suggested Data Sources:

- Dietitian assessment form
- Discharge summary
- Nutrition care form
- Progress notes

Data Element Name: *Discharge Status*

Value Set Names:

- a. Discharged to Health Care Facility for Hospice Care
- b. Discharged to Home for Hospice Care
- c. Left Against Medical Advice

Value Set OIDs:

- a. 2.16.840.1.113883.3.117.1.7.1.207
- b. 2.16.840.1.113883.3.117.1.7.1.209
- c. 2.16.840.1.113883.3.117.1.7.1.308

Collected For: #4

Definition: The final place or setting to which the patient was discharged on the day of discharge.

Note: If patients have a discharge status matching any of the following values, the record meets this criteria:

- a. Discharged to Health Care Facility for Hospice Care
- b. Discharged to Home for Hospice Care
- c. Left Against Medical Advice

Format:

Length: 1
Type: Binomial
Occurs: 1

Allowable Values:

- | | |
|---------|---|
| 1 (Yes) | Discharge status of Hospice (Health Care Facility or Home), or Left Against Medical Advice (AMA) |
| 0 (No) | Patients with any other discharge status: Home, Acute Care Facility, Other Health Care Facility, Expired, Not Documented or Unable to Determine (UTD) |

Suggested Data Sources:

- | | |
|--|--|
| <ul style="list-style-type: none">• Discharge instruction sheet• Discharge planning notes• Discharge summary• Nursing discharge notes | <ul style="list-style-type: none">• Physician orders• Progress notes• Social service notes• Transfer record |
|--|--|

Data Element Name: *Hispanic Ethnicity*

Value Set Name: Ethnicity

Value Set OID: 2.16.840.1.114222.4.11.837

Collected For: All Records

Definition: Documentation that the patient is of Hispanic ethnicity or Latino.

Note: None

Format:

Length: 1

Type: Character

Occurs: 1

Allowable Values:

Y (Yes)	Patient is of Hispanic ethnicity or Latino.
N (No)	Patient is not of Hispanic ethnicity or Latino or unable to determine from medical record documentation.

Suggested Data Sources:

- Emergency Department record
- Face sheet
- History and physical
- Nursing admission assessment
- Progress notes

Data Element Name: *Inpatient Admission Time Stamp*

Value Set Name: Hospital Measures-Encounter Inpatient

Value Set OID: 2.16.840.1.113883.3.666.5.625

Collected For: All Records

Definition: The documented time (military time) and calendar date of the patient's admission to inpatient acute care.

Suggested Data Collection Question: N/A, EHR-generated data element

Format:

Length: 15 – MM-DD-YYYY HH:MM (with or without colon) or UTD

Type: Date and Time

Occurs: 1

Allowable Values:

For Time Component:

HH = Hour (00-23)

MM = Minutes (00-59)

UTD = Unable to Determine

Time must be recorded in military time format.

With the exception of Midnight and Noon:

- If the time is in the a.m., conversion is not required
- If the time is in the p.m., add 12 to the clock time hour

Examples:

Midnight - 00:00

Noon - 12:00

5:31 am - 05:31

5:31 pm - 17:31

11:59 am - 11:59

11:59 pm - 23:59

For Calendar Date Component:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (1880-Current Year)

Suggested Data Sources:

- Emergency Department record
- Nursing admission assessment/admitting note
- Observation record
- Procedure notes
- Vital signs graphic record

Data Element Name: *Malnutrition Diagnosis*

Value Set Name: Malnutrition Diagnosis

Value Set OID: 2.16.840.1.113762.1.4.1095.55

Collected For: #3, #4

Definition: Subset of malnutrition diagnosis codes from the overall malnutrition diagnosis value set including:

Suggested Data Collection Question: What malnutrition diagnosis was entered for this case?

Format:

Length: 50 Characters

Type: Character (upper or lower case)

Occurs: 1

Allowable Values:

Any entries labeled with the following codes:

ICD10CM (2014)	E43, E44, E44.0, E46
----------------	----------------------

Notes for Abstraction:

None

Suggested Data Sources:

- Discharge summary
- Face sheet
- Nutrition form

Data Element Name: *Malnutrition Screening Time Stamp*

Value Set Name: Malnutrition Risk Screening

Value Set OID: 2.16.840.1.113762.1.4.1095.40

Collected For: #1, #2

Definition: The documented time (military time) and calendar date of the documented malnutrition screening.

Suggested Data Collection Question: N/A, EHR-generated data element

Format:

Length: 15 – MM-DD-YYYY HH:MM (with or without colon) or UTD

Type: Date and Time

Occurs: 1

Allowable Values:

For Time Component:

HH = Hour (00-23)

MM = Minutes (00-59)

UTD = Unable to Determine

Time must be recorded in military time format.

With the exception of Midnight and Noon:

- If the time is in the a.m., conversion is not required
- If the time is in the p.m., add 12 to the clock time hour

Examples:

Midnight - 00:00

Noon - 12:00

5:31 am - 05:31

5:31 pm - 17:31

11:59 am - 11:59

11:59 pm - 23:59

For Calendar Date Component:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (1880-Current Year)

Suggested Data Sources:

- History and physical
- Intake form
- Admission form
- Nursing screen

Data Element Name: *Malnutrition Screening Findings*

Value Set Name: Malnutrition Screening At Risk

Value Set OID: 2.16.840.1.113762.1.4.1095.38

Collected For: #2

Definition: Identification of malnutrition risk from the completion of a malnutrition screening is documented.

Note: Due to the various existing validated screening tools in use, the collection of this data element is dependent on the definition of “at risk” for each individual screening tool. Some tools characterize “nutrition risk” based upon the outcome of a specific quantitative scale.

Format:

Length: 1

Type: Alphanumeric

Occurs: 1

Allowable Values:

Y (Yes) finding of malnutrition risk document in record.

N (No) No finding of malnutrition risk was documented.

Notes for Abstraction:

Suggested Data Sources:

- History and physical
- Intake form
- Admission form
- Nursing screen

Data Element Name: *Nutrition Assessment Time Stamp*

Value Set Name: Malnutrition Assessment

Value Set OID: 2.16.840.1.113762.1.4.1095.29

Collected For: #2

Definition: The documented time (military time) and calendar date of the documented nutrition assessment.

Suggested Data Collection Question: N/A, EHR-generated data element

Format:

Length: 15 – MM-DD-YYYY HH:MM (with or without colon) or UTD

Type: Date and Time

Occurs: 1

Allowable Values:

For Time Component:

HH = Hour (00-23)

MM = Minutes (00-59)

UTD = Unable to Determine

Time must be recorded in military time format.

With the exception of Midnight and Noon:

- If the time is in the a.m., conversion is not required
- If the time is in the p.m., add 12 to the clock time hour

Examples:

Midnight - 00:00

Noon - 12:00

5:31 am - 05:31

5:31 pm - 17:31

11:59 am - 11:59

11:59 pm - 23:59

For Calendar Date Component:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (1880-Current Year)

Notes for Abstraction:

None

Suggested Data Sources:

- Dietitian assessment form
- Nutrition care form
- Discharge summary
- Progress notes

Data Element Name: *Nutrition Assessment Result*

Value Set Name: N/A, Chart abstracted data element

Value Set OID: N/A

Collected For: #3

Definition: Documentation of nutrition assessment result (nutrition diagnosis).

Note: The findings of the nutrition assessment are defined as the type and characterization of malnutrition identified by the dietitian.

Suggested Data Collection Question: What nutrition diagnosis was entered for this case?

Format:

Length: 50 Characters

Type: Character (upper or lower case)

Occurs: 1

Allowable Values:

Any entries labeled with the following codes:

Severe Protein-Calorie Malnutrition		
E43	Unspecified severe protein-calorie malnutrition	ICD10CM
262	Other severe protein-calorie malnutrition	ICD9CM
24484000	Severe (severity modifier) (qualifier value)	SNOMEDCT
Moderate Protein-Calorie Malnutrition		
E44.0	Moderate protein-calorie malnutrition	ICD10CM
263	Other and unspecified protein-calorie malnutrition	ICD9CM
6736007	Moderate (severity modifier) (qualifier value)	SNOMEDCT
190606006	Moderate protein energy malnutrition (disorder)	SNOMEDCT

Notes for Abstraction:

Academy of Nutrition and Dietetics (Academy)/American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) clinical characteristics that the clinician can obtain and document to support a diagnosis of malnutrition are published in the 2012 Consensus Statement recommending characteristics for the identification and documentation of adult malnutrition.

White JV, Guenter P, Jensen G, et al. Consensus statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). JPEN J Parenter Enteral Nutr. 2012;36(3):275-83.

Suggested Data Sources:

- Dietitian assessment form
- Nutrition care form
- Discharge summary
- Progress notes

Data Element Name: *Nutrition Care Plan*

Value Set Name: Nutrition Care Plan

Value Set OID: 2.16.840.1.113762.1.4.1095.88

Collected For: #4

Definition: Documentation of a nutrition care plan

Note: Care plan components include, but are not limited to: Completed assessment results; data and time stamp; treatment goals; prioritization based on treatment severity; prescribed treatment/intervention; identification of members of the Care Team, timeline for patient follow-up.

Format:

Length: 1

Type: Alphanumeric

Occurs: 1

Allowable Values:

Y (Yes) Nutrition care plan was documented as part of the patient's medical record

N (No) Nutrition care plan was not documented as part of the patient's medical record

Notes for Abstraction:

Suggested Data Sources:

- Discharge summary
- Progress notes
- Assessment notes
- Treatment plans
- Treatment consultations
- Dietary progress notes
- Home health instructions

Data Element Name: *Race*

Value Set Name: Race

Value Set OID: 2.16.840.1.114222.4.11.836

Collected For: All Records

Definition: Documentation of the patient's race.

Note: None

Format:

Length: 1

Type: Character

Occurs: 1

Allowable Values:

Select one:

1. **White:** Patient's race is White or the patient has origins in Europe, the Middle East, or North Africa.
2. **Black or African American:** Patient's race is Black or African American.
3. **American Indian or Alaska Native:** Patient's race is American Indian/Alaska Native.
4. **Asian:** Patient's race is Asian.
5. **Native Hawaiian or Pacific Islander:** Patient's race is Native Hawaiian/Pacific Islander.
6. **Other Race:** No race above is applicable.
7. **UTD:** Unable to determine the patient's race or not stated (e.g., not documented, conflicting documentation or patient unwilling to provide).

Suggested Data Sources:

- Emergency Department record
- Face sheet
- History and physical
- Nursing admission assessment
- Progress notes

Data Element Name: Sex

Value Set Name: ONC Administrative Sex

Value Set OID: 2.16.840.1.113762.1.4.1

Collected For: All Records

Definition: The patient's documented sex on arrival at the hospital.

Format:

Length: 1

Type: Character

Occurs: 1

Allowable Values:

M = Male
F = Female
U = Unknown

Suggested Data Sources:

- Consultation notes
- Emergency Department record
- Face sheet
- History and physical
- Nursing admission notes
- Progress notes
- UB-04