Comparative Effectiveness Review Disposition of Comments Report

Title: *Malnutrition in Hospitalized Adults: A Systematic Review*

Draft report available for public comment from June 3, 2021, to July 1, 2021.

Comments to Draft Report

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This document includes the responses by the authors of the report to comments that were submitted for this draft report. The responses to comments in this disposition report are those of the authors, who are responsible for its contents, and do not necessarily represent the views of the Agency for Healthcare Research and Quality.

Commentator & Affiliation	Section	Comment	Response
Public Comment, Angel Valladares	Evidence Summary	While the evidence review does include important outcomes seen clinically in hospitalized patients with malnutrition, it is likely that the omission of select research evidence may underestimate the impact of malnutrition, the importance of screening and effectiveness of nutrition interventions.	We appreciate your comments and for providing us with a list of studies that focus primarily on assessing the impact of implementing the Quality Improvement Project (QIP) in select hospitals. The focus of most of these studies is on the impact of the intervention included in QIP (which is oral nutritional supplementation [ONS]), and they would therefore be considered for inclusion under Key Question 3 (KQ3) of our report. However, none of the studies listed met study selection criteria for KQ3 for several reasons. One, as the reviewer points out, is due to study design. Most of the studies listed are retrospective database studies that compare patients who received the ONS intervention to those who did not. For inclusion in KQ3 studies were required to be randomized controlled trials (RCTs) comparing an intervention of interest (to either standard of care as described by the authors) or to another nutrition-focused intervention among patients diagnosed with malnutrition. Our review team and technical expert panel felt RCTs to be the most appropriate study design for this question as randomization reduces biases by balancing participant characteristics (both observed and unobserved) between study groups allowing attribution of any differences in outcome to the study intervention. And, while it is possible to control for KNOWN potential confounding variables in non-randomized studies using statistical methods, it is not possible to control for unobserved factors. Given the heterogeneity of patients with malnutrition, this is important. However, even if we ignore study design, the studies provided in the reviewer's list would not have meet inclusion criteria for the other following reasons:

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Public Comment, Angel Valladares (cont'd)	Evidence Summary (cont'd)	(comment above)	Not the population of interest: The following studies do not report indication for initiation of treatment; not clear if patients were diagnosed with malnutrition or what the non-ONS group received: Philipson et al. Am J Manag Care. 2013 Feb; 19(2):121-8. Lakdawalla et al. Forum Health Econ Policy. 2014 Sep 1;17(2):131-151. Snider et al. Chest. 2015 Jun; 147(6)1477-1484. Not a comparator of interest: The following studies do not provide any information about what the comparator patients received or did not receive: Mullin et al. J Acad Nutr Diet. 2019 Jul; 119(2):1168-1175. (In this study, of the 8,700 patients diagnosed with malnutrition only 279 received ONS.) Sriram et al. JPEN J Parenter Enteral Nutr. 2017 Mar;41(3):384-391. Sriram et al. JPEN J Parenter Enteral Nutr. 2018 Aug;42(6):1093-1098. VanDerBosch et al. Nutrition. Nov-Dec 2019;67-78:110519. Costanzo et al. J Aging Res clin Practice 2019;8:63-69. Meehan et al. J Nurs Care Qual. Jul-Sep 2016;31(3):217-23. Siegel et al. J Nurs Care Qual. Jul/Sep 2019;34(3):203-209 Valladares et al. JPEN J Parenter Enteral Nutr. 2021 Feb;45(2):366-371. (This study assesses outcomes at the hospital level.) Pratt et al. BMJ Open Qual. 2020 Mar;9(1):e000735. Sulo et al. Am Health Drug Benefits. 2017 Jul;10(5):262-270. Not an outcome of interest : These studies were cost-analysis studies. Buitrago et al. Clin Nutr. 2020 Sep;39(9):2896-2901. Schuetz et al. Clin Nutr. 2020 Nov;39(11):3361-3368. Zhong et al. Appl Health Econ Health Policy. 2017 Feb;15(1):75-83. Tyler et al. JPEN J Parenter Enteral Nutr. 2020 Mar;44(3):395-406.

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Public Comment, Angel Valladares	Methods	The omission of retrospective analyses and Quality Improvement Program (QIP) evaluations from the Malnutrition in Hospitalized Adults literature review limits the data available for consideration without considering the merits of these studies individually.	For inclusion in KQ3 (for which the QIP studies would address) studies were required to be RCTs comparing an intervention of interest (to either standard of care as described by the authors) or to another nutrition-focused intervention among patients diagnosed with malnutrition. Our review team and technical expert panel felt RCTs to be the most appropriate study design for this question as randomization reduces biases by balancing participant characteristics (both observed and unobserved) between study groups allowing attribution of any differences in outcome to the study intervention.While it is possible to control for KNOWN potential confounding variables in non-randomized studies using statistical methods, it is not possible to control for unobserved factors. Given the heterogeneity of patients with malnutrition, this is important.
Public Comment, Angel Valladares	Methods	The authors justify the omission of retrospective analyses and studies using historical control groups due to "their high potential for biases related to confounding effects and patient selection." This ignores that methods to reduce bias due to confounding and nonrandomized treatment selection have been developed, effectively utilized, and are accepted by the scientific community.	Thank you. We recognize that statistical methods can be used to minimize the effect of known confounders. However, our review team felt that RCTs were the most appropriate design to control for unobserved factors, which could impact the findings given the heterogeneity of patients with malnutrition.
Public Comment, Angel Valladares	Methods	Retrospective analyses and QIP evaluations have been developed that provide evidence on the impact of malnutrition and nutrition therapies in hospitalized adults utilizing methods to reduce bias from confounding and nonrandomized selection. Philipson et al (2013), Lakdawalla et al (2014), and Snider et al (2015) are well-designed retrospective studies that show nutrition interventions for hospitalized patients have positive impact on patient outcomes while addressing confounding and nonrandomized selection.	In addition to not meeting study design criteria for key question 3, the studies the reviewer references also did not meet inclusion criterial for not reporting on the indication for initiation of treatment; not clear if patients were diagnosed with malnutrition or what the non-ONS group received:

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Public Comment, Angel Valladares	Methods	QIP evaluations have also shown the impact of malnutrition and nutrition interventions on patients' outcomes utilizing distinct control groups and study designs. Sriram et al (2017) found that a nutrition focused QIP reduced readmissions and hospital length of stay. This finding was also confirmed in surgical and cardiovascular patient subpopulations in Sriram et al. (2018) and Costanzo et al (2019). A similar QIP in Colombia showed that malnutrition was prevalent and led to increased length of stay and mortality (Ruiz et al (2018)). Other nutrition-focused QIPs have shown that nutrition interventions reduce the incidence of hospital acquired pressure injuries (Meehan et al (2016)) and reduced length of stay (Siegel et al (2019)). Table 1 provides additional details on these studies.	In addition to not meeting study design criteria for key question 3, the studies that the reviewer references also do not meet inclusion criteria for not having a comparator of interest or not providing any information about what the comparator patients received or did not receive.
Public Comment, Angel Valladares	Methods	The economic benefits of nutrition interventions were not fully developed in report but have been addressed in the literature. Budget analyses building on evidence developed in QIPs show significant cost savings from nutrition interventions (Sulo et al (2017), Buitrago et al (2020)). Economic analyses of clinical trials have also shown nutrition interventions to be cost-effective at improving patient outcomes (Schuetz et al (2020), Zhong et al (2017)). Additional information on these health economic studies can be found in Table 2.	Thank you for bringing these studies to our attention. Cost-effectiveness and economic analyses were outside of the scope of our review.
Public Comment, Angel Valladares	Methods	It is also important to note that the Nutrition-Focused Physical Exam, though pending full validation, is a diagnostic approach for malnutrition that is increasing in use. Evidence already supports the use of this approach in real-world clinical settings for identifying patients with malnutrition and predicting adverse outcomes for these high risk populations.	Thank you for bringing the NFPE to our attention. We have revised Table 2 to include a brief description of this approach.
Public Comment, Angel Valladares	Methods	The submission includes two tables detailing studies for the two categories the submitter felt were omitted by the report Retrospective analyses and QIP evaluations of nutrition interventions and Economic Analyses of Nutrition Interventions.	See our response to your first comment.

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Public Comment, Aimee Cegelka	General Comments	In general, we found this to be an excellent systematic review of the literature of malnutrition in hospitalized adults; it is very detailed and well thought out. The report is very informative and highlights how little quality evidence there is out there on how to quantify and measure malnutrition in hospitalized patients.	Thank you for your comment and careful review of the report.
Public Comment, Aimee Cegelka	Methods	We found the process carefully described, including a useful flow diagram, where the authors provide detailed descriptions of studies that were included in the systematic review and of studies that were rejected because of methodological limitations.	Thank you for your comment and careful review of the report.
Public Comment, Aimee Cegelka	Discussion	The discussion section nicely summarizes the limitations of the existing systematic reviews and the limitation of clinical trials related to study design, definitions of malnutrition, definitions of clinical outcomes, screening, and diagnostic measures.	Thank you for your comment and careful review of the report.
Public Comment, Aimee Cegelka	General Comments	We observed that the report did not address the older population over 65 years old. While we noted that the report does mention ADLs and lack of information on ADL changes as markers of frailty, we suggest specifically mentioning older adults as a population and their nutritional needs during hospitalization within the report. We recommend adding to the discussion section a note that the benefits of hospital-initiated interventions for protein-calorie malnutrition are limited during the patient's hospitalization, as weeks to months are often required to resolve the risk on health outcomes of malnutrition such as length of hospital stay, discharge disposition, and hospital-associated complications.	Thank you for your comment. While the report is not specific to older adults, we do mention in the background section that this is a population at higher risk for malnutrition, and when possible we highlight findings for this population in Key Question 1 (KQ1). We also intended to conduct further subgroup analysis based on age of the findings for KQ3. However, we did not have a sufficient number of studies to perform this analysis. We have revised the discussion to include the following text about the potential limitations of hospital initiated interventions: "*Of course, the benefits of hospital-initiated interventions on hospitalization associated outcomes such as length of stay, discharge disposition, and hospital associated complication may be limited as weeks to months are often required to resolve the deleterious impact of malnutrition.*"
Public Comment, Aimee Cegelka	Introduction	For clarity, we suggest the introduction also briefly mention that the review does not include systematic reviews of isolated micro-nutrient deficiencies (such as cobalamin and iron deficiencies).	We have added text to Table 2 (the PICOTS table) clarifying that we did not include systematic reviews of isolated micro-nutrient deficiencies.

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Public Comment, Aimee Cegelka	Evidence Summary	Strengths of this systematic review are numerous. The systematic review was conducted with state-of-the-art criteria for systematic reviews and, impressively, included strength of evidence and risk of bias evaluations for both observational studies and randomized controlled trials. In addition, subgroup analysis was performed to assess if treatment effects varied by age, definition of malnutrition, type of treatment, follow-up time, and comorbid conditions. Because of statistical heterogeneity meta-analysis was often not possible, requiring the use of a random effects model.	Thank you for your comment and careful review of the report.
Public Comment, Aimee Cegelka	General Comments	We also recommend emphasizing that future studies need to better control for severity of risk for adverse outcomes through stratification of vulnerable patients by age, gender and defined frailty. This recommendation applies to observational, RCT, and diagnostic and prognostic studies. Socio-demographic variables are important confounders of effective interventions post-hospitalization and should be considered in future research studies.	Thank you for your comment. We have added text to the Limitations and Suggestions for Future Research section of the report that discusses the need for trials that better control of potential confounders.
Public Comment, Amy Cegelka	Understandability of Problem and Evidence	We note that there is evidence about ordering patients to have nothing by mouth (NPO). If someone is getting a procedure, then it is important to time the NPO correctly to not extend it and place a diet order as soon as the procedure is completed. Many times, providers put NPO if a speech assessment is delayed and oftentimes nursing can do bedside assessments to allow for modified diet until speech evaluates. The NPO order is overused and contributes to malnutrition in the hospital setting.	We appreciate your concerns, and recognize that a number of hospital practices may directly or indirectly contribute to malnutrition. However, the purpose of our report was to understand the role of screening, diagnosis and treatment on outcomes of patients categorized as malnourished. Thus, the background section of our report focuses more heavily on highlighting these areas and less on discussing other practices that may contribute to malnutrition.
Public Comment, Aimee Cegelka	Understandability of Problem and Evidence	Another important aspect about nutrition in the hospital is limiting unnecessary restrictive diets. For example, putting frail patients on restrictive diets because they have diabetes. The lack of evidence of feeding tubes/total parenteral nutrition in frail older adults without reversible illnesses. We suggest this should be noted in malnutrition in hospitalized patients as feeding tubes as an option should not be offered to those it will not benefit.	As the purpose of our report was to understand the role of screening, diagnosis and treatment of malnutrition, we focused on discussing factors related to these areas.

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Public Comment, Aimee Cegelka	Methods	In a systematic review authors are limited in their capacity to address in detail variables that might be contributing or mediating the relationship between malnutrition and adverse health outcomes, including many social determinants of health. Studies included had some but limited numbers of sociodemographic factors, such as age, gender and race effects.	We agree. For KQ1, we relied on existing systematic reviews and noted when the authors of those reviews indicated if studies controlled for important sociodemographic variables as possible confounders in the relationship between malnutrition and poor clinical outcomes. For KQ3, we lacked enough studies to perform subgroup analyses based on any of the mentioned sociodemographic variables. Finally, no studies met inclusion criteria for KQ2.
Public Comment, Aimee Cegelka	Methods	We also recommend that future versions of the report address the utilization of cost and cost of dieticians/availability of dieticians for consultations in all hospital settings.	Thank you for your comment. Cost analyses were out of scope for this review. Examples of future studies to address current gaps in this review are listed on Page 60 under Limitations and Suggestions for Future Research.

Commentator & Affiliation	Section	Comment	Response
Public Comment, Sharon McCauley	Introduction	The Academy of Nutrition and Dietetics, as measure steward, along with Avalere Health, measure developer, want to bring to your attention the progression of the quality measures for malnutrition screening, assessment, malnutrition diagnosis and development of a care plan. Table 1 in the report references individual electronic clinical quality measures for malnutrition, however we want to ensure the most current measure information is considered. The components of the measures have been combined into a composite measure, the Global Malnutrition Composite Score, to score hospitals on their efforts to identify malnutrition, improve care, and standardize practice for positive clinical outcomes. The Global Malnutrition Composite Score would incentivize screening all older adults for malnutrition risk at hospital admission, assessing those found to be malnourished and at risk for malnutrition documenting diagnosed malnutrition, and developing a nutrition care plan with implementing intervention and treatment before discharge which then follows patients as they transition to the next point of care setting.1 The Global Malnutrition Composite Score - MUC20-00322 is included on the final published Centers for Medicare & Medicaid Services (CMS) 2020 Measures Under Consideration (MUC) List.3 The Academy continues to pursue the adoption of the Global Malnutrition Composite Score into the CMS Hospital Inpatient Quality Reporting (HIQR) Program and endorsement from the National Quality Forum. The Global Malnutrition Composite Score - NQF #3592 is currently being reviewed for final approval by Consensus Standards Approval Committee.	Thank you for bringing the composite score to our attention. We have revised the Background section of the report to describe the origins of the composite measure. We removed Table 1 as the narrative description of the composite score sufficiently describes key elements of this metric.

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Public Comment, Sharon McCauley	Introduction	The measure development team studied existing composite measures and identified an initial framework and objective for the eventual composite measure. Informed by the experience of the hospitals implementing the individual malnutrition focused electronic clinical quality measures, the development team determined the focus of the proposed composite measure would be on optimal malnutrition care for adults aged 65 years and older who are admitted to inpatient service and receive care appropriate to their level of malnutrition risk and/or malnutrition diagnosis if identified.	Thank you for this information.
Public Comment, Sharon McCauley	Introduction	The Global Malnutrition Composite Score includes four component measures that are first scored separately as proportion measures. The four component measures (Figure 2) represent slight variations from the original individual eCQMs (Figure 1). The composite measure components were established using empirical testing by determining which individual components would most contribute to a sound overall composite score. The overall composite score is derived from averaging the individual performance scores for the following component measures: 1. Screening for malnutrition risk at admission; 2. Completing a nutrition assessment for patients who screened for risk of malnutrition; 3. Appropriate documentation of malnutrition diagnosis in the patient's medical record when this is indicated by the assessment findings; and 4. Development of a nutrition care plan for malnourished patients, including the recommended treatment plan.	We have revised the Background section of the report to describe components of the composite score as presented in the Center for Medicare and Medicaid Services (CMS) document describing the measure.

Commentator & Affiliation	Section	Comment	Response
Public Comment, Sharon McCauley	Introduction	In the existing Inpatient Quality Reporting Program implemented by CMS, although there is considerable focus on some of the sequelae of malnutrition such as pressure ulcers, infections, 30-day readmissions, and mortality, no measure considering the role of nutrition has ever been included in this program. Given the proliferation of the Global Malnutrition Composite Score component measures to dozens of hospitals around the country through the national hospital learning collaborative as part of the MQii and the rigorous empirical evaluation standards met by the measure development team, policymakers should consider the Global Malnutrition Composite Score for provider pay-for-reporting and pay-for performance programs like the Inpatient Quality Reporting Program. The inclusion of the Global Malnutrition Composite Score could provide valuable information to providers, consumers, and federal stakeholders on nationwide performance on standards of nutrition care practice that have considerable implications for clinical and economic outcomes.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
Public Comment, Jensen Gordon	Understandability of Problem and Evidence	The lack of eligible studies for review in regard to screening and assessment is not surprising in view of the rigor requested. Screening is currently considered standard of care throughout the USA. We would be very hard pressed to generate enthusiasm for an RCT that included a non-screening control arm. Before wide spread screening was implemented, it was common for severely malnourished individuals to be overlooked and suffer adverse outcomes. While there is certainly room for additional research on screening measures, we must be very careful not to let folks interpret this to mean that screening should not be undertaken.	Thank you for your comment. Although screening is required by The Joint Commission in the US, our review searched for and included trials from other countries where screening is not mandated and therefore could be conducted. However, we acknowledge that this type of trial would be suboptimal given the current standard of care in which all patients should be screened. Therefore, we have added language describing a more feasible trial which would study the effectiveness of diagnostic assessment tools: Section on KQ2, summary of findings, p.46: "*Studies that would most directly inform KQ2 would randomize hospitalized patients to a measurement tool vs. no measurement tool (See Figure 2 in the Methods section). However, in the US, hospital accreditation by The Joint Commission mandates screening. This existing mandate presents clear pragmatic challenges to randomizing U.S. patients to screening vs. no screening. Future trials could still randomize patients to different screening tools to assess the impact of various tools on clinical outcomes. Ideally, a study could screen all patients and randomize "at-risk" patients to SGA, no diagnostic assessment, or another tool (e.g., GLIM). Participants in both of these groups would then be identified as either malnourished, leading to an intervention, or not malnourished, resulting in no intervention or continued standard care. Another design could utilize all types of diagnostic assessments for "at-risk" patients, given that these assessments are non-invasive, and then randomize malnutrition interventions based on just one of these assessments. This would provide insight regarding the clinical course for patients who are false negatives and any potential harms of using specific tools.*"

Commentator & Affiliation	Section	Comment	Response
Public Comment, Jensen Gordon (cont'd)	Understandability of Problem and Evidence (cont'd)	(comment above)	Since hospitals already vary widely in which tools they utilize, this type of study would fall well within standard of care, but provide important information on clinical effectiveness of tools. Finally, we have noted that there is significant overlap amongst tools and therefore, future research could also determine which variables have the greatest sensitivity and specificity in prospective clinical studies.
Public Comment, Jensen Gordon	General Comments	Nutrition care should be considered a human right. In 2003 the Council of European Committee of Ministers endorsed this very principle. There is no known human benefit to being malnourished.	Thank you for your comment. We agree that recognizing malnutrition and providing nutrition care is important. We created KQ1 to examine differences in incidence of clinical outcomes between hospitalized individuals with and without malnutrition. In our review, we note greater incidence of mortality, prolonged hospital stays, and greater occurrence of hospital acquired conditions compared to well-nourished patients. Also, we noted in KQ3 that interventions on patients screened or diagnosed with malnutrition decrease the risk of mortality.
Public Comment, Jensen Gordon	Methods	"Radiographic" measures is not a gold standard for malnutrition diagnosis. It is an approach to identifying reduction in muscle mass. Malnutrition is not diagnosed on just this single variable. There are other causes of reduced muscle mass. In addition, a better term would be "imaging" measures because the approaches in use include DEXA, CT, MRI and ultrasound. The latter is not radiologic	Thank you very much for this suggestion. We have modified our terminology to clarify that imaging is a gold standard for body composition and muscle mass that can be used to assess malnutrition, particularly when serial imaging is utilized. We have also broadened the term to state imaging modalities or techniques, in order to encompass ultrasound as well.
Public Comment, Jensen Gordon	Introduction	It is critical that we emphasize that overweight and obese patients can be severely malnourished. Low body weight is not a requirement for malnutrition diagnosis.	Thank you for your comment. We agree that overweight and obese patients can be severely malnourished. In the introduction, we include obesity as an example of a chronic illnesses that can lead to malnutrition (inadequate intake of macro and micro nutrients).
Public Comment, Jensen Gordon	Introduction	GLIM is not currently the most widely used approach in the USA. However, it shares key core measures with the Academy/ASPEN and SGA approaches that are in widespread use in North America. These shared core measures have strong predictive utility for adverse clinical outcomes.	Thank you for your comment. We have revised the Introduction section of our report to include a description of the core criteria of the Academy of nutrition and Dietetics - American Society for Parenteral and Enteral Nutrition (AND-ASPEN) criteria, and mention that the SGA is based on similar diagnostic criteria.
Peer Reviewer 1	Introduction	The introduction is complete and well referenced and written in my opinion.	Thank you for your comment and careful review of the report.

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Peer Reviewer 1	General Comments	I feel this is an exceptionally well-done report that follows ARHQ Methods for Effectiveness and Reviews.	Thank you for your comment and careful review of the report.
Peer Reviewer 1	General Comments	I think it helps identify the knowledge gaps and opportunities along with what is known and the level of evidence for that. It should help our agency identify research opportunities in malnutrition.	We hope knowledge gaps identified through this report will support future research.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 1	General Comments	My opinion is that the key questions are appropriate and well refined for a review of this type, with one exception and that is KQ2. My interpretation is that this question could not be answered because there was no control groups in the published studies. However, unless I misunderstand it, the desired control group would be illegal in the U.S., because all hospitals are required (for accreditation or law?) to screen patients for malnutrition within 24 h? It seems to me that this conundrum could have been discovered earlier using an evidence scan or something prior to doing the systematic review so that the KQ2 could have been reframed as a selection between a poorer and better tool for assessment of malnutrition for example.	Thank you for your comment. Although screening is required by The Joint Commission in the US, our review searched for and included trials from other countries where screening is not mandated and therefore could be conducted. However, we acknowledge that this type of trial would be suboptimal given the current standard of care in which all patients should be screened. Therefore, we have added language describing a more feasible trial which would study the effectiveness of diagnostic assessment tools: In Section on KQ2, p. 46, we revised as follows: "*Studies that would most directly inform KQ2 would randomize hospitalized patients to a measurement tool vs. no measurement tool (See Figure 2 in the Methods section). However, in the US, hospital accreditation by The Joint Commission mandates screening. This existing mandate presents clear pragmatic challenges to randomizing U.S. patients to screening vs. no screening. Future trials could still randomize patients to different screening tools to assess the impact of various tools on clinical outcomes. Ideally, a study could screen all patients and randomize "at-risk" patients to SGA, no diagnostic assessment, or another tool (e.g., GLIM). Participants in both of these groups would then be identified as either malnourished, leading to an intervention, or not malnourished, resulting in no intervention or continued standard care. Another design could utilize all types of diagnostic assessments for "at-risk" patients, given that these assessments are non-invasive, and then randomize malnutrition interventions based on just one of these assessments. This would provide insight regarding the clinical course for patients who are false negatives and any potential harms of using specific tools.*"

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Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 1 (cont'd)	General Comments (cont'd)	(comment above)	Since hospitals already vary widely in which tools they utilize, this type of study would fall well within standard of care, but provide important information on clinical effectiveness of tools. Finally, we have noted that there is significant overlap amongst tools and therefore, future research could also determine which variables have the greatest sensitivity and specificity in prospective clinical studies.
Peer Reviewer 1	General Comments	Is a potential weakness that the review seems to be largely macronutrient focused? Is there any relationship between micromineral or vitamin malnutrition and the Key questions? For example, one of the so-called dual burdens of obesity is that people may be micronutrient deficient which could decrease their ability to recover from a stress like hospitalization or disease.	Thank you for your comment. Yes, the focus of our report is on macronutrients. Micromineral and vitamin malnutrition were out of scope and not included in the review protocol given differences in screening, diagnosis, and treatment of specific micromineral and vitamin malnutrition compared to macronutrient malnutrition.
Peer Reviewer 1	Methods	Also feel this section is excellent in content delivery, clarity and writing. The figures and tables are very helpful.	Thank you for your comment and careful review of the report.
Peer Reviewer 1	Methods	Again, the only issue is this problem with KQ2. Could this problem with the existing studies have been discovered before KQ2 was finalized (e.g., through evidence scans)?	Thank you for your comment. We agree that scoping could have been helpful to identify the sparse evidence; however, in this case, the Agency for Healthcare Research and Quality (AHRQ) funded a systematic review only. However, our team made many efforts to identify all possible studies to address these question in a rigorous manner. For instance, we included studies outside of the US where screening is not mandated; therefore, RCTs with appropriate controls could have been found. Additionally, even despite the screening mandate, U.S. trials could have screened all patients, but randomized at-risk patients to diagnostic assessments versus control group to determine effectiveness of diagnostic assessment tools. However, we found no studies with this design.
Peer Reviewer 1	Results	In my opinion the amount of detail presented in the results section is appropriate and the characteristics of the studies are clearly described?	Thank you for your comment and careful review of the report.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 1	Results	It is unclear how many "trained reviewers" we assigned to extract data from each article was extracted independently and whether separate data tables were available for the review team to go over when potential discrepancies were identified. Would recommend increasing the detail to become more transparent about that process.	We appreciate your comment and have revised the text in the Methods section describing data abstract as follows: *"A single trained reviewer extracted the relevant data from each included article into evidence tables. A second member of the team reviewed all data extractions for completeness and accuracy. Discrepancies were resolved through team discussion."*
Peer Reviewer 1	Results	I think a strength is that key messages ARE explicit and applicable, and the figures, tables and appendices were quite helpful? I did not see any studies that were missing or inappropriately included.	Thank you for your comment and careful review of the report.
Peer Reviewer 1	Results	Although the methods are quite clear as to what is meant by Nutritional Stores, that is not the phrase I would use for assessments of tissue masses. Loss of muscle is obviously key in catabolic situations, but both that and things like micronutrient status (vitamins and microminerals) are what I think about when nutritional stores or status are brought up. I felt that was a missed opportunity, but don't know if data are available.	Thank you very much for your comment. We agree that micronutrient deficiencies are not currently captured by available malnutrition tools and were therefore considered out of scope for this project.
Peer Reviewer 1	Discussion	The implications of the findings and limitations are clearly stated along with the limitations. I did not feel any key data was omitted.	Thank you for your comment and careful review of the report.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 1	Discussion	I did find the call for research on the effectiveness of malnutrition screening confusing though. In the beginning of the document (ES-3, line 37-43) and on P47... "First, is the need for controlled trials that assess the clinical utility (or effectiveness) of malnutrition screening and diagnostic assessment. Understanding downstream consequences of malnutrition screening, including subsequent diagnostic assessment, management, and clinical outcomes is extremely important." OK that makes sense. But then it continues "given that hospitals are mandated to provide nutrition screening for all hospitalized patients within 24 hours of admission." OK so if one is required to do the screening that means a control group that ARHQ would require to use such data would be illegal? It would be helpful to identify what kind of research is needed in this space in the writers' opinion. Is it head to head comparison of screening approach A vs B. Even in this case there is not "control" group.	Thank you for your comment. Although screening is required by The Joint Commission in the US, our review searched for and included trials from other countries where screening is not mandated and therefore could be conducted. However, we acknowledge that this type of trial would be suboptimal given the current standard of care in which all patients should be screened. Therefore, we have added language describing a more feasible trial which would study the effectiveness of diagnostic assessment tools: Section on KQ2 ,: *"Studies that would most directly inform KQ2 would randomize hospitalized patients to a measurement tool vs. no measurement tool (See Figure 2 in the Methods section). However, in the US, hospital accreditation by The Joint Commission mandates screening. This existing mandate presents clear pragmatic challenges to randomizing U.S. patients to screening vs. no screening. Future trials could still randomize patients to different screening tools to assess the impact of various tools on clinical outcomes. Ideally, a study could screen all patients and randomize "at-risk" patients to SGA, no diagnostic assessment, or another tool (e.g., GLIM). Participants in both of these groups would then be identified as either malnourished, leading to an intervention, or not malnourished, resulting in no intervention or continued standard care. Another design could utilize all types of diagnostic assessments for "at-risk" patients, given that these assessments are non-invasive, and then randomize malnutrition interventions based on just one of these assessments. This would provide insight regarding the clinical course for patients who are false negatives and any potential harms of using specific tools."*

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Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 1 (cont'd)	Discussion (cont'd)	(comment above)	This is also elaborated in the Discussion under "Limitations and Suggestions for Future Research" with the following edits/additions: *For example, a study could screen hospitalized patients as mandated by the Joint Commission, and further assess at-risk patients with each of these diagnostic assessment tools; results of one diagnostic assessment tool could then be used to randomize patients (i.e., those diagnosed with malnutrition) to nutritional interventions. This would provide better understanding of the clinical course for patients who test negative by various diagnostic assessments and provide insights on potential harms of using specific tools. Furthermore, given significant overlap in the variables utilized in the tools, future research could also support identification of which variables have the greatest impact on sensitivity and specificity in prospective clinical studies."* Since hospitals already vary widely in which tools they utilize, this type of study would fall well within standard of care, but provide important information on clinical effectiveness of tools. Finally, we have noted that there is significant overlap amongst tools and therefore, future research could also determine which variables have the greatest sensitivity and specificity in prospective clinical studies.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 1	Discussion	As an institute that hopes to conduct research, I would have appreciated more guidance on what kind of research designs would be helpful.	We have revised our discussion section to provide more guidance on research designs that could meet the identified gaps in research. Specifically, the section Limitations and Suggestions for Future Research now includes the following language: "*One way to indirectly address this is to determine if one measure—SGA, imaging modalities, or the new GLIM criteria—better captures clinically important malnutrition. To assess which measure is more effective, one could envision a multi-arm clinical trial that compares multiple tools and techniques. For example, a study could screen hospitalized patients as mandated by the Joint Commission, and further assess at-risk patients with each of these diagnostic assessment tools; results of one diagnostic assessment tool could then be used to randomize patients (i.e., those diagnosed with malnutrition) to nutritional interventions. This would provide better understanding of the clinical course for patients who test negative by various diagnostic assessments and provide insights on potential harms of using specific tools. Furthermore, given significant overlap in the variables utilized in the tools, future research could also support identification of which variables have the greatest impact on sensitivity and specificity in prospective clinical studies.*"
Peer Reviewer 2	Introduction	Suggest considering using the WHO definition of malnutrition at the beginning of the background. Then discuss etiologies of malnutrition that are particularly relevant to adult elderly patients admitted to the hospital.	Thank you for your comment. We revised the Introduction to include reference to the WHO definition of Malnutrition. We do include a brief discussion of etiologies that apply to a broad population of hospitalized patients including elderly.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 2	Methods	In KQ1 - this question would be more specific and perhaps have more significant results if it said "What is the association between screened at risk for malnutrition and diagnosed with malnutrition and clinical outcomes among hospitalized patients? Otherwise, patients who are "at risk" but may not have malnutrition could be entered into the analysis. People at risk but not with malnutrition may have different clinical outcomes than those who have malnutrition. I understand that part a of this helps to define this, but I think a more specific question would be clearer.	Thank you for your comment. We agree that rewording the question could have helped to clarify the distinction between screened at risk and diagnosed with malnutrition. We did organize the findings for key question 1 based on the tool -- screening vs. diagnostic--used to categorize patients with malnutrition. This allows readers to identify patients at risk vs diagnosed. To add further clarity, we have revised the language used to describe the findings of KQ1 as the reviewer suggests in subsequent comments to better clarify risk vs. diagnoses.
Peer Reviewer 2	Results	Figure 3 is very clear and helpful.	Thank you for your comment and careful review of the report.
Peer Reviewer 2	Results	The sentence (page 27, line 41) "Many studies used screening tools.....to diagnose patients with malnutrition" seems incorrect. Could you instead say "Many studies used screening tools....to categorize patients"?	We have changed diagnosed to categorize as suggested.
Peer Reviewer 2	Results	Page 29 the first key point again seems inaccurate - instead of "diagnosed with malnutrition (using NRS-2002)" wouldn't you say "screened at risk (using NRS-2002)...compared to hospitalized patients not at risk for malnutrition"	We have changed the text to read "screened at risk."
Peer Reviewer 2	Results	Page 30 line39 - could also discuss whether or not studies controlled for the systematic pathophysiological response by controlling for an acuity measure (Charleston comorbidity, etc..).	We appreciate your comment. We did try to point out when authors of reviews included as evidence for KQ1 reported on the impact of controlling for important outcomes, such as severity of illness or systemic pathophysiological response. However, for the most part, authors only indicated if studies controlled for important confounders and provided adjusted estimates of effects, but did not provide detail on how specific confounders impacted findings.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 2	Results	Page 38 line 6 or 7 - I think adding a sentence that chronic conditions with an underlying condition of inflammation or oxidative stress have the potential for increased risk of malnutrition - HF, COPD, cancer, CKD, IBD, etc... all of these have the commonality of inflammation which increases catabolism of amino acids in lean body mass and thus can ultimately reduce functionality. Then go into the example of HF...	We have revised this section of page 38 to include the following text: "*Malnutrition is a consequence, complication, and cause of deterioration of many chronic illnesses. Chronic illnesses with an underlying condition of inflammation or oxidative stress have potential for increased risk of malnutrition because inflammation increases catabolism of amino acids in lean body mass and can ultimately reduce functionality. For instance, patients with heart failure (HF)-related malnutrition often enter a vicious cycle of undernutrition, inflammation, and cachexia*".
Peer Reviewer 2	Results	Page 38 line 19 - seem to be comparing apples to oranges with the prevalence data - MNA is a diagnostic tool and GNRI is a screening tool.	Thank you for your comment. Our intent was not to compare the tools ability to measure prevalence, but to just establish that prevalence can vary depending on the tool used to measure it. We have removed language suggesting a comparison between tools.
Peer Reviewer 2	Results	Line 35 perhaps add the clarified "...also demonstrated that being at risk for malnutrition may be ..."	We have revised the text as suggested.
Peer Reviewer 2	Results	Page 49 lines 3-8 - this paragraph along with the KQ2 gaps are very important and I hope can be highlighted strongly in this report. The use of serum albumin as a definition for malnutrition can no longer be supported in research in this area.	Thank you for your comment. We added an additional note in the discussion (section on Limitations and Suggestions for Future Research, subsection on Effectiveness of Measurement Tools, page 50) to emphasize this point. "*As noted, many studies identified malnutrition based only on biometrical measures, such as serum albumin levels, BMI, and weight, despite consensus that albumin and BMI should not be used to define malnutrition in practice or research.*"
Peer Reviewer 2	Results	Again page 51 results on mortality are very important worth highlighting strongly. It might be important to identify cost effective studies as important going forward.	Thank you for your comment. We agree that the results on mortality are important to highlight, and have done so in our Main Points overview in the Evidence Summary. Although cost-effectiveness of the interventions is important, it is outside the scope of our review
Peer Reviewer 2	Discussion	The First paragraph on page 56 is perfect and sets the stage for continuing conversations, research, and work in the area.	Thank you for your comment and careful review of the report.

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Peer Reviewer 2	Discussion	I strongly recommend the removal of the second paragraph; it does not reflect the evidence which highlights SGA as the tool which has the most evidence behind it and is a reliable and valid diagnostic tool. The GLIM framework is promising but untested and this report is about the evidence that currently exists. This is emphasized by lines 10-12 on page 58 which states "However, when we evaluated this body of evidence using criteria aligned with current recommendations for screening and diagnosis established by the GLIM taskforce (2016), we found a sparse evidence base." Much like I suspect the NFPE was omitted due to lack of evidence and validity, the GLIM should be similarly treated unless there is a evidence based rational for including.	Thank you for your comment. Our Subject Matter Experts and Technical Expert Panel felt that SGA is considered a semi-gold standard and therefore this paragraph was left in place. Along those lines, we did not find studies for KQ2 in which SGA was used as a reference standard to assess impact on clinical outcomes. This indicates that the clinical validity of tools is not currently being assessed against SGA either.
Peer Reviewer 2	General Comments	I am worried that the exclusion of studies using parenteral and enteral nutrition excludes interventions in a more severely malnourished population and thus a very important group within the hospital. This seems a weakness to me but perhaps it can be framed as an important gap that needs to be filled.	We agree that patients undergoing parenteral and enteral nutrition are an important group of hospitalized patients. Unfortunately, our literature searches did not identify any RCTs meeting inclusions criteria for KQ3 that addressed these interventions (See Table 3 in report for study selection criteria). The primary reason for not meeting inclusion criteria was not using an identified measurement tool to categorize patients as malnourished. In most of these studies treatment was initiated based solely on admission to the intensive care unit (ICU), clinical judgment, surgical status, or biometrics. We provide a further discussion about exclusion of studies addressing these interventions in the Applicability section of the Discussion.
Peer Reviewer 2	General Comments	Overall, the report is well written and covers the topic of malnutrition in hospitalized patients well.	Thank you for your comment and careful review of the report.
Peer Reviewer 2	General Comments	In general, it appears the lack of a pre-step such as a scoping review could have saved the project time and energy as the lack of evidence to answer KQ2 would have been apparent.	Thank you for your comment. This project was not funded by AHRQ for a topic refinement period.
Peer Reviewer 2	General Comments	Additionally, there appears to be some bias toward the untested GLIM framework vs tools which are tested and have evidence to support them.	We refer to the GLIM framework as it is a universal approach to promote consistency in assessing malnutrition and incorporates diagnostic criteria recommended by AND-ASPEN, which has received some testing and is similar to that used in the SGA.

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Peer Reviewer 2	Evidence Summary	In lieu of the paragraph on GLIM in the ES I might add a paragraph describing the SGA. Detsky et al have some excellent early work on the SGA and a lot of research has been done validating both the PG-SGA and the SGA in different populations both in the US and globally. This would be particularly important to describe given it is your semi-gold standard and per your results clearly has the most evidence.	The Executive Summary (ES) is intended to be a brief overview of the report, and thus the introduction and discussion sections highlight key areas. To address your comment, we have a description of the SGA in Table 1, and briefly describe how the diagnostic criteria used in the SGA incorporates core elements of the AND-ASPEN criteria as follows: "*To promote consistency in assessing malnutrition, AND and ASPEN jointly published a set of criteria for hospitals to use for diagnosing and documenting malnutrition in hospitalized patients. The criteria focus on the following six characteristics: insufficient energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, localized or generalized fluid accumulation (that may sometimes mask weight loss), and diminished functional status as measured by handgrip strength.19 These criteria are the basis of the AMC diagnostic tool listed in Table 1, and are similar to the diagnostic criteria used in other tools, such as SGA*" (pg. 4)

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 2	Introduction	Additionally, currently one of the most frequently used diagnosis tools used in the US is not found in table 2: Academy-ASPEN Indicators of Malnutrition (AAIM - formerly MCC: White et al JAND/JPEN 2012; Yakes Jimenez JAND 2021). The other very commonly used technique for diagnosing malnutrition in both ICU and general hospital settings is the Nutrition Focused Physical Exam (NFPE). I am unsure if this was excluded due to lack of data or validity which is probable.	Thank you for your comment. We have added the AND-ASPEN tool and NFPE approach to table 2, and have revised the Introduction section to further discuss the AND-ASPEN criteria and it's relation to GLIM. *"In 2016, the Global Leadership Institute on Malnutrition (GLIM) taskforce convened to develop a universal framework for assessing malnutrition.20 The GLIM taskforce recommendations were published in 2019 and include the following two-step approach to identify malnutrition: 1) screening for malnutrition using a valid tool, followed by 2) formal diagnostic assessment. The taskforce produced consensus-based criteria for formal assessment that incorporates AND-ASPEN's criteria, and includes both etiologic influences (reduced food intake, hypercatabolic burden of disease) and phenotypic presentations (non-volitional weight loss, low body mass index (BMI), low skeletal muscle mass) of malnutrition. To be diagnosed with malnutrition, patients must have at least one etiologic criterion and one phenotypic criterion."*, pg 4.
Peer Reviewer 2	General Comments	I think it would be helpful to either strongly stick to US applicable tools (such as SGA, PG-SGA, AAIM/MCC etc.) or to increase the referencing and thoughts to a more global nature - e.g. NICE guidelines, WHO etc...	We appreciate your comment. We have for the most part focused on tools that are commonly used in the US. However, some studies included in the SRs addressing KQ 1 used measures that may not be used much in the US.
Peer Reviewer 2	General Comments	A very small point but dietitian is spelled with a t vs a c in the US.	We have made the suggested spelling change throughout the report.
Peer Reviewer 2	Introduction	The Figures 1 and 2 are excellent and very helpful to understanding the KQ and the study design.	Thank you for your comment and careful review of the report.
Peer Reviewer 2	Evidence Summary	Under evidence summary on page 10, 3rd paragraph of the methods the use of MUST and SGA in this sentence makes it appear the researchers were unaware of the difference between screening and assessment/diagnosis. As the report goes on it becomes clear that they do but if the reader only goes to the Evidence Summary this may cause confusion.	To add clarity here, we only reference diagnostic tools, e.g., SGA, MNA, and delete the examples of screening tools.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 2	Evidence Summary	Similarly in the ES results section, diagnosed patients are called out - it isn't clear, when taken with the methods, whether tools like MUST were included in the papers analyzed to come to this result.	Yes, some papers used screening tools to categorize malnutrition. We clarify this by adding distinguishing diagnosed by or "screened by" followed by reference to the appropriate tool.
Peer Reviewer 2	Evidence Summary	On page 11 line 38 there is an excellent statement on the need to separate out and research both screening and diagnosis of malnutrition. Perhaps a sentence similar to this could be closer to the beginning of the ES.	We appreciate your comment, but have not revised the report as suggested given that this sentence is in the ES.
Peer Reviewer 2	Introduction	Page 14, line 40 the data in this sentence seems to need a reference.	We have added the reference affiliated with the data used in line 40.
Peer Reviewer 2	Introduction	Same page but line 55, dietary technicians also screen patients in some hospitals.	We have added dietary technicians to this sentence.
Peer Reviewer 3	General Comments	Overall I think the precision of how KQ2 is framed needs work. In the abstract and on pages ESI and ES2, you speak about nutrition screening exclusively but on ES3, you begin to talk about screening and diagnostic assessment. This report will be heavily criticized if you do not differentiate these terms and decide what KQ2 is about. It appears as if the literature reviewed was both screening and assessment and if that is the case- be consistent throughout t he document. These are two different processes, done primarily by two different groups of clinicians and while they are sometimes interchangeably, it is imperative that this report be absolutely clear in the approach.	Thank you for highlighting the importance of distinguishing screening and diagnostic assessment. Edits have been made to KQ2 and throughout the report to more clearly use the term "measurement tools" to encompass both screening and diagnostic assessment. KQ2 encompassed both types of measurement tools, and we agree that it is very important to distinguish them as outlined in Figure 2 (Methods), given they both have the potential to impact clinical outcomes.
Peer Reviewer 3	Methods	Again, the issue of whether this review is looking at screening, assessment, or both is unclear throughout both in the purpose and scope on page and in the Key Question 2 on page 6. Table 3 PICOTS also addresses diagnostic assessment.	Thank you for highlighting this. We agree and have revised the report to more consistently use the term "measurement tools" when referring to both screening and diagnostic tools, and we acknowledge throughout, and as shown in Figure 2 that these are two separate processes.
Peer Reviewer 3	Results	While the following papers are not randomized trials, they do lend additional outcomes information related to malnutrition and to diagnostic assessment tools and should at least be considered in the background information. The AND-ASPEN tool is not validated but is widely used as shown above and the GLIM tool at this point is not validated either.	Thank you for providing these references. We have used them to describe the AND/ASPEN criteria for diagnosing malnutrition in the Introduction section of the report and in Table 2 of the report.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 3	Introduction	Page 1: Background- Line 9 Ref. 3. This is not the primary reference for this data but a review- here is the primary reference Somanchi M, Tao X, Mullin GE. The facilitated early enteral and dietary management effectiveness trial in hospitalized patients with malnutrition. JPEN J Pa renter Enteral Nutr. 2011;35:209- 216.	Thank you for attaching the primary reference. We have corrected the reference in the sentence.
Peer Reviewer 3	Discussion	Again clarification around screening vs. assessment is needed. Page 46 line 23-24 This study by Skipper labeled 2020 is really a 2012 study so should remove the word recent.	We corrected the date and clarified that the systematic review by Skipper is specific to screening tools.
Peer Reviewer 3	Introduction	Page 1: Background - Lines 27-37. CLARITY FOR DATA: FROM REF 7. In 1995, The Joint Commission mandated that nutrition screening be performed within 24 hours of hospital admission, with a full nutrition assessment completed if the screen identified an at-risk patient. In table 2 below from Ref 7, the timing of the screen was on admission 39.3% Plus the 50.8% done less that 24 hours – this reflects that more than 90% of all adult patients had the screen done according to the Joint Commission mandate. Because of this mandate, screening was done for the most part and hence it would have been difficult to find a control or comparator group of those not screened for KQ2.	We have revised the text in the background section to indicate that the hospitals included in the survey appear to be following the mandate for screening as follows: "*Findings from a national survey of hospital-based professionals representing ASPEN and other professional societies in the United States suggests high compliance with the screening mandate. The findings found 36.7% of respondents reporting completing nutrition screening at admission, 50.8% reporting doing so within 24 hours, and 69% reporting documenting the findings in the medical record.*"

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 3 (cont'd)	Introduction (contd)	(comment above)	We acknowledge it would be difficult to find a non-screened control group in the United States. However, our searches of the literature were not limited to studies conducted in the U.S. Thus, we could have identified international studies assessing the impact of screening versus no screening. However, our searches did not identify any such studies, and we recognize that this type of study is suboptimal given the current standard of care in which all patients should be screened. To address this, in the discussion section, we added suggestions for other study designs that could be utilized to measure the impact of screening. Specifically, we added the following language (page 50): *"To assess which measure is more effective, one could envision a multi-arm clinical trial that compares multiple tools and techniques. For example, a study could screen hospitalized patients as mandated by the Joint Commission, and further assess at-risk patients with each of these diagnostic assessment tools; results of one diagnostic assessment tool could then be used to randomize patients (i.e., those diagnosed with malnutrition) to nutritional interventions. This would provide better understanding of the clinical course for patients who test negative by various diagnostic assessments and provide insights on potential harms of using specific tools. Furthermore, given significant overlap in the variables utilized in the tools, future research could also support identification of which variables have the greatest impact on sensitivity and specificity in prospective clinical studies."*
Peer Reviewer 3	Introduction	LINE 35-36 These findings suggest there are opportunities for hospitals to improve their processes for identifying, diagnosing, and documenting malnutrition.	While hospitals may be mostly compliant with the screening mandate, the survey data cited in this section indicates that only 26% of respondents reported that diagnosis of malnutrition was based on nutrition assessment. Given these data, we feel that the sentence on line 35-36 of the report remains accurate.
Peer Reviewer 3	Introduction	Page 2, Line 40 needs to have Ref 7 as a citation for national data.	Thank you. We have added the reference.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 3	Introduction	Page 3 Table 2- this table is now 10 years old and does not include the AND-ASPEN or the GLIM tools, would update and not just use this table. Again mixing screening and assessment here. No mention of the 2012 Academy ASPEN nutrition assessment tool. In a paper by Mogensen, 2018 NCP, see citation below, Eighty-seven percent of adult respondents indicated they are using the Academy of Nutrition and Dietetics (Academy) and ASPEN Consensus Malnutrition Characteristics for Adult Malnutrition, respectively. Overall, 97% of respondents indicated nutrition assessment documentation was completed via an EHR. Also in that study, Ninety-eight percent of adult respondents indicated a registered dietitian completed the nutrition assessment following a positive nutrition screen. This seems to differ from your statements above about nutrition screen leading to assessment.	Thank you for bringing the omission of the AND-ASPEN Consensus Malnutrition Characteristics for Adult Malnutrition tool from Table 1. We have revised the table to include reference to these criteria.. We do distinguish if tools listed in Table 1 are primarily used for screening or diagnosis, and also discuss how the components of some of the different screening vs. diagnostic assessment tools overlap. The introduction includes a reference to the survey results reported in Mogensen, 2018 (page 1) stating that the 2018 survey results were limited to ASPEN members only. Specifically, the text reads: "*In a more recent survey of ASPEN members, 89% reported that a dietitian completed a nutrition assessment once an adult patient screened at high risk for malnutrition.*"
Peer Reviewer 3	Discussion	Page 47 Lines 28-36 reflect on the need for effectiveness of a nutrition screen and then again talk about assessment need to be separated. Also talk about radiographic imaging as assessment gold standard is a bit out of scope here is the true question is about screening only.	Thank you for your comment. As suggested, we have clarified wording in KQ2 and in the Discussion relating to KQ2 to indicate that the goal was to look for effectiveness for both types of measurement tools (screening and diagnostic assessment).
Peer Reviewer 3	Discussion	Page 48, line 31-34- needs the Patel #7 reference. Would remove the information about coding variation as that was from the Patel paper with data collection that happened for that survey in about 2013. The coding picture today is much complicated with now using ICD-10 codes and the issues with CMS and coding audits.	We revised the text so that it is not linked to the Patel survey and is reflective of current issues related to the ICD-10 coding system.
Peer Reviewer 6	General Comments	General Comments: report is clinically meaningful. There is relevant discussion of the overview of the report.	Thank you for your comment and careful review of the report.
Peer Reviewer 6	Introduction	Introduction: There is relevant discussion of the background, measures, and preliminary work that underpinned this discussion. Limitations are large, but well documented	Thank you for your comment and careful review of the report.
Peer Reviewer 6	Methods	Methods: Page 20 Line 4, there is a space missing between the period and the next letter. Methods are clear, logical, and fully specified. PICOTS appropriate. Search criteria appropriate and logical.	Thank you, space error corrected.

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Peer Reviewer 6	Results	Results: Details appropriate for an SR. Key messages are clear and supported by the evidence. No glaring absences on studies.	Thank you for your comment and careful review of the report.
Peer Reviewer 6	Discussion	Discussion/ Conclusion: Clear future research. Findings reflect the state of the previous research and limitations of the results. Clear implications and description of the issues related to lack of standard descriptions.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	General Comments	The report does a comprehensive job of reviewing the key questions around malnutrition and clinical outcomes.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	General Comments	The report is clinically meaningful and the key questions are articulated well.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	Introduction	Page 2 Table 1 - I think it's important to consider the work already done with the development of these 4 eCQMs. There should have been a fair degree of feasibility and reliability testing of the elements needed for these measures (e.g. nutrition assessments and their findings) so as other measures are considered it's reasonable to think that data is readily available in the EHR despite differences in how organizations are capturing that information or what tools they might be using.	Thank you for your comment. We agree that it is important to consider the work that has already been done regarding the measures currently being considered by CMS. We reference the CMS documents that describe the 4 eCQMs and the more recent composite measure based these eCQMs. Thus, readers can better understand the context of these measures.
Peer Reviewer 7	Methods	Inclusion/exclusion criteria were reasonable.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	Methods	The search strategies were stated and logical in the Appendix.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	Results	Results were appropriately detailed and articulated well.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	Results	Each key question was comprehensively addressed.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	Discussion	Implications stated on page 48 are clear.	Thank you for your comment and careful review of the report.
Peer Reviewer 7	Discussion	I think there are questions related to the association between readmissions and malnutrition-related interventions.	We appreciate your comment, and agree that the relationship between hospital readmission and malnutrition-related interventions may not be straightforward and may require additional inquiry beyond the scope of this report.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 5	General Comments	Report is clinically meaningful. The value is the confirmation that malnutrition (using commonly available measurement tools) is associated with poor clinical outcomes and that some interventions improve clinical outcomes among patients who are diagnosed with malnutrition, specifically hospital initiated specialized nutrition care and increased protein intake likely reduce mortality compared to usual care.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	General Comments	Furthermore, identification of knowledge and research gaps will be immensely useful for the nutrition research community at large -- and hopefully this report will stimulate funding opportunities to establish clinical utility/effectiveness of nutrition screening and diagnostic nutrition assessment and establishment (validation) of a gold standard reference.	Thank appreciate your comment, and hope that the research gaps identified in this report are used to further research in this area.
Peer Reviewer 5	Discussion	The specific recommendation on page 47 (last paragraph) for a proposed research design is extremely valuable.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Introduction	Succinct. Captures historical approach and limitations to malnutrition diagnosis.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Introduction	Up to date with respect to Academy of Nutrition and Dietetics (AND) and American Society for Parenteral and Enteral Nutrition (ASPEN) consensus criteria, clinical quality measures as well as most recent Global Leadership Institute on Malnutrition (GLIM) taskforce framework.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Introduction	Commonly available measurement tools for screening and malnutrition diagnosis comprehensively described in Table 2.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Methods	Methodology clearly described.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Methods	Comprehensive search strategy.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Results	While there is some duplication with respect to results and key messages, this reviewer believes they deserve frequent mentioning to underscore the limitations in malnutrition screening and diagnosis, the lack of appropriate control groups in much of the existing research, and the difficulty evaluating outcomes due to lack of comparative gold standard tools.	We appreciate your comment.

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Peer Reviewer 5	Discussion	Major findings are clearly stated.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Discussion	Limitations are adequately described.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Discussion	Literature review is comprehensive.	Thank you for your comment and careful review of the report.
Peer Reviewer 5	Discussion	Heart of report is the section on future research and agree that it is easily translated into new research -- important to have funding opportunities tied to these research and knowledge gaps.	We hope that the research gaps identified in this report will lead to opportunities and funding of needed research.
Peer Reviewer 5	Discussion	On page 48 in section titled "Implications for Clinical Practice, Education, Research of Health Policy", final paragraph -- discussion regarding ICD, Revisions 9 codes are mentioned for the first time. I see no other discussion of ICD coding in entire report. The discrepancies in practice with regard to proper coding and lack of consensus approach (although improving) in the field of clinical documentation is a real problem both for clinical practice and research (especially to retrieve data in EMRs). This reviewer believes some expansion on the topic (perhaps as a limitation) is necessary.	We have revised our discussion about coding on page 48 to include a brief discussion of how there are discrepancies between diagnostic criteria used in practice and ICD-10 codes for malnutrition.
Peer Reviewer 4	General Comments	General Comments: Overall, this paper reflects a much-needed Herculean effort to highlight screening discrepancies and the need to unify these clinical practices. As many clinicians can appreciate, the highly variable, sometimes overlapping definitions of malnutrition coupled with different nutrition screening tools have plagued this field for decades. As a result, it is difficult to evaluate outcomes or to demonstrate clinical progress. The results of this review are eye-opening, highlighting the limitations of our disjointed approach to screening and malnutrition.	Thank you for your comment and careful review of the report.
Peer Reviewer 4	General Comments	Is the report clinically meaningful? Extremely. While the majority of findings rely on predominantly weak evidence, this paper draws attention to vital gaps in our practices and will ultimately help clinicians realize why we need to make improvements in our screening procedures.	Thank you for your comment and careful review of the report.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Discussion	Within the summary statements and/or conclusive remarks, it might be beneficial to include something along the lines of 'without valid baseline assessments, we cannot measure changes over time (improvements or declines.)'	Thank you for your comment. We have clarified in the Discussion that the use of imaging to assess body composition and muscle mass as indicators of nutrition stores is most beneficial when serial imaging is utilized to track changes over time. In the section "Limitations and Suggestions for Future Research" subsection "Defining Malnutrition" the sentence now reads: "*For the purposes of this report, we selected, with input from our TEP and SMEs, imaging modalities to assess body composition (i.e., nutrition stores) as the gold standard and SGA as a semi-gold reference standard. However, use of imaging specifically to assess malnutrition is infrequent and has important limitations, including cost, radiation exposure, and need for serial studies.*"
Peer Reviewer 4	Methods	Are the target population and audience explicitly defined? The target population is clear (i.e., hospitalized adults); however, the target audience could use better defining. Although we would like to believe Diet Technicians and/or Registered Dietitians drive screening efforts, a better approach might be to acknowledge that a number of different clinicians are responsible for screening and for diagnosing malnutrition. At some institutions, DTRs screen and at others, it is a nursing responsibility. Identifying a broader audience may also help to dispel some of the antiquated methods to diagnose malnutrition. Based on my experience as a peer reviewer, serum biomarkers are still being used as surrogate markers of nutritional status and oftentimes the lead author is almost always a physician. We need to acknowledge and recognize we still have work to do with regard to broad clinical education efforts. Engaging an array of clinicians in the writing (medical, surgical, nursing, pharmacy, etc.) might be one way to help strengthen these efforts.	Thank you for your comment. As noted, the target population is hospitalized adults. The target audience for this report is quality measure developers. Of course this information is also useful for clinicians; we have utilized the term "clinicians' more broadly throughout the report to be more inclusive. We also have emphasized in the Discussion that serum biomarkers, such as albumin, should no longer be utilized to define malnutrition, in the section on "Effectiveness of Measurement Tools": *"As noted, many studies identified malnutrition based only on biometrical measures, such as serum albumin levels, BMI, and weight, despite consensus that albumin and BMI should not be used to define malnutrition in practice or research. Thus, future studies assessing the impact of malnutrition on outcomes or evaluating malnutrition-focused interventions should use known tools to establish malnutrition status."*

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Methods	Are the key questions appropriate and explicitly stated? Yes, these questions are clear and highly relevant to practicing clinicians working with hospitalized patients. At first, I thought these questions were too ambitious, but the approach is scientifically sound and comprehensive. This review provides a state-of-the-art perspective and is critical to moving this area forward.	Thank you for your comment and careful review of the report.
Peer Reviewer 4	Introduction	Introduction: *Overall, well written conveying the novelty and clinical importance of this work.	Thank you for your comment and careful review of the report.
Peer Reviewer 4	Introduction	Pg. 13, lines 16-17: Suggest changing to "inadequate intake of macro and micronutrients....leading to nutritional imbalances, severe weight loss and adverse body composition changes (e.g., muscle wasting)."	Thank you for your comment. The revised sentence now reads *"These conditions are often associated with inadequate intake of macro and micronutrients, leading to nutritional imbalances, severe weight loss, and adverse body composition changes (e.g., muscle wasting). "*
Peer Reviewer 4	Introduction	Pg. 13, line 25: Suggest changing to, "Patients categorized with "protein-calorie malnutrition" using XYZ tool accounted for..."	Thank you for your comment. We recognize that the sentence that the reviewer is referring to is confusing. Since it does not add to the context of the discussion, we felt it best to delete the sentence.
Peer Reviewer 4	Introduction	Pg. 15, Table 2: For the SNAQ tool, suggest including if this was the tool designed for older patients 65+. Looks like there are a couple of versions now. For the MNA, suggest specifying the minimal age for Geriatric. Consider using Adults and then specifying the age.	Thank you for your comment. All versions of the SNAQ and MNA tools were eligible for inclusion in this report, and differences in tools were extracted as needed. For KQ1, study designs were limited to systematic reviews and detailed demographic data were not always available. For KQ3, characteristics of the studies, tools, and patients (such as age) are captured in Table D-3. Therefore, Table 2 was not revised as it is meant to show a broad overview of types of measurement tools included in this report.
Peer Reviewer 4	Introduction	Pg. 16, lines 4-8: Making diet changes (i.e., 2 gram sodium to general diet) and initiating oral nutrition supplements (ONS) are other common nutrition interventions worth noting. However, prescribing ONS and patients consuming them are two different behaviors worthy of further consideration.	As suggested, we added "initiating oral nutrition supplements (ONS)" and "diet changes" to the paragraph specified in the introduction.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Methods	Methods: Pg. 17, line 34: Again, I want to raise concern over the idea of using radiographic imaging as an "acceptable" gold standard. Please refer to my previous concerns regarding these different concepts on Pg. 11, lines 49-50.	We appreciate your comment. We have modified our terminology to clarify that imaging is a gold standard for body composition and muscle mass (i.e. nutrition stores) that can be used to assess malnutrition, using serial imaging with the following sentence in the Discussion and Executive Summary: "*For our review, we considered imaging modalities as the gold standard for assessing body composition and muscle mass, and SGA as a semi-gold standard for malnutrition. However, use of imaging specifically to assess malnutrition is infrequent, and has important limitations, including cost, radiation exposure, and need for serial studies.*"
Peer Reviewer 4	Methods	Pg. 19, Figure 1: Suggest clarifying "Hospital mortality" in the outcomes box.	Thank you for your comment, however, no changes were made to the report. We use the term mortality as opposed to hospital mortality because studies may report mortality either during or after an inpatient stay.
Peer Reviewer 4	Methods	Pg. 19, Figure 2: Ecosystem? Consider Study Design Schematics or some other word here. The issue of unscreened hospitalized patients merits reconsideration here. Please refer to my concerns regarding this points in the Discussion.	Thank you for this suggestion. We have revised this to "Schematic"
Peer Reviewer 4	Methods	Pg. 20, line 10. Suggest eliminating 'All' prior to disagreements to help minimize tone. Alternatively, if retained, how many disagreements were there? What was the content? How were they resolved exactly? Etc.	Thank you for your comment. As suggested, we have removed "All" prior to disagreements.
Peer Reviewer 4	Methods	Pg. 21, Table 3: KQ3: Suggest eliminating protein-calorie prior to malnutrition? It is somewhat dated terminology. If retained, then defend the use of this term.	Thank you for the comment. As suggested, we eliminated "protein-calorie" prior to malnutrition.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Methods	Pg. 21, Table 3, Intervention/Exposures: It seems methodologically weak to group nutrition risk and malnutrition together. For example, the risk of malnutrition could be quite low in someone who comes in for routine hernia repair. However, if there are complications and they require prolonged hospitalization, they can certainly develop acute malnutrition. Additionally, many of these nutrition risk tools do not allow patients with obesity to be classified as malnourished. This grouping approach requires some critical rationale or at least, an acknowledgement that these are different concepts but merged for statistical purposes.	We agree that patients who are at risk and malnourished have separate levels of severity which directly impact patient outcomes. However, no changes were made to the report because we note that there is a paucity of literature that specifies patient outcomes by malnutrition status. For more information, please consult Appendix G where we subgroup patient outcomes by malnutrition status as stated within studies.
Peer Reviewer 4	Methods	Pg. 22, Table 3, Outcomes: Change to gait (not gate). Was ECOG considered here? This is a common performance measure in oncology trials.	Thank you for your comment. As suggested, we have changed to "gait" and added "ECOG" as an example of functional status measures
Peer Reviewer 4	Methods	Pg. 22, Table 3: The elimination of retrospective studies is potentially problematic IF the information on nutritional status was obtained in real time. It seems wise and easily justifiable to eliminate studies where the approach to malnutrition is done retrospectively, piecing together risk factors from progress notes and screening forms. However, for studies where the information on nutritional status is sitting in a database and then analyzed later, removing these studies would be short sighted. Please assure the reader what approach was taken here to ensure all eligible studies and study designs were considered or included. The information that follows on Pg. 27, lines 31-32 is confusing [retrospective studies (except when combined with prospective studies...)]	In general, we did not include retrospective trials due to their potential for selection bias. This is specified in Table 2 (PICOTS table) and further described in the Methods appendix. However, in some cases where the authors of a systematic review addressing KQ1 included a retrospective study in a pooled analysis of mostly prospective trials, we included the findings of the pooled analysis. We provide an explanation of this, as the reviewer points out, on page 27 and also indicate in Tables 3 and 4 for what outcomes this applies.
Peer Reviewer 4	Results	Results: *Overall, well written, clear, and easy to follow and understand.	Thank you for your comment and careful review of the report.
Peer Reviewer 4	Results	Pg. 28-29, Table 4: Is there overlap between these studies regarding the investigations used in their analyses (i.e., duplicative study inclusion)? If so, this should be stated.	Thank you for your comment and careful review of the report.
Peer Reviewer 4	Results	Pg. 30, line 49: Change "elderly" to "older" here, specifying the minimum age for inclusion.	We have made the change.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Results	Pgs. 32-36, Table 5. I do not find the reporting of this table to be intuitive. Perhaps the explanation on Pg. 31, line 19 could be more descriptive. In particular, what is the difference between the evidence source and the direction of the association? Is the evidence source the document for which everything else gets compared? My apologies for not being more familiar with this format; however, if I am confused, I am sure others will be as well. This information needs to be more obvious to convey its significance to the analyses. Please explain/expound. Pgs. 40-42, Table 6: Same concerns as above.	We appreciate your comment, and revised the report to add the following text further describing the content of Tables 4 and 5: "*The table is organized by measurement tool and outcome and includes columns indicating what study provided the data (reference), findings and direction of findings (e.g., no association, increased/decreased occurrence of outcome), and strength of evidence rating.*"
Peer Reviewer 4	Results	Pg. 43, lines 12-15: The term "nutrition stores" is unclear in this question. Please clarify this terminology.	Thanks for this comment: Nutritional stores are defined in the "Methods" section, Table 3.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Results	Pg. 43, lines 30-32 and 46-47: This concept is methodologically troubling. From an epidemiologic standpoint is very clear why this is needed (i.e., to provide an unexposed comparator); however, this is where science needs to be practical and recommendations need to be 'real.'. Nutrition screening is mandated by the Joint Commission on Accreditation of Healthcare Organizations (as stated on Pg. 57, lines 18-19); therefore, this recommendation is impractical and reads as 'out of touch.' Unless there are exceptions to this rule, collecting data on unscreened patients will not happen [...] I would recommend the authors rethink the practicality of this key point. (Pg. 44, lines 11-16, 27-28) Pg. 44, lines 28-37: Are the authors suggesting that patients deemed malnourished be randomized to receive nutrition intervention or no nutritional intervention to assess differences in outcomes? If I am reading this correctly, this seems highly unethical. Please clarify to avoid further confusion and/or to convey the ethical dilemma of this 'ideal' design.	Thank you for your comment. Although screening is required by The Joint Commission in the US, our review searched for and included trials from other countries where screening is not mandated and therefore could be conducted. However, we acknowledge that this type of trial would be suboptimal given the current standard of care in which all patients should be screened. Therefore, as outlined and revised to emphasize in this report, a more feasible trial would study the effectiveness of diagnostic assessment tools. We have modified the *Section on KQ2* Summary of Findings, and the Discussion to include the following paragraphs *"Studies that would most directly inform KQ2 would randomize hospitalized patients to a measurement tool vs. no measurement tool (See Figure 2 in the Methods section). However, in the US, hospital accreditation by The Joint Commission mandates screening. This existing mandate presents clear pragmatic challenges to randomizing U.S. patients to screening vs. no screening. Future trials could still randomize patients to different screening tools to assess the impact of various tools on clinical outcomes. Ideally, a study could screen all patients and randomize "at-risk" patients to SGA, no diagnostic assessment, or another tool (e.g., GLIM). Participants in both of these groups would then be identified as either malnourished, leading to an intervention, or not malnourished, resulting in no intervention or continued standard care. Another design could utilize all types of diagnostic assessments for "at-risk" patients, given that these assessments are non-invasive, and then randomize malnutrition interventions based on just one of these assessments. This would provide insight regarding the clinical course for patients who are false negatives and any potential harms of using specific tools."*

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Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4 (cont'd)	Results (cont'd)	(comment above)	This is also elaborated in the Discussion under "Limitations and Suggestions for Future Research" with the following edits/additions: *"To assess which measure is more effective, one could envision a multi-arm clinical trial that compares multiple tools and techniques. For example, a study could screen hospitalized patients as mandated by the Joint Commission, and further assess at-risk patients with each of these diagnostic assessment tools; results of one diagnostic assessment tool could then be used to randomize patients (i.e., those diagnosed with malnutrition) to nutritional interventions. This would provide better understanding of the clinical course for patients who test negative by various diagnostic assessments and provide insights on potential harms of using specific tools. Furthermore, given significant overlap in the variables utilized in the tools, future research could also support identification of which variables have the greatest impact on sensitivity and specificity in prospective clinical studies."* Since hospitals vary widely already in which tools they utilize, this type of study would fall well within standard of care, but provide important information on clinical effectiveness of tools. Finally, we have noted that there is significant overlap amongst tools and therefore, future research could also determine which variables have the greatest sensitivity and specificity in prospective clinical studies. With regard to randomizing patients to different interventions, this is outside scope of KQ2 which addresses screening and diagnosis. In KQ 3, we considered evidence from RCTs comparing nutritional interventions to standard of care and appeared to meet ethical standards.
Peer Reviewer 4	Results	Pg. 48, line 38-39: Can the authors provide a definition of specialized nutrition care, as defined by the study authors? As written, this is ambiguous. Please change "protein intake" to "protein provision" since simply providing supplements does not mean patients consume them.	We define specialized nutrition care as "consultation with a dietician to set goals for protein and caloric intake". For more information about individual studies, please consult Appendix D-3. As suggested, we changed "protein intake" to "protein/calorie provision".

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Results	Pg. 48, line 43/44: Suggest changing "sweet or salty high-protein liquid" to 'liquid oral nutrition supplement' or 'high calorie and/or high protein' liquid supplement.	We agree with this wording change, and changed the phrase "sweet or salty high-protein liquid" to *"high protein/high calorie liquid supplement."*
Peer Reviewer 4	Results	Pg. 49, Table 8: Suggest changing to protein/calorie supplement since every gram of protein provides 4 calories per gram.	Thank you for the comment. As suggested, we changed the phrase to "protein/calorie supplement."
Peer Reviewer 4	Discussion	Discussion/ Conclusion: Pg. 56, lines 44-46: Likely more appropriate to say radiographic imaging is a gold standard for quantifying and evaluating body composition, specifically muscle and adipose tissues and SGA is considered among clinical experts to be a semi-gold standard for classifying malnutrition.	Thank you. The text was edited as suggested in the Discussion, p. 56. We specifically edited it as follows: "*For the purposes of this report, we selected, with input from our TEP and SMEs, imaging modalities to quantify and evaluate body composition (i.e., muscle and adipose tissues) as the gold standard and SGA as a semi-gold standard for classifying malnutrition.*"
Peer Reviewer 4	Discussion	Pg. 56, lines 51-52: "...gold standard, as sarcopenia and malnutrition reflect independent yet potentially overlapping syndromes." (See my previous comments regarding these concepts.) Pg. 56, line 56: Can the authors include some examples here? Decreased ADLs or physical functioning perhaps?	The revised version of the report no longer includes this sentence.
Peer Reviewer 4	Discussion	Pg. 57, line 17: Suggest change to, "Given the potentially detrimental effects of malnutrition...."	We have made the suggested wording change.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Discussion	Pg. 57, lines 27-36: Please revisit this concept to read more practically. As written, it discredits the authenticity and applicability of this entire report. To keep repeating this 'ideal' design when the readership knows it can never happen, reads as if the authors are out of touch. It would be best to make design recommendations given the screening requirements all hospitals must meet.	Thank you very much for your comment. Although screening is required by The Joint Commission in the US, our review searched and included trials from other countries where screening is not mandated and therefore could be conducted. However, we acknowledge that this type of trial would be suboptimal given the current standard of care in which all patients should be screened. To address this, in the discussion section, we added suggestions for other study designs that could be utilized to measure the impact of screening. Specifically, we added the following language (page 50): *"To assess which measure is more effective, one could envision a multi-arm clinical trial that compares multiple tools and techniques. For example, a study could screen hospitalized patients as mandated by the Joint Commission, and further assess at-risk patients with each of these diagnostic assessment tools; results of one diagnostic assessment tool could then be used to randomize patients (i.e., those diagnosed with malnutrition) to nutritional interventions. This would provide better understanding of the clinical course for patients who test negative by various diagnostic assessments and provide insights on potential harms of using specific tools. Furthermore, given significant overlap in the variables utilized in the tools, future research could also support identification of which variables have the greatest impact on sensitivity and specificity in prospective clinical studies."* Since hospitals vary widely already in which tools they utilize, this type of study would fall well within standard of care, but provide important information on clinical effectiveness of tools.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Discussion	Pg. 57, lines 36-38: It remains unclear what potential biases were, in fact, eliminated with this approach. Please expound.	We have included the following examples of potential biases in retrospective studies: selection bias and confounding bias. The sentence in the Discussion now reads as follows: *"Additionally, retrospective studies or studies using a historical control group were not included given their high potential for biases related to confounding effects and patient selection."*
Peer Reviewer 4	Discussion	Pg. 58, lines 47: The studies included were a mix of nutrition risk and malnutrition. Please reword this sentence to make this more accurate of the methods employed. (The MUST does not diagnose malnutrition, it assesses nutrition risk using a scoring system.) Be sure the working for the remainder of this section conveys the intermingling of these two concepts.	Thank you for the comment. As suggested, we changed the wording in Key Question 3 to accurately reflect that included patients were either screened at risk or diagnosed as malnourished.
Peer Reviewer 4	Discussion	Pg. 59, lines 5/6: Studies assessing these interventions initiated treatment based on severity of illness, clinical judgment, or surrogate... (suggest including clinical judgment here.)	Thank you for the comment. As suggested, we included "*clinical judgment*" as a reason for initiating parenteral or enteral nutrition treatment.
Peer Reviewer 4	Discussion	Pg. 59, lines 25-27: Can a strong justification, practical justification be provided here? This enables us to track outcomes by nutritional status, but also to assess change. Do patients improve, decline or stay the same? How else can we assess the impact of treatment or care without measures of change? Suggest emphasizing this point clearly and pointedly. Clinicians need to understand this is how we help to advance this area of research.	Thank you for your comment. In KQ3, we used randomized controlled trials to understand whether certain interventions on patients screened at-risk or diagnosed with malnutrition had better clinical outcomes than patients receiving standard care. From these studies, we identified the direct impact of malnutrition-specific interventions on clinical outcomes. However, in KQ2, we sought to understand the direct impact of screening and/or assessment, but there were no studies with a pre-defined comparator. Without a useful comparator, it is difficult to discern if directing care based on a screening and/or diagnostic assessment score provides better clinical outcomes than interventions that are provided regardless of an individual's nutrition status.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Discussion	Pg. 59, lines 36-44: Understand that sarcopenia, malnutrition and cachexia have different etiologies so different treatment regimens. Some treatments may overlap but it is important to understand that simply providing calories and protein will only treat those with simple malnutrition. It may have no impact on sarcopenia or cachexia. *An important point worthy of some discussion here is the notion that it is nearly impossible to tease out the disease course from nutritional decline. In other words, even if we treat the underlying malignancy, patients may still suffer from malnutrition, sarcopenia or cachexia. Even if we provide 24 hour enteral feedings over estimated energy and protein needs to patients who are critically ill, they may suffer profound muscle and fat wasting from their underlying critical diagnosis. There is a given overlap here and some acknowledgement that disentangling disease and nutritional status is complex and evolving is needed. To this end, it might be worth noting that the GLIM criteria reflect a purposeful move away from serum biomarkers. This is intentional and reflective our improved understanding of the immunology and the acute response to injury.	Thank you very much for this thoughtful point. We agree it is important to distinguish these entities, and have elaborated in the Discussion section the issue that malnutrition is often conflated with severity of illness. This language appears in the section "Defining Malnutrition" as follows: "*Although many studies have defined malnutrition using biomarkers (e.g. BMI, weight loss, serum albumin levels) experts have expressed concern that these measures are not reliable indices of malnutrition by themselves. For instance, serum albumin levels often fluctuate in response to physiological stress and other factors unrelated to a patient's nutritional status. Similarly, metrics such as BMI fail to account for variations related to gender, age, race, or body type. Other studies have used severity of disease (e.g. any intensive care admission) as a proxy for or criterion to intervene on malnutrition often without formal diagnostic assessment. Therefore, there is wide variability in how malnutrition has been identified and studied.*" Also, the following language is included in the Implications for Clinical Practice, Education, Research, or Health Policy section: "*For example, some tools may benefit from removing outdated variables, such as BMI. Such research could support the complex and evolving task of disentangling disease (i.e., severity of illness) and nutritional status.*" GLIM was a step away from utilizing these traditional definitions of malnutrition, and that it is important to disentangle disease and nutritional status as noted.

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Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Discussion	Pg. 60, Implications: It might be worth nothing that we are in a new era of the nutrition focused physical exam to help support the diagnosis of malnutrition. Data obtained from the NFPE can help to detect the etiologic and phenotypic criteria proposed by the GLIM, as well as support the physical findings needed to classify patients using SGA. Advocating clinicians perform and document their NFPE findings is another practical way to impact documentation and potentially policies. *It also might be advantageous to include very concrete ways clinicians can make a difference here. What can be done specifically to move this area of research and practice forward? Consider enumerating these so clinicians can start to engage, change practice and evolve.	Thank you for your comment. In order to address this point, we have emphasized in the Discussion that standardization of malnutrition measurement tools is important for the development of quality measures. For instance, in the section "Effectiveness of Measurement Tools" we include the following language: "*future studies assessing the impact of malnutrition on outcomes or evaluating malnutrition-focused interventions should use known tools to establish malnutrition status*".. Also, in the following section "Implications for Clinical Practice, Education, Research, or Health Policy" we include the following: "*Variations in how malnutrition is defined and measured pose a challenge for hospitals seeking to standardize processes for screening, further assessing, and documenting diagnosis of malnutrition.*"
Peer Reviewer 4	Methods	KQ3: Suggest including dietary manipulation here, if applicable. This could be accommodating food preferences, known allergens or initiating any other dietary changes (restrictions or liberations.)	We appreciate your comment. Although we do not explicitly describe dietary manipulation, the report includes studies assessing nutrition team consultation, including dietitian counseling, which often involves dietary manipulation based on an individual's dietary needs.
Peer Reviewer 4	Evidence Summary	Overall, this section is well written, pointed and clear.	Thank you for your comment and careful review of the report.
Peer Reviewer 4	Evidence Summary	Page 10, lines 30-31: Unsure why MNA is not included here.	Thank you for your comment. As suggested, we have added MNA to Table 1, which lists commonly available measurement tools.
Peer Reviewer 4	Evidence Summary	Page10, lines 43-44: Is there overlap between the studies included in the SR and these 11 RCTs?	None of the studies that addressed KQ3 overlapped or were included in the 6 SRs that addressed KQ1.
Peer Reviewer 4	General Comments	Suggested title is: "Malnutrition Screening in Hospitalized Patients: A systematic review."	We appreciate your comment, and have added the suggested text to the title of the report.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	General Comments	Structured Abstract: Suggest editing the final sentence to read, "Further research is needed to better align screening efforts and to assess and to comprehensively evaluate the clinical utility of screening for malnutrition on outcomes." Alternatively, to make this critical sentence less broad, consider making this more pointed using a 'step by step' description of what exactly is needed. The average clinician should be able to understand what exactly is needed to move this forward.	We appreciate your comment. As the ES section is intended to be brief and highlight major points from each section of the report, we did not add a step by step description here, but did include the suggested sentence in the discussion of future research needs.
Peer Reviewer 4	Evidence Summary	Page 10, line 45: this should say screened or diagnosed with malnutrition.	Thank you for the comment. As suggested, we changed the phrase to read *"screened or diagnosed with malnutrition."*
Peer Reviewer 4	Evidence Summary	Page 11, line 5/6: the use of radiographic image is not really considered a reference standard. I understand later this was a suggestion of one of the Technical Experts; however, not sure this should be included here without room to frame it.	Thank you very much for your comment. We have modified our terminology to clarify that radiographic imaging is a gold standard for body composition and muscle mass that can be used to assess malnutrition, and that SGA is a semi-gold standard
Peer Reviewer 4	Evidence Summary	Page 11, line 8: what is meant by nutrition stores? Does this refer to body weight?	Thank you very much for your comment. Please see the "Methods" section, Table 3 for the protocol's definition of nutrition stores. A reference to this table was added to this section for clarity.
Peer Reviewer 4	Evidence Summary	Page 11, line 29: insert 'body' before weight here.	Thank you for your comment. As suggested, we have added "body" before weight in this sentence.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 4	Evidence Summary	Page 11, lines 49-50: the concepts of malnutrition and sarcopenia are being intermixed here and technically, these are two different conditions. Dr. Jensen is really the expert here; however, according to talks and papers by his group, malnutrition is treatable with calorie/protein provision, whereas the treatment for sarcopenia is not so straightforward. Adequate calories and protein can be provided and yet, an individual can still have sarcopenia. It is difficult to say they are malnourished in this situation because there are likely other neurohormonal or inflammatory factors at play here.	We appreciate your comment and recognize that there are distinctions between malnutrition and sarcopenia, especially with regard to treatment. The revised version of our report no longer includes reference to sarcopenia. The section the reviewer is referring to now reads as follows in both the Evidence Summary and Discussion section: *"Second, is the need to establish an accepted reference gold standard for diagnosing malnutrition in hospitalized patients. Through discussions with our Technical Expert Panel (TEP), we recognized that there currently is no universally agreed upon gold standard for malnutrition assessment and measurement. For the purposes of this report, we selected, with input from our TEP and subject matter experts (SMEs), imaging modalities to quantify and evaluate body composition (i.e., muscle and adipose tissues) as the gold standard and SGA as a semi-gold standard for classifying malnutrition. However, use of imaging specifically to assess malnutrition is infrequent and has important limitations, including cost, radiation exposure, and need for serial studies. Consensus regarding objective measures to define a gold standard for diagnosing malnutrition are critical to advance clinical care and research. "*
Peer Reviewer 4	Evidence Summary	Page 12, line 5/6: after reading the body of the paper, I understand why increased protein intake is parsed out here. However, we need to remember that protein supplements still provide calories. As a clinician, I would advise renaming these as calorie/protein supplements. Simply calling them protein supplements brings us back to the days of "non-protein calories," when clinicians wanted to calculate needs suggesting protein calories were not part of total energy needs. We do not practice like this anymore and the use of 'protein' supplements tends to remind me of these days.	Thank you for the comment. As suggested, we changed the phrase to read "protein/calorie supplements."
Peer Reviewer 4	Evidence Summary	Page 12, line 16 or 17: suggest adding nutrition prior to treatments to make it clear the authors are referring to therapies associate with nutrition (vs. medical or surgical treatments.)	Thank you for the comment. As suggested, we changed the phrase to "nutrition prior to treatments".

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 9	Methods	Study design ecosystem Page 7): the suggestion that when a diagnostic assessment results in negative malnutrition that no intervention or standard care is applied is inaccurate; in clinical practice many patients who do not meet diagnostic assessment criteria for malnutrition receive active nutrition interventions (including specialized nutrition care) to prevent or slow the progression of malnutrition which commonly occurs in the acute care setting. Malnutrition is not a single event; it progresses on a continuum.	Thank you very much for your comment. The figure is intended to represent various schematics of study designs which could show effectiveness, rather than real-life practice. We agree that the process of screening or diagnosing a patient using a tool may not impact clinical outcomes as much as the presence of a robust nutrition program that may reach all patients, regardless of which tool was (or was not) utilized. This indicates the evidence gap that the effectiveness of such measurement tools alone is not known (KQ2).
Public Comment, Robin Paynter	Methods	Draft review METHODS SECTION reporting does not follow current PRISMA/PRISMA-S and EPC Content Guidance – see excerpted section below from the EPC Librarians' Systematic Review Search Reporting Template (available via the EPC Librarians folder on the Secure Site): AHRQ REVIEW - METHODS SECTION (EPC Systematic Review Content Guidance) "Much of what appeared in a standard Methods chapter should now be moved to appendices… Provide a high-level summary of search strategy" Sample methods section text: The methods for this systematic review followed the AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Reviews (available at https://effectivehealthcare.ahrq.gov/topics/cer-methods-guide/overview) and the PRISMA1 and PRISMA-Searching2 reporting guidelines. We conducted a comprehensive literature search in January 2017 (updated February 2018), searching MEDLINE ALL, Embase.com, Cochrane Central Register of Controlled Trials, CINAHL, ClinicalTrials.gov and WHO ICTRP. See the review protocol [insert link] and the Methods Appendix [insert link] for full details.	We revised the text describing the search strategy to better fit the current reporting guidelines.

Commentator & Affiliation	Section	Comment	Response
Public Comment, Robin Paynter	Appendices	Draft review APPENDIX A section reporting does not follow current PRISMA/PRISMA-S and EPC Content Guidance – see excerpted section below from the EPC Librarians' Systematic Review Search Reporting Template (available via the EPC Librarians folder on the Secure Site). PRISMA 2020 Checklist "Present the full search strategies for all databases, registers and websites, including any filters and limits used."	Thank you. We have revised the report to meet current reporting criteria.
Public Comment, Robin Paynter	Appendices	EPC Systematic Review Content Guidance "Authors should include the elements below when they are important to understanding the methodological approach. Not all elements need be included in all reports: Explain the literature search strategy (e.g., names of required and additional databases, inclusive dates [months/years], including any interim updates of searches); Specify details when different searches were done for different key questions; Mention role of librarian and/or information specialist and, if true, that searches were peer reviewed; Include exact search strings, all search strategies must be reported; Describe gray literature searches, if any; Mention hand searching reference lists, journal tables of contents; Mention consulting or contacting content experts to help identify relevant literature, if that step was done; Describe acquisition and use of FDA documents, Supplemental Evidence and Data for Systematic Reviews (SEADS), Federal Register Notice, etc. (Include dates of portal or submission period.); Describe use of trial registries, if any; Justify any publication restrictions (e.g., language, search dates); and no tables may be used per ADA requirements.	Where appropriate, we have revised to add further explanation.
Public Comment, Robin Paynter	Methods	The reporting aspects are the main issue to be resolved, please let me know if the reporting template language is unclear. The Embase.com search strategy looks good but can't comment on the others since they were not published. Was the search strategy peer reviewed in house? I thought ECRI Librarians were doing that. If so, please do mention. In the final, I would also encourage you to note the search was conducted by a librarian (research shows it does make a difference!).	We appreciate your comments, and have made suggested changes in Appendix A describing the Search Strategy.

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Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 8	General Comments	Many thanks for the huge effort to compile this report. The report is clinically meaningful and the target population well defined.	Thank you for your comment and careful review of the report.
Peer Reviewer 8	Evidence Summary	My major general remark concerns KQ2. I do not agree that KQ2 is a justified key question, due to the following reasons:All medical treatment is based on recognition and diagnosis of the target condition. History has learned us that malnutrition is notoriously under-recognized and undertreated in hospital clinical practice, and interestingly so even when legal authorities mandate screening for the condition. The reason for instituting screening was to assure that patient's nutritional status was considered at all.To question screening, by requiring RCTs with non-screening/non-assessment vs. screening/assessment on clinical outcomes, is to jeopardize progress of the last 40 years, as it would risk to "push the skeleton back into the hospital closet" (Butterworth 1974).We all agree that relevant knowledge on medical issues is not only generated by controlled trials. The GRADE system is emphasizing that well-performed observational studies provide knowledge of high quality with usually a better external validity than RCTs. This is especially so when the issue is more complex than to test one substance against placebo for a specified disease (which of course is complex enough).	Thank you for your comment. Although screening is required by The Joint Commission in the US, this review searched and included trials from other countries where screening is not mandated and therefore could be conducted. However, we acknowledge that this type of trial would be suboptimal given the current standard of care in which all patients should be screened. To address this, in the discussion section, we added suggestions for other study designs that could be utilized to measure the impact of screening. Specifically, we added the following language (page 50): "*To assess which measure is more effective, one could envision a multi-arm clinical trial that compares multiple tools and techniques. For example, a study could screen hospitalized patients as mandated by the Joint Commission, and further assess at-risk patients with each of these diagnostic assessment tools; results of one diagnostic assessment tool could then be used to randomize patients (i.e., those diagnosed with malnutrition) to nutritional interventions. This would provide better understanding of the clinical course for patients who test negative by various diagnostic assessments and provide insights on potential harms of using specific tools. Furthermore, given significant overlap in the variables utilized in the tools, future research could also support identification of which variables have the greatest impact on sensitivity and specificity in prospective clinical studies.*"

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 8	Methods	For this reviewer the answers generated on KQ1 and KQ2 clearly justify the screening process.	Thank you for your comment. The goal was to define effectiveness of using screening or diagnostic tools by studying the impact of these tools on clinical outcomes. If studies were conducted, it would have provided helpful information on whether specific tools lead to better outcomes, given that there is wide heterogeneity in the application of various tools in hospitals. All screening tools should be validated against a diagnostic gold standard in order to determine sensitivity and specificity, and then studied in clinical practice to determine clinical effectiveness. For example, colonoscopy is the diagnostic gold standard for colon cancer screening, but many screening tests including various different stool tests are validated by comparison to a gold standard (colonoscopy), despite the fact that colonoscopy is an invasive procedure. For malnutrition, SGA is considered a semi-gold standard for diagnostic assessment for malnutrition, is non-invasive, and it would be low risk to randomize patients to SGA vs. a different diagnostic assessment (like MNA) to determine effectiveness of that tool.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 8	Methods	There are several diagnostic procedures in medicine that we accept due to thorough experience and numerous observations (and initially not generated by controlled trials), because we find them necessary for the treatment of many ominous conditions. A close example is the practice to screen/measure blood pressure; should we today require controlled trials on the measurement of blood pressure on clinical outcomes? ? The likely reason that no studies were found addressing KQ2 on screening, assessment and diagnosis utility, is that few in the clinical nutrition community question this utility. Such practices are today non-controversial inherent parts of quality-assured health care. To question nutrition screening and diagnosis is to jeopardize recognition of undernutrition and subsequent treatment of malnutrition.	Thank you for your comment. To the Reviewer's point about blood pressure, many trials are still conducted in which patients are screened for hypertension with blood pressure readings and then at-risk (hypertensive) patients are randomized to further diagnostic tools or interventions. Similarly, all patients could be screened for malnutrition and then randomized to diagnostic assessment tools. They could also receive several types of diagnostic assessments, given that these tools are non-invasive, like SGA and GLIM, but then have nutritional intervention determined by only one of those tools. This would allow for net reclassification and a further understanding of comparative outcomes including harms. It would also shed light on what happens to false negatives, which is not currently captured in the literature. Finally, in many hospitals (and in many studies), patients receive nutrition intervention regardless of the screening or diagnostic assessment (i.e. all ICU patients are given supplemental nutrition regardless of the screening result), and often (as shown in KQ3 and in clinical practice), diagnostic assessment does not always follow screening. Therefore, while screening may help with resource allocation (i.e. help direct resources such as a dietitian to highest risk patients) in resource-constrained areas, the clinical effectiveness of these tools has not been studied.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 8	General Comments	Such non-recognition of malnutrition, and the subsequent withholding of food and nutrition to patients in need, could be viewed as a violation of Article 25 of the Universal Declaration of Human Rights from 1948 ratified by all nations, that provides every human with the right to health and the right to food. ?The Council of European Committee of Ministers also declared in 2003 nutrition care as a human right. The challenge is not to restrict nutritional screening, assessment and diagnosis, but rather the opposite. The voice of the undernourished chronically ill patient is very weak - their right to food and health has to be protected. Reference: Butterworth CE Jr. The skeleton in the hospital closet 1974. Nutr Hosp 2005 Jul-Aug;20(4):302-7, 301; discussion 297-300	Thank you for your comment; we agree that screening should not be reduced or restricted simply due to the lack of evidence in effectiveness. Therefore, we have highlighted the importance of future studies screening all patients and randomizing to diagnostic assessments instead; see Discussion section: "*For example, a study could screen hospitalized patients as mandated by the Joint Commission, and further assess at-risk patients with each of these diagnostic assessment tools; results of one diagnostic assessment tool could then be used to randomize patients (i.e., those diagnosed with malnutrition) to nutritional interventions. This would provide better understanding of the clinical course for patients who test negative by various diagnostic assessments and provide insights on potential harms of using specific tools. Furthermore, given significant overlap in the variables utilized in the tools, future research could also support identification of which variables have the greatest impact on sensitivity and specificity in prospective clinical studies.*"
Peer Reviewer 8	Introduction	The introduction provides a good background for the initiative. Importantly, the negative impact of the array of screening and diagnostic tools is well described. It is interesting to read about the low usage of screening and diagnostic procedures in American hospitals. Consider to add MNA-SF as a screening tool in Table 2. ? Page 3: The mentioning of the GLIM approach to diagnose malnutrition is well recognized. It was published in 2019, and has since then yielded >550 citations, and there are now close to 100 validation studies (criterion and predictive validity).	Thanks for this comment. We have added MNA-SF to Table 1. We agree that GLIM is important to highlight, although our understanding is that existing validation studies would not meet inclusion criteria for this report due to study design and lack of control group. Furthermore, many existing validation studies for GLIM do not include clinical outcomes.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 8	Methods	It is reasonable to use strict criteria for the selection of papers, especially in an area where there is a huge variation in the quality of available studies. This reviewer has no concerns about tools for assessing Risk Of Bias and Strength of Evidence. ? Such tools and assessment are generally adapted for assessing pharmacological intervention studies. The financial support for such studies are usually much stronger (compared to the support/opportunities to perform nutrition studies), providing the possibility to recruit huge numbers of participants with a risk/chance of coming up with statistically significant results, but sometimes with less clinical value.	We thank you for your comment and appreciate your concerns about larger studies sometimes resulting in statistically significant findings that have little clinical value. AHRQ's rating system (used in this report) takes this possibility into account by considering the minimally clinically important difference (MCID) of an outcome when assessing the precision of effect size estimates. However, MCIDs may not be available or developed for all measurement tools or metrics used to assess important outcomes.
Peer Reviewer 8	Methods	There is a risk that the financial power and dominance of the [pharmacological] industry (in medicine) overshadows the importance of other non-pharmacological treatment modalities.	Thanks for this comment. We understand the concern that some areas of research may be differentially funded. However, we hope reports like this one can highlight the existing key evidence gaps around malnutrition and support identification of future research priorities for funding.
Peer Reviewer 8	Methods	Page 13, line 10: It could be [questioned] if observational studies in general are less important than RCTs.	Thanks for this comment. Observational studies are not more or less important than RCTs, but, by design are typically more susceptible to biases, such as selection bias, than RCTs. Thus, the strength of evidence system factors this into the rating.
Peer Reviewer 8	Discussion	Page 44, line 30: A minor comment is that the [publication(s)] from the GLIM Taskforce were issued 2019.	Thank you for this clarification. We see that the task force met in 2016, but the recommendations were not published until 2019. We have changed the date in our report.
Peer Reviewer 8	Results	Given the strict inclusion criteria it is not surprising that the number of included studies became low. Still, for KQ1 studies from ICU, traumatic injury and decompensated chronic disease consistently show negative outcomes (mortality/low QoL) linked to malnutrition.	Yes, the findings for KQ1 suggest that malnutrition may be associated with increased risk for hospital mortality in these populations. However, the findings for KQ1 did not indicate a reduction in quality of life. The findings for KQ3 suggest that hospital-initiated malnutrition interventions may improve quality of life compared to usual care.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer 8	Results	KQ3: Recent larger well designed studies indicate that either dietitian counselling or protein supplementation provided to malnourished hospitalized patients reduce mortality.	Thank you for your comment and careful review of the report. We agree that our findings suggest interventions via dietitian counseling or protein/calorie supplementation on patients who are either at-risk or malnourished may reduce mortality. We also agree that this evidence is aided by recent, large, well-designed RCTs (mainly Schuetz et al. 2019 and Deutz et al. 2016).
Peer Reviewer 8	Discussion	Page 44, lines 44-: It could be [questioned] that radiographic imaging is the golden standard for defining malnutrition. The clinical nutrition community acknowledge that reduced muscle mass is one crucial component of the diagnosis, but not the only component.	Thanks for this comment. We have modified our terminology to clarify that imaging is a gold standard for body composition and muscle mass that can be used to assess malnutrition, and that SGA is a semi-gold standard for diagnosing malnutrition.
Peer Reviewer 8	Discussion	Comments on Malnutrition Screening and Interventions: Page 45, line 22: Given the result of KQ1 and KQ3 the statement "... whether such screening is beneficial remains unknown" appears unjustified. Malnutrition is, even with mandatory screening, under recognized and undertreated. The area is still young and under development. It can be foreseen that continuous R&D activities will fine-tune diagnostic procedures and be better at identifying those undernourished that may benefit from treatment. Comments on Limitations and Suggestions for Future Research: To this reviewers understanding very few in the nutrition community questions the utility of screening and diagnosis of malnutrition (for reasons given above). Page 47, lines 45-: Since the publication 2019 of the GLIM format for diagnosing malnutrition, up to 100 validation studies have been published (June 2021) confirming its validity, reliability and applicability. Page 48, lines 35-: In November 2020 WHO received a proposal for a revised definition/diagnosis code for "Malnutrition in adults", signed by >40 international societies of clinical nutrition, including ESPEN and ASPEN. It advocates the combination of etiologic and phenotypic criteria, to align with for example the GLIM or the SGA format. It is under review at WHO-ICD and may be integrated in the ICD-11 2022 revision.	Thank you for this comment. The purpose of our review was to focus on clinical effectiveness of measurement tools. There may be other benefits to screening, such as resource allocation (i.e. dietitians are triaged to only at-risk patients, rather than all patients), that may also impact clinical outcomes. However, our report found no studies have assessed the clinical utility of the measurement tools themselves. We conducted an updated search (after the initial public release of this report) to look for emerging studies on GLIM; several studies were found but failed to meet inclusion due to study design and lack of control group. Importantly, many existing validation studies for GLIM do not include clinical outcomes, which was the focus of this report. As described in prior responses to the Reviewer, it is feasible to randomize all at-risk patients to diagnostic assessments including GLIM to determine clinical effectiveness.

Source: https://effectivehealthcare.ahrq.gov/products/malnutrition-hospitalized-adults/research

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