



Applied nutritional investigation

Identifying patients with malnutrition and improving use of nutrition interventions: A quality study in four US hospitals



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ABSTRACT

Objective: This study investigated how specific nutrition interventions were implemented at four US hospitals, compared rates of malnutrition diagnosis and assessment between physicians and registered dietitian nutritionists (RDNs), and examined how these differences affected the nutrition intervention received during patients' hospital stay.

Methods: Data on patients' nutrition status and nutrition interventions were collected from 16 669 hospital inpatient records. Data on intervention utilization for patients with differing nutrition assessments and diagnoses from different health care practitioners were compared using descriptive statistics and χ^2 tests.

Results: The study found high levels of agreement between physician diagnosis and RDN assessment of malnutrition (88%). Much of this agreement related to patients identified as not malnourished. Of patients identified as malnourished by either physician diagnosis or RDN assessment, agreement was reached in 55.5% of patients. Less than half (46.3%) of patients identified as malnourished had a documented nutrition intervention. Oral nutritional supplements (ONS) were the most commonly used intervention, with 5.1% of patients receiving them. Patients identified as malnourished by physician diagnosis, but not by RDN assessment, were more likely to receive enteral and parenteral nutrition. Patients identified as malnourished by RDN assessment, but not by physician diagnosis, were more likely to have received ONS, meals and snacks, counseling, and food/nutrition-related medication management.

Conclusion: The high level of agreement on assessment and malnutrition diagnosis suggests positive levels of malnutrition care coordination at the study hospitals. However, significant room for improvement exists in providing interventions to inpatients diagnosed with malnourishment. Differences in interventions may reflect dissimilar approaches commonly used by different practitioners and should be a topic of future study.

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Introduction

Malnutrition in hospitalized patients is common and costly to health care systems. Disease-related malnutrition or its risk

continues to be reported in 20% to 50% of patients hospitalized worldwide despite remarkable advances in medical technology and general care [1–6]. For patients who are malnourished or for those at risk of malnourishment, some of the most common adverse consequences include increased risk for infections, reduced ability to heal wounds such as pressure ulcers, muscle weakness, balance problems associated with falls and fractures, longer hospital stays, and higher rates of readmissions [1,7–9]. Not surprisingly, these health outcomes are paralleled by increased use of health care services at increased costs, especially during hospitalizations [2,10–14]. However, prompt provision of nutrition interventions for hospitalized patients via nutrition therapy—counseling, oral nutritional supplements (ONS), enteral nutrition, and parenteral nutrition—is associated with improved patient

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outcomes and cost savings to health care systems [15–17]. Potential cost savings from nutrition care are largely owing to shortened length of stay and reduced readmissions [16,18–20].

To improve hospital nutrition care, updating nutrition policies and practices, especially by enhancing professional awareness and training on malnutrition treatment, is of utmost importance. Developing an institutional culture that values nutrition and establishing interdisciplinary nutrition care policies and protocols ensures that nutrition care is not lost in competing priorities in patient care [21]. Educating physicians, nurses, and other clinicians on the benefits patients receive through nutrition care can help foster a willingness to change practices [22–24].

The Malnutrition Quality Improvement Initiative (MQii) was developed to help hospitals improve and emphasize nutrition care for patients with malnutrition or malnutrition risk [25,26]. MQii resources include a tool kit of interdisciplinary strategies to help hospitals implement best-practice malnutrition care [27], and four malnutrition-focused electronic clinical quality measures [28]. The MQii tool kit and electronic clinical quality measures are now being used by a Learning Collaborative of 292 hospitals across the United States to implement standardized nutrition care practices as part of quality improvement projects [28]. MQii Learning Collaborative hospitals routinely collect, analyze, and share data on patient nutrition care and implementation of nutrition-focused quality improvement projects.

The current project investigated how specific nutrition interventions were implemented at four MQii Learning Collaborative hospitals. This study also examines similarities and differences in rates of malnutrition diagnosis and assessment between physicians and registered dietitian nutritionists (RDNs) and how these differences affected the nutrition intervention patients received during hospital stays.

Methods

Description of participating hospitals

Hospital inpatient records from four hospital systems were assessed. The hospitals were located in the Northeast, Mid-Atlantic, and Great Plains regions of the United States; they had an average of 483 beds each. Each hospital followed a general care workflow for identifying malnutrition risk, confirming diagnosis of malnutrition, and developing a nutrition treatment/intervention plan that aligned with existing hospital nutrition care guidelines. Each participating hospital implemented a validated screening tool for patients known as the Malnutrition Screening Tool to identify malnutrition risk on the first day of admission. Subsequently, as patients were identified as at risk of malnutrition or were in the hospital for longer than 48 to 72 h, patients would receive a nutrition assessment by an RDN

within 24 to 48 h of the screening determination to identify the clinical characteristics of malnutrition, including the severity (if identified). Once malnutrition was determined, a nutrition care plan with intervention and treatment recommendations was developed to address nutritional status. All participating sites obtained Institutional Review Board approval or waivers to provide data for analysis.

Data collection

Combining deidentified medical records from January to April of 2019 provided a large sample of inpatient encounters ($n = 16\,669$). Data were collected on patient age, sex, Charlson comorbidity index score [29], assessment by RDN, *International Classification of Diseases, Tenth Edition (ICD-10)* diagnosis of malnutrition, and documented nutrition interventions. Physician diagnosis of malnutrition (if documented) was based on diagnostic codes associated with the hospitalization, including “E43, Unspecified severe protein-calorie malnutrition”; “E44.0, Moderate protein-calorie malnutrition”; and “E46, Unspecified protein-calorie malnutrition.” The results of an RDN nutrition assessment (if documented) were based on findings from a nutrition-focused physical examination. Nutrition interventions were categorized according to terminology of the Academy of Nutrition and Dietetics and are defined in Table 1 [30].

Analysis

Descriptive statistics (number and percent) were calculated to determine documented nutrition intervention utilization and to draw comparisons between practitioner type (RDN versus physician). The frequency of diagnosis or assessment by each practitioner type was analyzed to compare physician malnutrition diagnosis and RDN malnutrition assessment. To assess potential differences in practice patterns, the frequency of documented nutrition intervention recommendation was analyzed in cases where practitioners differed in their evaluation of the patient's condition. For example, the treatment of a patient identified as malnourished by an RDN, but that lacked a physician diagnosis of malnutrition, may provide insight into nutrition interventions routinely implemented by an RDN. Conversely, nutrition interventions given to a patient with a physician diagnosis of malnutrition, but in whom an RDN did not evaluate as malnourished, may provide insight into physician nutrition intervention recommendations. A χ^2 test was performed using SAS version 9.4 (SAS Institute Inc.) software to measure the statistical significance of differences in all categorical variables; P values of < 0.05 were considered statistically significant.

Results

The sample consisted of 16 669 combined records of hospitalizations; 52% of patients were women; 31.3% were between the ages of 45 and 64 y; and 36.7% were between the ages of 65 and 84 y. Patients were mostly non-Hispanic whites (78.3%), with 10.0% of patients being non-Hispanic black or black, 6.0% Hispanic, 1.7% Asian, and 3.9% identifying as “other race”; 64% of patients had only mild comorbidity levels (CCI score ≤ 2). In terms of payer mix, most patients were in the Medicare program (52.3%); the second most common payer was commercial/private payer (35.0%),

Table 1
Nutrition interventions documented at participating hospitals*

Nutrition intervention	Definition
Oral nutritional supplements	Commercial or prepared foods or beverages that supplement energy, protein, carbohydrate, fiber, and fat intake
Meals and snacks	Regular eating episodes (meal); food served between regular meals (snack); and adjustments to the compositions of meals/snacks
Nutrition education	Formal process to instruct or train patients in a skill or to impart knowledge to help patients/clients voluntarily manage or modify food, nutrition, and physical activity choices and behavior to maintain or improve health
Care coordination	Consultation with, referral to, or coordination of nutrition care with other providers, institutions, or agencies that can assist in treating or managing nutrition-related problems
Enteral nutrition	Nutrition provided through the gastrointestinal tract via tube, catheter, or stoma
Parenteral nutrition	Nutrition and fluids provided intravenously (centrally or peripherally)
Food/nutrition-related medication management	Modification of a medication or complementary/alternative medicine to optimize patient/client nutrition or health status
Counseling	A supportive process, characterized by a collaborative counselor–patient/client relationship to establish food, nutrition and physical activity priorities, goals, and individualized action plans that acknowledge and foster responsibility for self-care to treat an existing condition and promote health
Feeding assistance	Accommodation or assistance in eating

*Definitions as defined by the Academy of Nutrition and Dietetics³⁰

Table 2
Malnutrition diagnosis, assessment, and intervention at each hospital site

Characteristics and documented activities	Hospital site			
	Hospital #1	Hospital #2	Hospital #3	Hospital #4
Hospital type, size	AMC, large	STAC, large	STAC, medium	AMC, large
Total hospitalizations	6382	1174	1577	7536
Hospitalizations with malnutrition screening, n(%) ^a	4782/6382 (74.9)	960/1174 (81.8)	1556/1577 (98.7)	7502/7536 (99.6)
Hospitalizations with RDN Nutrition assessment, n (%) ^a	3172/6382 (49.7)	244/1174 (20.8)	561/1577 (35.6)	1720/7536 (22.8)
Hospitalizations with malnutrition identification by RDN, n (%) ^a	389/6382 (6.1)	167/1174 (14.2)	135/1577 (8.6)	396/7536 (5.3)
Hospitalizations with malnutrition diagnosis by physician, n (%) ^a	488/6382 (7.7)	54/1174 (4.6)	198/1577 (12.6)	446/7536 (5.9)
Hospitalizations with documented nutrition care plan, n (%) ^{a,†}	2527/6382 (39.6)	375/1174 (31.9)	482/1577 (30.6)	N/A
Hospitalizations with documented nutrition Interventions, n (%) ^{a,‡}	414/6382 (6.5)	175/1174 (14.9)	458/1577 (29.0)	322/7536 (4.3)
Documented intervention for patients assessed, n (%) [§]	414/3172 (12.9)	155/244 (63.8)	458/561 (81.6)	304/1720 (17.7)

AMC, academic medical center; RDN, registered dietitian nutritionist; STAC, short-term acute care hospital

^aPercentage out of total hospitalization for the site

[†]Care plan indicates if the RDN included any data during the patient's hospital stay that provided information on their nutrition care, and thus includes patients who may not have had a nutrition assessment

[‡]These hospitalizations included recommended interventions for an explicit nutrition intervention as defined above

[§]Percentage out of patients assessed Large, >500 beds; medium, 499–100 beds.

followed by Medicaid (10%), and the remaining 2.7% had no insurance or were in special coverage arrangements.

Rates of malnutrition screening, RDN nutrition assessment, malnutrition diagnosis/identification rates by physician and RDN, and documented nutrition care plans varied significantly across hospitals in the sample (Table 2). Hospital rate of completing malnutrition screening for all adults ranged from about 75% to 100%, and the range of completed nutrition assessments on all patients also varied widely from 20.8% to 49.7%.

Tables 3 and 4 list the nutrition status of patients (based on physician diagnoses and RDN assessments) and documentation of a nutrition intervention. Physicians and RDNs identified similar numbers of hospitalized patients as malnourished (1087 and 1186, respectively). Physician diagnoses and RDN assessment findings agreed in 88% of cases where both evaluations took place. However, this finding is driven by the high number of patients that both practitioners identified as *not* malnourished. Among the 1391 patients identified as malnourished by physician diagnosis [1], RDN assessment, or both, only 768 (55.6%) were identified as malnourished by *both* physician diagnosis and RDN assessment. Thus, there was a high level of agreement regarding patients who were not identified as malnourished but less agreement regarding patients who may have been malnourished.

Nutrition interventions were recommended for 1369 (8.9%) of hospitalizations. Of patients identified as malnourished by either physician diagnosis or RDN assessment (or both) [2], 46.0% (692/1505) were recommended to receive a nutrition intervention. Thus, hospitalizations occurred in which the patients with documented nutrition interventions were not documented as having been assessed or diagnosed as malnourished, as well as hospitalizations in which patients who were documented as having been assessed or diagnosed as malnourished had no documented nutrition interventions. For many hospitalizations, more than one nutrition intervention was frequently documented. Additionally, 727 of the 1369 (53.1%) hospitalizations with documented nutrition interventions had two or more different documented nutrition interventions. Overall, 5.1% of patients had a documented intervention of ONS, making it the most frequently documented nutrition intervention, followed by meals and snacks at 3.3% and nutrition education at 1.9%.

The likelihood of having a documented nutrition intervention varied by the type of practitioner identifying a patient as malnourished. Hospitalizations were less likely to include a documented nutrition intervention when the physician diagnosed malnutrition but the RDN identified only mild or no malnutrition. Conversely,

Table 3
Documented nutrition interventions^a

Nutrition intervention	Patients with documented interventions (n = 16 669)
Total	1369 (8.21%)
Oral nutritional supplements	854 (5.1%)
Meals and snacks	555 (3.3%)
Nutrition education	318 (1.9%)
Care coordination	290 (1.7%)
Enteral nutrition	224 (1.3%)
Food/nutrition related medication management	214 (1.3%)
Nutrition counseling	156 (0.9%)
Feeding assistance	98 (0.6%)
Parenteral nutrition	50 (0.3%)

^aSome patients have more than one documented intervention; therefore the total reflects unique patients with at least one documented intervention not a cumulative total of all interventions documented

hospitalizations were more likely to include a documented nutrition intervention when the RDN assessment identified severe or moderate malnutrition but the physician did not diagnose malnutrition. Only half of hospitalizations with malnutrition identified by both an RDN and physician had a documented nutrition intervention.

The study data were further evaluated in terms of documented nutrition intervention type, subdivided by the RDN assessment findings and physician malnutrition diagnosis (Table 5). ONS was the most common documented nutrition intervention for hospitalizations where the patient's physician diagnosis and RDN assessment differed (i.e., RDN assessment was mild or no malnutrition and physician diagnosis was severe or moderate malnutrition, or the converse). Hospitalizations where patients were identified with severe or moderate malnutrition by only a physician diagnosis received enteral and parenteral nutrition at a much higher rate than patients identified with severe or moderate malnutrition by only an RDN assessment (26.35% versus 7.69% [$P < 0.001$] and 7.75% versus 1.78% [$P = 0.012$], respectively). However patients identified as severely or moderately malnourished only by RDN assessment were more likely to receive ONS (82.8% versus 58.1%, $P < 0.001$), meals and snacks (55.6% versus 20.9%, $P < 0.001$), counseling (52.7% versus 1.6%, $P < 0.001$), and food/nutrition-related medication management (33.7% versus 7.8%, $P < 0.001$) than patients receiving a physician diagnosis of malnutrition, but an RDN assessment of not malnourished.

Table 4
Documented nutrition intervention rates by malnutrition identification (physician diagnosis and RDN assessment)

	Malnutrition diagnosis by physician (n = 1186)	Malnutrition not diagnosed by physician (n = 15 483)	All patients (n = 16 669)
Not assessed by RDN* (n = 10 632)	3/114 (2.6%)	129/10 518 (1.2%)	132/10 632 (1.2%)
Mildly/not malnourished by RDN (n = 4500)	129/304 (42.4%)	548/4196 (13.1%)	677/4500 (15.0%)
Severely/moderately malnourished by RDN (n = 1087)	391/768 (50.8%)	169/319 (53.0%)	528/1087 (48.6%)
All patients (n = 16 669)	523/1186 (44.4%)	846/15 483 (5.5%)	1369/16 669 (8.2%)

RDN, registered dietitian nutritionist

*Care plan indicates if the RDN included any data during the patient's hospital stay that provided information on their nutrition care, and thus includes patients who may not have had a nutrition assessment

Table 5
Documented nutrition interventions when physician diagnosis and RDN assessment differ

Nutrition interventions documented	Physician diagnosis of malnutrition; RDN assessment: not malnourished n = 129*	No physician diagnosis of malnutrition; RDN assessment: severely/moderately malnourished n = 169*	% Difference	P values
Oral nutritional supplements	75 (58.1%)	140 (82.8%)	42.5	< 0.001
Meals and snacks	27 (20.9%)	99 (55.6%)	165.6	< 0.001
Nutrition education	26 (20.2%)	36 (21.3%)	5.7	0.809
Care coordination	30 (23.3%)	49 (29.0%)	24.6	0.266
Enteral nutrition	34 (26.4%)	13 (7.7%)	-70.8	< 0.001
Parenteral nutrition	10 (7.8%)	3 (1.8%)	-77.0	0.012
Food/nutrition-related medication management	10 (7.8%)	57 (33.7%)	335.2	< 0.001
Nutrition counseling	2 (1.6%)	89 (52.7%)	3297.4	< 0.001
Feeding assistance	3 (2.3%)	13 (7.7%)	230.0	0.042

RDN, registered dietitian nutritionist

*Some patients received more than one type of nutrition intervention, so columns do not sum to 100%

Because more than one nutrition intervention was noted for most hospitalizations with a documented nutrition intervention, the most frequent combinations of two nutrition interventions were investigated in Table 6. The most common combinations of documented nutrition interventions were ONS in combination with either nutrition education, counseling (or both), or food/nutrition-related medication management.

Discussion

This analysis demonstrates that physicians and RDNs agree on the nutrition status of most patients, but significant differences in diagnosis and assessment remain, particularly for patients who are

identified as malnourished. Additionally, the differences in diagnosis and assessment are associated with different levels and types of documented nutrition interventions, highlighting the need for continued improvement in the coordination of nutrition care across disciplines. Appropriate documentation and ordering in the electronic health record (EHR) have been identified as helping to improve the likelihood that patients receive the indicated nutrition intervention and treatment [31].

The identification and effective treatment of poor nutrition in a hospital setting requires involvement from multiple disciplines [21,32]. Such coordination enables a malnourished patient to receive interventions that may require a physician order, such as enteral and parenteral nutrition, as well as interventions that may be specifically or primarily provided by the RDN, such as nutrition education and counseling. The high level of agreement on identification of non-malnourished patients suggests that coordination between RDNs and physicians is taking place in the participating hospitals, but differences in identification of malnourished patients indicate room for improvement. Additional evidence of multifaceted, coordinated care is evident in the high number of patients with multiple interventions.

Only half of patients identified as malnourished by either the physician or RDN had a documented nutrition intervention (50.9%). The relatively low rates of nutrition intervention for patients who were identified as malnourished, despite clinical guidelines suggesting timely intervention, demonstrate that further work can be done to improve the coordination and documentation of nutrition interventions for malnourished patients. It may be that malnourished patients were receiving nutrition interventions, but the interventions were not documented. Further, the inconsistency in documented nutrition intervention rates across the hospitals suggests that more standardized workflows in nutrition care are needed across hospitals to support care coordination and its measurement [33].

Table 6
Frequent combinations of documented nutrition interventions

Combination of documented nutrition interventions	Number of hospitalizations
ONS and nutrition education and/or counseling	335
ONS and food/nutrition-related medication management	161
Food/nutrition-related medication management and nutrition education and/or counseling	144
ONS and feeding assistance	75
Feeding assistance and food/nutrition-related medication management	48
Feeding assistance and nutrition education and/or counseling	48
Enteral and food/nutrition-related medication management	41
Enteral and ONS	30
Enteral and nutrition education and/or counseling	24
Enteral and feeding assistance	8
Enteral and parenteral	2

ONS, oral nutritional supplements

Apparent differences in the interventions recommended by different health care practitioners based on their diagnosis or assessment were observed. The study identified 319 instances where the RDN assessed a patient as malnourished but no medical diagnosis was made. This finding is consistent with previous research on the underdiagnosis of malnutrition by physicians. Conversely, there were 304 hospitalizations where a medical diagnosis of malnutrition was made but the finding of the RDN assessment was mild/not malnourished. This suggests that different criteria for diagnosis and assessment of malnutrition are being used by different practitioners. Malnutrition criteria, such as those recommended by the Global Leadership Initiative on Malnutrition provide an opportunity for building consensus and providing education [34]. Combining these two categories shows that 44% of hospitalizations where patients were identified as malnourished by a either physician or RDN did not have a concurring opinion of the diagnosis or assessment by the other provider [3]. The differing results of diagnosis and assessment resulted in observable differences in documented nutrition interventions. Patients identified as malnourished by an RDN were more likely to have a documented nutrition intervention of some kind. Understandably, patients who did not receive a nutrition assessment by an RDN almost never had a documented nutrition intervention. These findings suggest that RDNs manage many of the levers for nutrition intervention, but there is also a small subset of patients who are potentially being provided certain nutrition interventions without the consultation of RDNs. This is a critical opportunity to improve patient care as evidence suggests the inclusion of a nutrition care plan with nutrition interventions recommended by an RDN is associated with lower readmission risk [28]. In addition, this may be an opportunity for quality improvement, as research has shown that implementation of a nutrition-focused quality improvement process as part of a comprehensive program may be associated with significant reductions in patient length of hospital stay and infection rates [32].

Effective care coordination between physicians and RDNs requires that the general medical teams have sufficient knowledge and training in nutrition care and a common understanding of the definition of malnutrition. However, previous studies have found that only 25% of US medical schools provide a dedicated nutrition course [35]. Improvements in nutrition training and education would allow physicians to better coordinate their efforts with RDNs to improve patient nutrition care. There is demonstrated feasibility of educating physicians in real-world clinical practice settings [36,37].

Lastly, results show that some malnourished patients do not receive nutrition interventions when an identified need exists. Previous studies have demonstrated that improvements in nutrition screening, assessment, and care plan implementation are possible through coordinated, nutrition-focused Quality Improvement Programs (QIPs) [28,32,38]. Recent evidence supports the benefits of using the nutrition-focused MQji tool kit to improve nutrition care processes in hospital settings [25,27,28,32,36,38]. The 5.1% utilization rate of ONS in this study is notably higher than the 1.6% and 2.7% rates identified in previous studies [39,40]. This may be because the participating sites were implementing QIPs focused on identification of and intervention in cases of poor nutrition, driving higher rates of use of all nutrition interventions. Future research is needed to examine this hypothesis and provide further support for our findings. Additionally, as part of future nutrition-focused QIPs, health care providers should ensure that malnourished patients receive the nutrition interventions in a timely fashion (especially within 24–48 h) as a way to optimize their overall nutrition status and in turn improve health outcomes, such as reduced length of hospital stay and 30-d readmissions rates [39–41].

Study limitations

This study had limitations common to observational studies of real-world practices. The observational nature of the data prevents the identification of causal relationships. Thus, findings of this study should be investigated further with experimental or quasi-experimental methods. Inaccurate documentation of malnutrition and nutrition interventions, as reported in other studies [37,42,43], could result in underreporting of interventions in this study. Additionally, inconsistencies in data standardization and clinical workflow were identified across the four participating sites. While some hospitals records had consistent documentation in a structured template EHR, other hospitals' records had inconsistent use of the EHR care plan section where nutrition intervention recommendations are documented. The hospitals participating in this study mostly follow consensus agreement on how best to implement a nutrition care-focused EHR workflow [31]. Furthermore, all four hospitals did not use the same EHR system, resulting in differences in documentation practices, reporting, level of order writing privileges granted to an RDN, and how the RDN assessment results and care plan recommendations were communicated to a patient's physician. Improving workflow and data documentation standards across health systems could yield more meaningful data on care coordination between clinical disciplines and potentially more meaningfully impact nutrition interventions on patient outcomes. Nonetheless, this study contributes to the understanding of nutrition intervention utilization in hospitals and apparent differences between physician and dietitian malnutrition identification and nutrition intervention practices. The study establishes that notable differences in the documented nutrition intervention exist when practitioners disagree on the diagnosis and assessment of malnutrition. These differences may arise from order writing privileges, severity of patients treated, practitioner education and training on malnutrition identification, or any number of other sources. Finally, the limited number of sites participating in this study may limit its generalizability to other hospitals. While the sample size is large compared with other articles looking at nutrition care patterns, this was a convenience sample reflecting hospitals in various geographic areas of the country with sufficient diversity to assess differences in practice patterns. Future research should investigate the cause of these differences in malnutrition identification and nutrition interventions, their effect on patient outcomes, and expand the analysis to additional hospitals.

Conclusions

Collaboration between all patient care disciplines is essential for providing effective nutrition care [21]. Although positive levels of coordination between RDNs and physicians exist, room for improvement in identification of malnutrition and provision of nutrition interventions remains. Nutrition-focused QIPs to improve collaboration between disciplines could help identify existing similarities and opportunities to determine the root causes of the remaining differences between physicians and RDNs in their documentation of patient nutrition status. Future research should also explore similarities and differences in nutrition interventions recommended or prescribed by the RDNs and physicians, how these are informed by patient diagnosis, and how they affect patient outcomes. Finally, policy makers and regulators could consider policies that incentivize standardized documentation of clinical nutrition data and evidence-based care coordination and interventions between RDNs and physicians in the hospital.

Declaration of Competing Interest

None.

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