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# A Step-By-Step Guide to Implementing a Malnutrition Coding Program for Adult Inpatients

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## Abstract

Proper assessment and documentation of a malnutrition diagnosis can have a significant impact on Medicare reimbursement and the case mix index for a hospital. Multidisciplinary involvement and support is key to implementing a successful program. This article provides guidance for implementing a malnutrition coding program, including the development of an effective nutrition screening and prioritization plan, using the key steps of the Nutrition Care Process, and communicating the malnutrition diagnosis to the appropriate health care team members. It also provides guidance on how to determine the actual payment amount and the change in case mix index when the malnutrition diagnosis is the primary driver for the severity level of the Diagnosis Related Group assignment.

## Introduction

"I've been reading about the impact malnutrition coding can have on hospital finances and the case mix index. What do we need to do here at our hospital to get us to that point?" As the clinical nutrition manager, I was thrilled to have our Chief Medical Officer (CMO) approach me after Medical Executive Committee to discuss this topic. We had already taken several steps toward implementation of this initiative, and having the CMO's support to coordinate efforts with other health care team members and hospital departments would be invaluable. I explained the steps for an individual patient to be diagnosed, treated, and coded for malnutrition (Fig 1) to give the CMO a better understanding of the patient care workflow involved and the interdisciplinary nature of the process. I also shared the steps involved in implementing such a program, the progress we had made so far, and specific actions for which we needed support.

Although not all registered dietitian nutritionists (RDNs) may be fortunate enough to be approached by the CMO, all clinicians have a responsibility to work toward implementing a comprehensive malnutrition program in their organizations. Understanding each step involved in the process is necessary to achieve a complete program. Having an overall vision increases the opportunity for the clinical nutrition team to show their value in a health care landscape driven by patient satisfaction, quality outcomes, and financial stability. Many health care facilities and systems have portions of the programs in place but may be unsure of how to implement them completely. This guide explains the process surrounding malnutrition coding and suggests a path for successful creation of an effective and inclusive malnutrition documentation and tracking program.

## Patient Workflow Using the Nutrition Care Process

### *Nutrition Screening and Prioritization*

A prioritization system can determine which patients are seen by the RDN within a specific timeframe. Not all hospitalized patients can receive a nutrition assessment and care plan from the RDN due to staffing levels. The first step in the process is usually completion of a nutrition screening tool by the registered nurse or designee during the admission process. The tool contains a predetermined list of questions to identify nutrition risk. A validated nutrition screening tool that is appropriate for the patient population served at the specific hospital is recommended. RDNs can consult the Evidence Analysis Library from the Academy of Nutrition and Dietetics for an extensive review of available validated tools to choose the most appropriate screen (1).

Some hospitals determine the list of patients

for the RDN to see each day based solely on the presence of a nutrition screening referral or physician consultation; others have an additional process to determine which patients would benefit from an RDN intervention, even if they do not trigger positively on the nutrition screen. Examples of additional factors that may trigger an RDN assessment include the presence of pressure injuries (pre-existing or hospital-acquired); oncology diagnoses; and gastrointestinal diseases causing obstruction, shortened length of bowel, or malabsorption of macronutrients, micronutrients, and/or fluids. Because of variations in this process among institutions, all stakeholders involved in developing a malnutrition coding program must understand the actual workflow that determines which patients are seen by the RDN, how the nutrition diagnosis is determined, and the steps necessary to ensure inclusion of the malnutrition diagnosis in the master charge (Fig. 1).

### *Nutrition Assessment and Diagnosis*

Patients identified at nutrition risk are referred to the RDN for more in-depth screening and potential nutrition assessment. The development of a nutrition diagnosis, of which malnutrition is one example, starts with a thorough nutrition assessment, as outlined in the Nutrition Care Process (2). Each component of a thorough nutrition assessment should be considered, including a nutrition-focused physical exam (NFPE).

Many health care providers automatically consider a patient's body mass index (BMI), oral intake, and weight changes when considering the degree of malnutrition. Physical signs and symptoms are equally important to identify, especially for patients with normal or overweight/obese BMIs, who may not be easily identified as malnourished. Historically, approaches to evaluation, including assessment of appetite, weight loss, and laboratory tests, varied widely and

were not always evidenced-based. Some of these approaches resulted in inconsistent measurement and confused communication among clinicians, with potential misdiagnoses (3). Many laboratory indicators, such as acute-phase protein values (albumin, prealbumin), are affected by the inflammatory response and do not specifically reflect nutrition status (4,5). Consequently, estimates of malnutrition prevalence vary widely from 15% to 60% of the hospitalized population (3).

To address the need for a more consistent and reliable diagnostic approach, the Academy and the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) produced a consensus statement in 2012 that detailed a set of criteria important in assessing and classifying the degree of malnutrition (3). In the statement, malnutrition is defined in the setting of three basic causes: chronic versus acute injury or illness and social/environmental. Six malnutrition clinical characteristics are outlined, and four of these six are physical findings that the RDN can investigate using the NFPE.

Clinical RDNs must develop competency in the assessment and interpretation of all six clinical characteristics, with the ultimate goal of determining nutrition status with appropriate interventions. The challenges in implementing the NFPE include lack of RDN knowledge about the clinical characteristics and apprehension about conducting the physical exam due to lack of experience. An informal poll of 27 RDNs in clinical practice showed that 45% had never used physical assessment in their practices (author's survey). The most cited reason was insufficient training and practice. A multistep approach to training can address these shortcomings. The first step is to provide background information regarding the need for a consistent, reliable diagnostic approach, followed by an overview of the Academy/A.S.P.E.N. etiology-based approach to the malnutrition diagnosis (3). Review of the consensus article itself can provide this initial information and the foundation upon which subsequent

**Figure 1. Interdisciplinary workflow to identify malnourished patients and include the malnutrition diagnosis in the master charge.**

Nursing Staff	Foodservice Staff	Registered Dietitian Nutritionist (RDN)	Physicians	Clinical Documentation Specialists
Completes initial nutrition screen using validated screening criteria.			Enters referral to RDN to complete nutrition assessment if needed.	
Enters nutrition screening referral to notify RDN when patient triggers positively on the screen.		Completes nutrition assessment on all referred patients and those identified at nutrition risk through other methods.		
		Uses the approved criteria to determine presence and degree of malnutrition.		
		Documents the nutrition diagnosis of malnutrition, if present. Notifies physician.	Determines if he/she agrees with the malnutrition diagnosis. If yes, documents the malnutrition in the progress notes.	Reviews chart and enters code for malnutrition diagnosis in the coding software. Sends query if needed to physician.
Helps implement the nutrition care plan as directed by the RDN and/or the physician.	Helps implement the nutrition care plan as directed by the RDN and/or physician.	Develops and implements the nutrition care plan and communicates it to the physician.	Writes orders as needed to implement the nutrition care plan.	
		Reassesses the patient at defined intervals to determine response to care. Determines nutrition discharge plan as needed.		

*(Continued on next page)*

**Table 1. International Classification of Diseases, 10th edition (ICD-10) Codes for Malnutrition**

ICD-10 Code	ICD-10 Title	Criteria/Description	MCC/CC
E40 E42	Kwashiorkor* Marasmic kwashiorkor *	Nutritional edema with dyspigmentation of skin and hair.	MCC
E41	Nutritional marasmus *	Nutritional atrophy; severe malnutrition otherwise stated; severe energy deficiency.	MCC
E43	Unspecified severe protein-calorie malnutrition	Nutritional edema without mention of dyspigmentation of skin and hair.	MCC
E44	Moderate protein-calorie malnutrition	No definition given.	CC
E44.1	Mild protein-calorie malnutrition	No definition given.	CC
E45	Retarded development following protein-calorie malnutrition		CC
E46	Unspecified protein-calorie malnutrition	A disorder caused by a lack of proper nutrition or an inability to absorb nutrients from food. An imbalanced nutritional status resulting from insufficient intake of nutrients to meet normal physiologic requirement. Inadequate nutrition resulting from poor diet, malabsorption, or abnormal nutrient distribution. The lack of sufficient energy or protein to meet the body's metabolic demands, as a result of either an inadequate dietary intake of protein, intake of poor-quality dietary protein, increased demands due to disease, or increased nutrient losses.	CC
E64	Sequelae of protein-calorie malnutrition		CC

\*Should rarely be used in the United States; if they are used, they require extensive documentation to justify their use.  
CC=complication or comorbidity, MCC=major complication or comorbidity.

training can be built. Next, the clinician should seek educational resources that target implementing the malnutrition diagnosis approach into daily clinical practice, including conducting the physical exam, documenting the findings, and recording the corresponding malnutrition when present. Developing a strong conceptual understanding of the malnutrition diagnosis approach gives the RDN a foundation for initiating hands-on physical assessment training.

A workshop with a skilled trainer is an effective tool for gaining experience in conducting the physical exam. Beginning with the head and working toward the lower body, the RDN conducts the physical assessment of various body areas. With the guidance of the instructor, RDNs practice palpation on partners and consider the necessary findings to identify nutrition status using the malnutrition clinical characteristics. To simulate the tactile experience of the NFPE, items with specific purposes are included in the training. A leather belt can mimic the feeling of a well-nourished temporal muscle, while a

half-filled water balloon demonstrates the feeling of severe wasting of the same area. A taut water balloon simulates the normal firmness of a deltoid, and a bag of flour can mimic the shape of the deltoid from posterior to medial head. A ball of string can simulate the feel of the muscles at the base of the neck of a severely wasted patient.

The final training step involves practicing the approach at the bedside, preferably with one RDN conducting the NFPE and interpreting the findings, which are validated by an observing RDN. Subsequent discussion as well as review and interpretation of the findings are completed by RDNs in partnership. With continued consistent practice, the clinician should gain greater understanding of the differences in individuals, comprehend the implications of findings, and develop competency in conducting the physical exam as part of the nutrition assessment.

The nutrition assessment provides the information required to document a nutrition diagnosis, using standardized language in the problem-etiology-signs/symptoms (PES)

format (2). The *Nutrition Focused Physical Exam Pocket Guide* (6) provides sample PES statements that document the degree of malnutrition, the context in which that malnutrition occurs (acute, chronic, or social/environment circumstances), and the etiology and signs/symptoms.

#### *Nutrition Intervention, Monitoring, and Evaluation*

Once the nutrition assessment has been completed and the diagnosis identified, the Nutrition Care Process steps include developing nutrition interventions targeted to address the signs and symptoms and/or etiology of the nutrition diagnosis and resolve the diagnosis if possible (2). A monitoring and evaluation plan must be developed to monitor the patient's response to care and the achievement of care goals. Several additional steps, discussed in this article, need to be completed to develop a robust malnutrition program at a hospital. These inform the work done with individual patients and measure the impact of the malnutrition assessment, intervention, and documentation. Some steps are interrelated and can be completed simultaneously.

## Defining Malnutrition

Malnutrition can be defined simply as an imbalance of nutrients to promote optimal health, but there is no universally accepted set of criteria for determining the presence of or degree of malnutrition (3). The *International Classification of Diseases*, 10th edition (ICD-10) includes basic definitions (Table 1) but does not provide guidance on assessment factors or signs/symptoms that a patient might exhibit (7). Recognizing this limitation, the Academy and A.S.P.E.N. developed the consensus statement for patient-specific definitions and criteria to be evaluated to determine the etiology and degree of malnutrition (3).

Because these criteria have not been officially accepted by the Centers for Medicare & Medicaid Services (CMS) and have not been validated, each hospital may use the consensus statement criteria or choose alternate criteria. RDNs should collaborate with physicians from multiple care teams, such as surgery, medicine, neurology, gastroenterology, oncology, and endocrinology, to determine the criteria that will be used to diagnose malnutrition by health care team members in that hospital. Coding documentation specialists (CDSs) read through medical charts to determine all appropriate diagnoses to add to the patient's master charge list. Therefore, it is important to engage this department in determining the malnutrition diagnosis criteria that will be used in the hospital to limit the queries they send to physicians using unapproved alternate criteria. We recommend use of the consensus statement criteria because several studies have demonstrated negative outcomes in patients identified as malnourished using the consensus malnutrition clinical characteristics, and work is underway to validate these criteria (8–11). Consistent use can help with this effort. In most institutions, the policy summarizing the criteria requires approval by the Pharmacy and Therapeutics Committee and Medical Executive Committee or facility equivalent committees.

Although clinical judgment still can play a part in assigning the malnutrition diagnosis,

the approved policy should be used as a guide to ensure consistency in the diagnosis. As an example, consider two patients admitted to the hospital at the same time. Patient A has had poor oral intake for 2 weeks due to mouth sores and poor appetite and has lost 40 lb (16% of usual body weight). The RDN documents "Severe protein-calorie malnutrition in the context of chronic disease related to mouth sores affecting ability to eat, as evidenced by patient's report of poor intake for 2 weeks and 16% weight loss." Patient B has a similar pattern of inadequate oral intake and unintentional weight loss but receives a diagnosis of mild malnutrition by a different (or the same) RDN. Such inconsistencies can be confusing to the physicians who are asked whether they agree with the diagnosis and can raise suspicion among auditors assigned by CMS to determine accuracy of Medicare billing.

## Communicating Approved Malnutrition Diagnosis Criteria

Health care providers must be educated about the approved criteria to diagnose malnutrition, especially because they may vary slightly from one hospital to another. Education can ensure that all clinicians involved in risk identification, assessment, diagnosis, and intervention for malnutrition provide consistent, evidence-based nutrition care. Physicians, nurses, RDNs,

pharmacists, speech-language pathologists, and CDSs are some of the clinicians who need to receive education.

Because the criteria list is often long and contains multiple assessment factors, physicians may have difficulty remembering the approved criteria when asked to corroborate the RDN's malnutrition diagnosis, whether directly contacted by the RDN or queried by the CDSs. Certain strategies can facilitate this process (Table 2). Figure 2 shares an example of documentation best practices from the coding department at a Midwest hospital.

## Optimizing the Electronic Medical Record to Communicate Nutrition Assessment Data and Malnutrition Diagnosis

RDNs should work with nursing and information technology staff to optimize nursing electronic medical record (EMR) workflow in documenting items that should be assessed for malnutrition, such as meal and oral nutrition supplement intake, enteral and parenteral nutrition delivery, and anthropometric measurements. Nursing staff require periodic education on how, where, and why to document relevant information to provide RDNs with adequate information to assess the patient accurately and assign the appropriate nutrition diagnosis.

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### Table 2. Strategies to Educate Interdisciplinary Health Care Members about Malnutrition Clinical Characteristics

1. Create laminated pocket cards listing malnutrition clinical characteristics for medical students, interns, and residents.
2. Embed a link to the approved malnutrition clinical characteristics in the electronic medical record for easy reference while completing documentation.
3. Present a complicated case series for registered dietitian nutritionists, nurses, physicians, and other clinicians to discuss patients with severe protein-calorie malnutrition that illustrates common etiologies and interventions for these patients.
4. Present malnutrition clinical characteristics at physician/resident orientation or on grand rounds.
5. Use facility-specific communication and education processes such as clinical alerts or email blasts.
6. Include a link to the malnutrition clinical characteristics in queries sent by coding documentation specialists to physicians for easy reference.
7. Discuss individual patients with the health care team during rounds, care conferences, or individually.

**Figure 2. Best practice tip for documenting signs and symptoms of malnutrition from the author’s institution.**

**Provider Documentation Tip**  
Week of 2/21/2016

<div style="background-color: #f08080; padding: 5px; border: 1px solid black; margin-bottom: 5px;"> <b>COMMON Documentation</b> </div> <ul style="list-style-type: none"> <li>• Frail</li> <li>• Cachectic</li> <li>• Malnourished</li> <li>• Severely Malnourished</li> </ul>	 	<div style="background-color: #90ee90; padding: 5px; border: 1px solid black; margin-bottom: 5px;"> <b>BEST PRACTICE Documentation</b> </div> <ul style="list-style-type: none"> <li>✓ Underweight</li> <li>✓ Cachexia</li> <li>✓ Protein Calorie Malnutrition (Mild, Moderate, Severe)</li> </ul> <p>Is there a Dietary Consult?</p> <p><b>Severe Protein Calorie Malnutrition Clinical Indicators:</b>  <b>Decreased energy intake:</b> <math>\leq 50\%</math> energy intake <math>\geq 5</math> days  <b>Body fat depletion:</b> moderate to severe  <b>Muscle mass depletion/wasting:</b> moderate to severe  <b>Fluid accumulation:</b> moderate to severe  <b>% Weight loss:</b> <math>&gt; 5\%</math> in 1 month, <math>&gt; 7.5\%</math> in 3 months, <math>&gt; 10\%</math> in 6 months, <math>&gt; 20\%</math> in 12 months</p>
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The malnutrition diagnosis can only be assigned an ICD-10 code and added to the overall charge master if the physician or other primary care provider documents it as a medical diagnosis. The CMO and other physician leaders can help determine preferred communication pathways when RDNs have identified a patient with malnutrition, such as a phone call, discussion on rounds, or electronic notification through the EMR. A practice that has been very successful at multiple facilities is the Nutrition Summary, in which the RDN identifies a patient as malnourished and creates a concise note detailing criteria observed. The Summary is sent electronically through the EMR to the physician responsible for care of the patient, requesting agreement and signature. If the physician signs, indicating agreement with the RDN assessment, the CDS can enter the diagnosis into the patient record. The response rate with this process is believed to be higher than that associated with more traditional communication methods, such as verbal communication on medical rounds or leaving sticky notes in the physician’s progress note or order section.

Building a close working relationship with the CDS team can facilitate malnutrition coding of appropriate patients. CDSs need to understand malnutrition clinical characteristics and feel comfortable contacting RDNs when clarification is needed to improve the chances of diagnosing the correct, billable malnutrition type and severity. For example, a physician may diagnose a patient with “malnutrition,” which is not a codable form of the diagnosis. The CDS who has a good relationship with the RDN can raise the issue, and the RDN can work with the physician and CDS to provide the appropriate diagnosis for the patient. One suggestion is to have an identifiable field in a flowsheet where the RDN or physician can choose the correct malnutrition diagnosis from a discrete field. The coders can run a periodic report from that list, then check to see if physicians have written a medical diagnosis of malnutrition, querying them for agreement with the RDN’s nutrition diagnosis if needed.

### Determining the Impact of Malnutrition Documentation and Coding on Payment and Case Mix Index (CMI)

Several steps are involved in determining the impact of malnutrition documentation and coding on hospital payment and the CMI. RDNs should develop a quality assurance/performance improvement (QAPI) program to ensure that patients to whom they assign a nutrition diagnosis of malnutrition are actually given that medical diagnosis by the physician and the diagnoses are coded by the CDSs. A QAPI program also addresses patient-level data needed from the finance department.

Table 3 provides sample data that can be tracked by the RDNs as part of a malnutrition QAPI program. These data can be used to track the prevalence of malnutrition in patients seen by RDNs at the hospital, which can provide useful insight into the nutrition severity level of the patient population. The data also can be analyzed retrospectively to determine if patients are assigned the corresponding ICD-10 code upon discharge. These findings can contribute to decisions about whether a performance improvement plan should be implemented to enhance the process.

Obtaining the data needed to determine the impact on payment and CMI can be challenging for many reasons and is often the part of the program that needs the most support from senior leaders such as the CMO. RDNs may not know the correct terminology to request the needed data, and once obtained, RDNs may not know how to interpret the data to determine if they are indeed the data needed. Data that should be obtained from the finance department for each patient are described in Table 4. Such data can be compared with examples of data in Table 3 that can be

**Table 3. Example Data Collected by the Registered Dietitian Nutritionist (RDN) for Patients Assigned a Malnutrition Diagnosis**

Patient identifier	Date seen by RDN	Not malnourished	Mild malnutrition (E44.1)	Moderate malnutrition (E43)	Severe malnutrition (E44)	Date communicated to physician
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**Table 4. Data Needed for Each Patient to Determine Impact of Malnutrition Code on Payment and Case Mix Index**

Patient identifier	1 <sup>0</sup> insurance	2 <sup>0</sup> insurance	Final MS-DRG assigned	2 <sup>0</sup> dx (MCC)*	2 <sup>0</sup> dx (CC)**
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1<sup>0</sup>=primary, 2<sup>0</sup>=secondary, CC=complication or comorbidity, dx=diagnosis, MCC=major complication or comorbidity, MS-DRG=Medicare Severity-Diagnosis Related Group

\*Most patients have several columns of 2<sup>0</sup> diagnoses that are MCCs for that MS-DRG.

\*\*Most patients have several columns of 2<sup>0</sup> diagnoses that are CCs for that MS-DRG.

tracked by the RDNs as part of a QAPI program.

Using the patient-level data described in Table 4 to determine the actual impact of the malnutrition coding requires knowledge of the base rate for Medicare payment for the hospital for the current year. The base rate for payment is developed annually by Medicare using several factors, including but not limited to geography, resident and medical education costs, overhead costs, and average CMI from the year before (which indicates acuity level of patients cared for at that institution) (12). The patient financial services department should be able to provide the base rate for the current fiscal year for Medicare patients using the Diagnosis Related Group (DRG) payment system.

The inpatient prospective payment system through CMS established Medicare Severity-DRGs (MS-DRGs) (12). Using this system, patients with the same diagnosis and similar clinical characteristics are assigned to an MS-DRG, and the hospital receives a fixed payment amount based on the average cost of care for patients in that group. In addition to the principal diagnosis for that hospitalization, the patient may have additional conditions that increase the resources needed to care for him or her. These are known as either major complications or comorbidities (MCCs) or

complications or comorbidities (CCs). The hospital receives a higher payment for MS-DRGs associated with a CC, and an even higher payment for MS-DRGs associated with MCCs. Table 1 indicates which malnutrition diagnoses are considered MCCs or CCs. This same system is used to determine the CMI, which is a description of the level of severity of patients being cared for at that hospital. Of note, only one CC or MCC is required to increase the severity level of the MS-DRG, so the malnutrition diagnosis is not always the one that makes a difference on the payment or the CMI. However, it should always be coded when appropriate.

#### Calculating the Impact of Malnutrition Coding on Hospital Payment

Each MS-DRG has a relative weight (RW) assigned to it by CMS; RW tables are updated each year and can be found at [www.cms.gov](http://www.cms.gov) (13). The RW reflects the severity of illness associated with the given diagnosis. Medicare determines payment for a patient's hospital stay by multiplying the RW of the MS-DRG assigned at discharge by the base rate for that hospital for that year. Table 5 provides sample calculations for a hospital whose base rate is \$8,800.

#### Calculating the Impact of Malnutrition Coding on CMI

The CMI is the average of all of the RWs assigned to patients discharged from a hospital in a given time period (14),

calculated by summing the RWs for all Medicare discharges and dividing that sum by the number of discharges. A higher CMI indicates that the patient population has a higher acuity (is sicker) compared with other patient populations. Similarly, when comparing two hospitals, the hospital with the higher CMI serves more complex patients. When the malnutrition diagnosis affects the severity level of the DRG assigned and, therefore, increases the RW for an individual patient, it has an impact on the overall CMI. Over time, such impacts can be a major financial benefit to the hospital.

Many hospitals adjust their statistics based on the CMI. For example, the total mortality rate is reported using both a raw score and a score that has been adjusted based on CMI. The CMI is also often used to adjust the average cost per patient for a given hospital relative to the adjusted average cost for other hospitals by dividing the average cost per patient by the hospital's calculated CMI. The adjusted average cost per patient reflects the charges reported for the types of cases treated in that year. Table 6 offers example calculations between two hypothetical hospitals. The expenses per patient at the two hospitals are close to equal when adjusted for acuity of patients served using the CMI. Figure 3 illustrates additional examples of how hospitals use CMI to adjust performance metrics.

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**Table 5. Example Calculations for Determining Payment Based on the MS-DRG System Using the RW Assigned by Medicare for Fiscal Year 2017**

MS-DRG	Example MS-DRG	RW	Payment (base rate \$8,800)
DRG without CC or MCC	195 – Simple pneumonia without CC or MCC	0.7028	\$ 6,184.64
DRG with CC but no MCC	194 – Simple pneumonia with CC	0.9469	\$ 8,332.72
DRG with at least 1 MCC	193 – Simple pneumonia with MCC	1.3860	\$12,196.80

CC=complication or comorbidity, MCC=major complication or comorbidity, MS-DRG=Medicare Severity-Diagnosis Related Group, RW=relative weight.

A hypothetical base rate is used and is multiplied by the RW of the MS-DRG to calculate the payment for patients assigned to that MS-DRG. This does not account for any incentives or penalties the hospital may receive due to Value-Based Purchasing performance.

**Table 6. Sample Calculations for Adjusting Expenses per Patient Based on the Case Mix Index (CMI)**

	Hospital A	Hospital B
Average cost per patient	\$1,200	\$1,700
CMI	0.9	1.25
Adjusted cost per patient	$\$1,200 \div 0.9 = \$1,333$	$\$1,700 \div 1.25 = \$1,360$

Table 7 shows the CMI for patients discharged from a large academic medical center in the mid-Atlantic region in a given time period who were assigned to the four disease state DRG groups that were chosen to be studied (author’s report, previously unpublished data). The first column shows the CMI as it was actually coded, with some of the patients coded for malnutrition as a secondary diagnosis appropriately and some not coded who should have been. The second column shows what the CMI would have been if malnutrition was not coded as a secondary diagnosis on the 9 patients for which it was the primary driver for the severity level assigned to the patient. This illustrates how the CMI would have been lower if the malnutrition had not been coded. The third column keeps the CMI as it is (with the coded malnutrition) and adds in the cases that should have been coded for malnutrition. This illustrates the ideal state of all identified malnutrition being documented by the RDN and physician, the intervention occurring, and the malnutrition coded. Due to a small proportion of patients who were malnourished in each of the categories, the coding does not have a substantial impact on CMI. In this example,

only four out of hundreds of possible DRG groups were examined, but the overall impact of malnutrition coding could potentially be much larger.

Table 8 uses this same data set and follows the sample calculation methods in Table 5 to determine the impact on hospital payment for the cases that were coded for malnutrition. Table 9 indicates the missed payment opportunities when malnutrition is identified by the RDN but not documented by the physician as a medical diagnosis and, therefore, not added to the master charge list with an ICD-10 code for malnutrition as a secondary diagnosis (15). It is very important to note that these totals are based on calculations using the RW tables published annually by Medicare and the hospital’s reported base rate; they may not reflect any incentives or penalties as a result of the Value-Based Purchasing program (16). Accordingly, actual payment at the end of the fiscal year to the hospital from Medicare may vary slightly.

**Conclusion**

Implementing a complete malnutrition program requires several steps, including

approval of consensus malnutrition criteria with the hospital administrative and interdisciplinary team, proper training and practice for RDN staff, and tracking and reporting of revenue and impact on the hospital’s CMI. These pieces all are key to documenting the value and expertise of the RDN in the changing health care landscape. Undertaking the process in a step-by-step approach, finding the right stakeholders, and enlisting the assistance of the RDN team can create a powerful program.

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**Figure 3. Example from a mid-Atlantic hospital using the case mix index (CMI) to adjust performance factors.**

Volumes	Actual	Budget	Variance	Variance %
Discharges	18,542	18,883	(341)	-1.8%
Average Length of Stay	5.92	5.40	0.52	9.6%
CMI Adjusted Average Length of Stay	2.91	2.73	0.18	6.6%
Clinic Visits	506,908	516,501	(9,593)	-1.9%
Emergency Department Visits	40,056	39,609	447	1.1%
Main OR Surgeries	11,514	11,278	236	2.1%
OPSC Surgeries	7,371	7,707	(336)	-4.4%
All Payor CMI	2.03	1.98	0.05	2.5%
Paid FTE/Adj Discharge/All Payor CMI	25.00	24.82	0.18	0.7%

**Table 7. Impact on the Case Mix Index (CMI) of Malnutrition Coding**

DRG Group (n)	CMI as Coded	CMI If Malnutrition Had Not Been Coded	CMI If Opportunities Were Not Missed (IDEAL STATE)
COPD 190-192 (71)	0.943	0.943	0.949
CAP 193-195 (81)	1.089	1.068	1.118
Spinal Fusion 459-460 (193)	4.201	4.201	4.228
Chemotherapy 846-848 (111)	1.275	1.268	1.275
Overall (456)	2.284	2.278	2.290

CAP=community-acquired pneumonia, COPD=chronic obstructive pulmonary disease, DRG=Diagnosis Related Group

**Table 8. Total Captured Increased Reimbursement from Malnutrition Documentation and Coding (15)**

DRG Group (n)	Cases with Malnutrition as Secondary Diagnosis (n)	Cases with Malnutrition as Primary Driver of Reimbursement (n)	Total Increased Captured Reimbursement
COPD 190-192 (71)	1	0	0
CAP 193-195 (81)	11	7	\$28,526.21
Spinal Fusion 459-460 (193)	5	1	\$24,197.69
Chemotherapy 846-848 (111)	2	1	\$10,603.71
Overall (456)	19	9	\$63,327.62

CAP=community-acquired pneumonia, COPD=chronic obstructive pulmonary disease

**Table 9. Total Missed Reimbursement When Documentation and Coding For Malnutrition Are Absent (15)**

DRG Group	RDN Documentation of Malnutrition But No Secondary Diagnosis Code (n)	Secondary Diagnosis of Malnutrition Would Have Been Primary Driver of Reimbursement (n)	Total Missed Reimbursement
COPD 190-192	5	1	\$ 1,976.58
CAP 193-195	10	6	\$26,128.92
Spinal Fusion 459-460	3	2	\$48,395.38
Chemotherapy 846-848	2	0	0
	20	9	\$76,500.88

CAP=community-acquired pneumonia, COPD=chronic obstructive pulmonary disease

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