Understanding and Implementing the New Definition of Malnutrition

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Medical Grand Rounds
St. Charles Medical Center
Bend, Oregon
January 17, 2014

Malnutrition is a major contributor to increased morbidity and mortality, decreased function and quality of life, increased frequency and length of hospital stay, and higher health care costs.

New guidelines have changed the nutritional assessment methods. The St. Charles Supervisor of Clinical Documentation Improvement requested education to update physicians on the new guidelines, citing a lack of understanding of the new criteria.

This activity addresses competencies “medical knowledge”, “patient care” and “systems-based practice”.

This education is also relevant to documentation improvement specialists, medical coders, dietitians and nurses.

Learning Objectives

1. Increase understanding to apply the (2012) international consensus characteristics for adult disease-related malnutrition and their application in patient care.
2. Examine updates on the relationship of inflammation, serum albumin and relationship to adult disease-related malnutrition.
3. Demonstrate how consistent documentation enables clinicians to better establish prevalence of malnutrition and in turn target cost effective interventions.
4. Discuss future care models to prevent the negative economic impact of adult disease-related malnutrition.
5. Examine in-office and hospital tools to reduce incidence and identify patients at risk for adult disease-related malnutrition.

Note: we will be discussing adult malnutrition in light of energy balance and protein anabolism and catabolism rather than micronutrients.

The Skeleton in the Hospital Closet

“Failure to record height/weight
• Frequent staff rotation
• Diffusion of patient care responsibility
• Prolonged use of glucose/saline iv
• Withholding meals due to tests
• Inadequate tube feeding, unsanitary and uncertain composition
• Ignorance of composition of vitamin mixtures and other nutritional products
• Failure to recognize increased nutrition needs for injury/illness
• Surgical procedures without first optimizing nutrition; failure to give nutrition after surgery
• Failure to appreciate role of nutrition in infection/increase in use of antibiotics
• Lack of communication and interaction between MD and RD
• Lack of RD concern about every patient in hospital
• Delay of nutrition until advanced state of depletion
• Limited availability of laboratory tests to assess nutrition status
• Failure to use those that are available

Statement of Need:

Malnutrition is a major contributor to increased morbidity and mortality, decreased function and quality of life, increased frequency and length of hospital stay, and higher health care costs.

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The St. Charles Supervisor of Clinical Documentation Improvement requested education to update physicians on the new guidelines, citing a lack of understanding of the new criteria.

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What contributors to malnutrition have you observed?

Malnutrition: “The Cinderella of Modern Medicine”?

- Viewed as “Old technology”
- Failure to define in a way that engages physicians to cause it to be taken seriously
- Vague definitions and degree of it which requires interventions
- Imprecise and perceived to disagree on how to diagnose and describe prevalence


Malnutrition

Stratton, R., Green, C., Elia, M. Disease-Related Malnutrition: an Evidence-Based Approach to Treatment. CABI Publishing 2003.

The Malnutrition Carousel

25-34% of hospital admissions are at risk of malnutrition

- More GP visits
- More prescriptions
- More hospital admissions
- Longer stay, more complications
- More support needed after discharge from hospital
- More likely to need care

70% of patients weigh less on Hospital discharge

http://www.bapen.org.uk/about-malnutrition/introduction-to-malnutrition?showall=&start=1

Disease-related Malnutrition

“...decline in lean body mass with the potential for functional impairment” at multiple levels—i.e., molecular, physiologic, and/or gross motor.”


“Historic definitions for malnutrition syndromes have promoted widespread confusion and misdiagnosis. They also do not encompass a modern understanding of the role of inflammatory response,”

Words that Describe Malnutrition

- Anasarca
- Athrepsia
- Nutritional Atrophy
- Severe Calorie Deficiency
- Protein Deficiency
- Multiple Deficiency Syndrome
- Propranoxenia
- Arested Development due to Malnutrition
- Wasting Disease
- Nutritional Dwarfism
- Famine Edema
- Inanition Edema
- Starvation Edema
- Emaciation
- Nutritional Hydrops
- Hypoproteinosis
- Inanition with edema
- Inanition due to malnutrition
- Malnutrition degree, 1st, 2nd, 3rd, mild, moderate, severe
- Protein Calorie Malnutrition NEC
- Protein Calorie Severe NEC
- Protein Calorie due to specified underlying condition
- Pediatrophia
- Pluricarental syndrome of infancy
- Plurideficiency syndrome of infancy
- Polycarental syndrome of infancy
- Prekwashiorkor
- Growth retardation due to malnutrition
- Physical retardation due to malnutrition
- Acute Disease or Injury-Related Malnutrition
- Starvation Related Malnutrition (pure chronic starvation, anorexia nervosa)
- Chronic Disease – Related Malnutrition (organ failure, pancreatic cancer, rheumatoid arthritis, sarcopenic obesity)
- Acute Disease or Injury-Related Malnutrition (major infection, burns, trauma, closed head injury)

Etiology Based Malnutrition Definitions

Nutritional Risk Identified
- Compromised intake or loss of body mass.

Inflammation present? No / Yes

- Yes
  - Mild to Moderate Degree
  - Yes
  - Marked Inflammatory Response

- No
  - Starvation Related Malnutrition
  - Chronic Disease – Related Malnutrition
  - Acute Disease or Injury-Related Malnutrition
Nutrition Risk Screening

- Determines at-risk patients
- In all settings of care, or targeted patient populations
- Multiple validated tools are available
- Compliance with Joint Commission and CMS admission screening to hospital

Mini-Nutrition Assessment
Malnutrition Universal Screening Tool
Short Nutritional Assessment Questionnaire

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2964075
http://www.bapen.org.uk/screening-for-malnutrition/must/must-toolkit/the-must-itself
http://fightmalnutrition.eu/

Screening Needs Action/Intervention to be of Value

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(pure chronic starvation, anorexia nervosa)

Chronic Disease – Related Malnutrition
(organ failure, pancreatic cancer, rheumatoid arthritis, sarcopenic obesity)

Acute Disease or Injury-Related Malnutrition
(major infection, burns, trauma, closed head injury)

Starvation-Related Malnutrition in Adults

(Malnutrition of social or environmental circumstances)

Classic: The Minnesota Semi-starvation Experiment

Colorado State University tape or DVD.

http://www epis t tk. edu/videos/video.aspx?id=4047
• distinguish the effects of semi-starvation on the body’s strength, composition, physiological status, and mood from the confounding effects of such underlying diseases as cancer, intestinal malabsorption, renal insufficiency, emphysema, etc. – illnesses that often give rise to conditioned PCM.

• The Minnesota group showed clearly that semi-starvation can be independently responsible for an array of psychological problems such as anxiety, depression, and hypochondria.

• From their studies, it is possible to demonstrate a clear relationship between a decline in fat-free mass and PCM-associated morbidity.

“Even in times of comparative peace and prosperity man suffers from malnutrition, including semi-starvation or actual starvation, as a result of disease, injury, individual poverty, nutritional ignorance, inequitable food distribution, and crop failure. These factors are aggravated in many parts of the world by population pressures that tend to exceed the food production.”

Hypothetical relationship – Starvation Related Malnutrition w & w/o Nutritional Support

- Leaner person has a higher rate of weight loss than the obese person during fasting
- Leaner person has a greater loss of lean tissue
- The rate of weight loss influences function during food shortage
- Loss of body weight means fat and muscle loss
- Loss of body weight means organ mass loss
- Shifts in body fluids

Chronic Disease-Related Malnutrition in Adults &
Acute Disease or Injury-Related Malnutrition

Etiology Based Malnutrition Definitions

Nutritional Risk Identified
- Compromised intake or loss of body mass.
- Inflammation present? No / Yes

Yes

No

Chronic Disease – Related Malnutrition (organ failure, pancreatic cancer, rheumatoid arthritis, sarcopenic obesity)

Acute Disease or Injury-Related Malnutrition (major infection, burns, trauma, closed head injury)
Inflammation

Promotes:
- Metabolic dysregulation
- Hyperglycemia
- Decreased visceral proteins
- Muscle catabolism
- Edema
- Anorexia
- Malaise / deconditioning

Can Blunt: Favorable responses to nutrition intervention

Hypothetical Relationship: Acute or Chronic Disease or Injury-Related Malnutrition

Complications relative to loss of lean body mass*

Table 4: Complications related to loss of lean body mass*

<table>
<thead>
<tr>
<th>Lean body mass (% loss of lean body mass)</th>
<th>Complications (related to lean body mass)</th>
<th>Associated, mortality, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Imbalance, increased infection</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>Decreased healing, malnutrition, thinning of limbs</td>
<td>0</td>
</tr>
<tr>
<td>30</td>
<td>Too weak to sit, pressure sores develop, no healing</td>
<td>0</td>
</tr>
<tr>
<td>40</td>
<td>Severe malnutrition, death</td>
<td>100</td>
</tr>
</tbody>
</table>

*Assuming no preexisting disease.


Priority for Protein Intake vs % Loss of Lean Tissue

<table>
<thead>
<tr>
<th>Priority for Protein Intake</th>
<th>% Loss of Lean Tissue</th>
</tr>
</thead>
</table>

Chronic Disease-Related Malnutrition

- Immune changes, especially cellular immunity
- Muscle changes: reduction in mass and function
- GI changes:
  - Gut damaged by:
    - Decrease in mesenteric blood flow: operations, procedures
    - Altered mucus
    - Altered acid and bile secretion
    - Altered gut motility
    - Damaged villi
    - Enzyme decrease

Acute Disease or Injury-Related Malnutrition

(major infection, burns, trauma, closed head injury)
Why not serum albumin/visceral proteins?
• Inflammatory disease / illness / injury elicit a cytokine-mediated acute phase response
  – Alters hormone secretion and target organ function
  – Favors a catabolic state that results in metabolic alterations
    • Over the short run the acute phase metabolic response with resulting catabolism is likely an appropriate adaptive response.
    • If the underlying stressor is severe, protracted or repeated, then adverse outcomes will result.

Inflammation can blunt favorable responses to nutrition intervention.

Nutrition alone is ineffective in preventing muscle loss in inflammation.

Albumin/Pre-albumin
“Pre-albumin levels decreasing \(\Rightarrow\) \(\text{poor nutrition}^3\)"

• Remains in textbooks and publications.
• Challenging to use other phrasing after so long a pattern
• A measure of morbidity and mortality
• Much used leverage for over 30 years to prompt treatment action
• See The Academy Evidence Analysis Library

...so what do we do now to get action?

Rationale for Developing Academy/A.S.P.E.N Malnutrition Diagnoses/Markers
• No standardization
• Multiple Definitions
• Multiple Diagnostic (ICD-9) Codes
• Multiple characteristics used to diagnose
• Limited evidence base
• Emerging role of inflammation
  – Influence on Assessment Parameters
  – Influence on Response to Nutrition intervention
  – Anti-inflammatory Interventions / Nutrition interventions outcomes divergence

Task of Academy Malnutrition Work group (Adults)
1. Convert these clinical conditions into practical bedside clinical characteristics
   • Starvation-Related Malnutrition and
   • Disease/Injury Related Malnutrition

2. Propose additional detail to ICD-9 so they would be meaningful codes
Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition)

Jane W. White, PhD, RD, ADA*, Peggy Guenther, PhD, RN, Linda Jones, PhD, RD, FADANU, Annable Makes, MS, RD, DCEC, Monica Schneidler, MS, RD, the Academy Malnutrition Work Group, the ASPEN Malnutrition Task Force and the Academy of Nutrition and Dietetics Board of Directors

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**ICD-9 Codes** – Two Levels of Severity:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>262</td>
<td>Other Severe Protein Calorie Malnutrition</td>
</tr>
<tr>
<td>263.0</td>
<td>Malnutrition of a Moderate Degree</td>
</tr>
</tbody>
</table>

Three Typical Etiologies:

- Acute Illness/Injury – severe acute inflammation
- Chronic Illness – mild to moderate chronic inflammation
- Social/Environmental Circumstances – without inflammation

**Six Characteristics:**

- Weight Loss
- Insufficient Energy Intake
- Loss of Subcutaneous Fat
- Loss of Muscle Mass
- Localize or Generalized Fluid Accumulation
- Diminished Functional Status - measured by hand grip strength

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**Characteristics to Diagnose Adult Malnutrition**

- **Inadequate intake**
  - <50-75% estimated needs
  - By History
  - Observed

- **Unintended weight loss**
  - Occurs at Any BMI
  - Blackman Criteria

- **Physical Exam**
  - Muscle Loss
  - Subcutaneous Fat Loss
  - Fluid Accumulation
  - Localized
  - Generalized

- **Functional Status**
  - Hand Grip Strength

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**Malnutrition of Moderate Degree**

For Examples: ICD-9 Code 263.0 *

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Moderate Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Illness/Injury</td>
<td>75%–94% month, 3-6 months, 3-9 months, &gt;6 months</td>
</tr>
<tr>
<td>Chronic Illness</td>
<td>5%–19% month, 1-3 months, 3-6 months, 6-12 months, &gt;1 year</td>
</tr>
<tr>
<td>Social/Environmental</td>
<td>&lt;50% month, 3-6 months, 6-12 months, &gt;1 year</td>
</tr>
</tbody>
</table>

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*A 2013 ASPEN Consensus Definition for Adult Malnutrition was developed by the American Society for Parenteral and Enteral Nutrition (ASPEN) for the purpose of developing a comprehensive and consistent consensus-based classification system. This system was based on the ASPEN Consensus Criteria for the Definition of Adult Malnutrition*. This system is not intended to be used for epidemiological or clinical purposes. Additionally, *the authors of this document are not responsible for the interpretation or application of these criteria in clinical practice*. The criteria are intended to be used as a tool to guide the identification and documentation of adult malnutrition.
Physicians build less rapport with obese patients

"I think a lot of them are compassionate and don't realize this is going on," Dr. Katz said. "The antipathy for obesity is really rooted in our culture. We should expect better from doctors and train them better."

Obese and Malnourished? Yes!

"Are Doctors Nicer to Thinner Patients?"

Muscle Mass and Function in Malnutrition

- **Reduction in Muscle Mass**
- **Reduction in Muscle Function**
  - Muscle function is sensitive to reduction in nutritional intake even before any change in muscle mass occurs
  - Heart
  - Respiratory muscle
  - Hand grip strength

Acute Care Disease-Related Malnutrition Work Flow

Upon admission, patients are screened by Nursing and MD Consults to Nutrition

Registered Dietitian (RD) assesses patients with nutrition risk factors

RD reviews malnutrition findings with MD/NP/PA; team collaborates on plan of care with documentation

Upon discharge, Coders review medical records and assign ICD-9 codes which generate data to monitor population and provide potential reimbursement to hospital for acuity and MD for patient severity

Documentation and Work Flow

Quality Documentation

- Describe (succinctly, and descriptively) objective evidence and details supporting malnutrition criteria and characteristics
- Documentation of additional data builds supporting evidence
- Subjective information is important too: Describe pertinent evidence and associations to undernutrition
- Quantify data
  - Time frames of deficits, actual weight change and percentages over time
  - Intake percentages and estimates of intake compared to short term and long term targets (especially calories and protein)
- Include nutrition physical assessment descriptions!
- Avoid vernacular! Talk about nutrients, food, metabolism
- Describe ongoing nutritional needs and nutrient targets to stabilize or improve nutritional status in the future.

When Documenting Malnutrition: Remember

No single piece of information means a patient is malnourished:

- Use critical thinking
- Consider the whole patient situation
- Nutrition history
- Ongoing ability to access and consume food
- Weight history
- Food and liquids intake history
- Metabolism

Assessment of malnutrition occurs at this point in time, regardless of the prognosis

Documentation does not replace care, advocacy, communication concerns, questions and observations with other team members
Dr. Butterworth’s list 2013?

- Failure to weigh/measure and record height/weight
- Frequent staff rotation
- Diffusion of patient care responsibility
- Excessive use of glucose/saline IV
- Withholding meals due to tests
- Inadequate tube feeding, unsanitary and uncertain composition
- Ignorance of composition of vitamin mixtures and other nutritional products
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Challenges & Opportunities:

http://www.medicare.gov/hospitalcompare/?AspxAutoDetectCookieSupport=1


The Result?

The U.S. health care system today

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

Advising the nation | Improving health

INNOVATION CHALLENGE

Reduce the delivery of critical care

Best Care Experience

Innovative Care Models

Innovative Care Models

G8418: CALCULATED BMI BELOW THE LOWER PARAMETER AND A FOLLOW-UP PLAN WAS DOCUMENTED IN THE MEDICAL RECORD

HCPCS Code: G8418
HCPCS Long Description: Calculated BMI Below The Lower Parameter And A Follow-up Plan Was Documented In The Medical Record
HCPCS Short Description: Calc BMI bw low parma f/u

Consumer Education for Self Management

- A culture of partnership with patients
- Self management tools
- Resources
- Health Literacy attention
- How to interact with health care providers

http://www.ahrq.gov/patients-consumers/index.html

Oregon AND: Public Policy Committee DRAFT Proposal to Health Share Oregon CCO

Malnutrition Alert! Oregon

Purpose: To create accountability and value, and minimize the negative health and economic impact of disease-related malnutrition for the adult population in Oregon.

1. The Consensus Statement of the Academy of Nutrition and Dietetics and the American Society of Parenteral & Enteral Nutrition: Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition) is used as the characteristics data set for the diagnosis of disease related malnutrition in adults.

2. Report prevalence of Adult Disease-Related Malnutrition for systems, economic and outcomes analyses.

3. Create consumer value through education about self-management and by partnerships with health care providers.

Decreasing Malnutrition Prevalence: the Dutch Experience

Main achievements

Malnutrition is included in the main list of quality indicators in Dutch health care. As of 2013, this malnutrition performance indicator has been extended to hospital environments.

In 2012, 30% of all Dutch patients were screened at hospital admission. Over the last years, the combined Dutch efforts in fight malnutrition have led to gradually decreasing malnutrition prevalence rates in all health care settings in the Netherlands.

More information: www.fightmalnutrition.eu

Opportunities to reduce morbidity and save health care dollars
2. Consider use of validated screening tools and referrals in all settings of care, early and for high risk populations. Hospitals are only one location.
3. From all care settings and home, refer at-risk and malnourished persons for nutrition assessment, intervention, counseling and education by a registered dietitian.
4. Coordinate processes to capture and report adult malnutrition in populations.
5. Educate the public and colleagues for awareness, and preventive action.
6. Engage with Health Care Reform efforts to help your patients

ICD-9  ICD-10  ICD-10 NAMING
262  E43  Unspecified severe protein-calorie malnutrition
263.0  E44.0  Moderate protein-calorie malnutrition
263.1  E44.1  Mild protein-calorie malnutrition
263.8  No Code  Unspecified protein-calorie malnutrition
263.9  E46  Unspecified protein-calorie malnutrition
278.01  E66.01  Morbid (severe) obesity due to excess calories
783.22  R63.6  Underweight
783.21  R63.4  Abnormal weight loss
799.4  R64  Cachexia
V85.4  Z68.4  Body mass index (BMI) 40 or greater, adult
260  E40  Kwashiorkor
261  E41  Marasmus
42  Marasmic Kwashiorkor

Additional Notes and Resources

The Minnesota Semi-Starvation Experiment
Video or DVD
Mark Cole
970-491-5920
mcole@colostate.edu
Colorado State University
Academic Computing Network Services
Mail Stop 1018
Fort Collins, CO 80523

Resources and Links to Efforts in Europe & North America
Malnutrition Resource sites: UK, EU, US, CA
European Society of Enteral & Parenteral Nutrition Video
http://www.espen.org/wedding-accounts/videos
European Food Information Council
http://www.eufic.org/article/en/artid/Time-recognise-malnutrition-Europe-
http://www.youtube.com/watch?feature=youtu.be&hl=en&v=Cqcc9bwt5tg
http://malnutrition.andjrnl.org/
http://www.fightmalnutrition.eu/
The Netherlands and EU excellent and well thought out
UK Guidelines
http://www.nice.org.uk/CG032
UK: Nutrition Support in Adults: Oral nutrition support, enteral tube feeding and parenteral nutrition – Costing Report and Excel Template
http://www.bapen.org.uk/
British professional resource site
Wales
http://nutritioncareincanada.ca/
Canada

Thank you!
Questions?
terese.scollard@providence.org
503.216.2496
Additional Reading

Malnutrition Syndromes: A Conundrum vs Continuum
Goodman, Jesse; Serio, Rachel; Brand, Rachel J; and Hambroger, Olof
The online version of this article is to be found at:
http://open.sagepub.com/content/30/3/261

Agreement on Defining Malnutrition
Weiner, Eugene
http://open.sagepub.com/content/36/5/948
The online version of this article can be found at:
http://open.sagepub.com/content/30/3/261

Clinical Nutrition Insight
Serum Proteins and Nutrition Monitoring: Has This Relationship Run Its Course?

Academy Evidence Analysis Library:
Validated Nutrition Risk Screening Tools

MNA- Mini Nutrition Assessment for the Elderly

NRS 2002:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2964075/
for “adults”

Malnutrition Universal Screening Tool (MUST)
http://www.bapen.org.uk/screening-for-malnutrition/must/must-toolkit/the-must-itself
http://www.bapen.org.uk/screening-for-malnutrition/must/must-apper
http://www.bapen.org.uk/screening-for-malnutrition/must-calculator

Short Communication

Adult Starvation and Disease-Related
Malnutrition: A Proposal for Etiology-
Based Diagnosis in the Clinical
Practice Setting From the International
Consensus Guideline Committee

Gordon L. Jensen, joy Mirtala, charlene Compere, Binyou(Dong), skosz Forber, Rafael Figueredo, Grijalva, Gil-Harby, Jens Kondrup, Demetrio Liberator, Binde Namava, Juan Carlos Castillo-Pinazo, and Dan Warmer

Advocacy and Public Policy Special Report

Disease-Related Malnutrition and
Enteral Nutrition Therapy: A Significant Problem With a
Cost-Effective Solution

National Alliance for Inositol Therapy and the American Society for Parenteral and Enteral Nutrition Public Policy
Committee and Board of Directors