Redefining Adult Malnutrition -
Where Are We Now?
Ainsley Malone, MS, RD, CNSC, LD
Nutrition Support Dietitian
Mt. Carmel West Hospital
Columbus, OH
FOCUS 2013

Objectives
• Outline historical and current issues related to hospital malnutrition
• Review current diagnostic approach to malnutrition
• Outline standardized malnutrition criteria
  – Patient case application
• Discuss strategies for implementation

Landmark Publication

The Skeleton
In the Hospital Closet

“I suspect, as a matter of fact, that one of the largest pockets of unrecognized malnutrition in America exists not in rural slums or urban ghettos, but in the private rooms and wards of big city hospitals.”

Nutr Today 1979: 2:4-8
A New Approach to Defining Malnutrition

Rationale for Developing Academy/A.S.P.E.N Characteristics to Identify Malnutrition:

- No standardization
  - Multiple Definitions
  - Multiple Diagnostic (ICD-9) Codes
  - Multiple characteristics used to Diagnosis
  - Limited evidence base
- Emerging role of inflammation
  - Influence on Assessment Parameters
  - Influence on Response to Nutrition Intervention
  - Anti-inflammatory Interventions / Nutrition interventions outcomes divergence

Contributors to Malnutrition In Acute Care Settings

Personal
- Age
- Apathy/Depression
- Disease
- Inability to buy/prepare food
- Inability to chew/swallow
- Limited mobility
- Sensory loss
- Medications
- Therapies: vents/drains/NPO, etc.

Organizational
- Lack of recognition
- Lack of screening/assessment
- Lack of nutrition education
- Confusion re: responsibility
- Ht/Wt not measured/recorded
- Failure to measure/record food intake
- Inadequate nutrients provided
- Lack of feeding assistance staff
- Nutrition status low priority
Negative Outcomes Associated With Malnutrition

- Prospective evaluation of patients admitted to a tertiary care hospital in Singapore
  - 618 patients
- Subjective global assessment performed
  - Well nourished - 71%
  - Mod malnourished - 25%
  - Severely malnourished - 4%
  - Highest prevalence
    - Oncology - 71%
    - Endocrinology - 49%
    - Respiratory - 47%

Lim S, et al., Clin Nutr 2012;31:345

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>Well Nourished (n=583)</th>
<th>Malnourished (n=235)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital LOS (days)</td>
<td>4.6</td>
<td>6.9</td>
<td>0.001</td>
</tr>
<tr>
<td>Readmission within 90 days</td>
<td>133 (22%)</td>
<td>87 (37%)</td>
<td>0.01</td>
</tr>
<tr>
<td>Readmission within 6 months</td>
<td>187 (32.1%)</td>
<td>113 (49.1%)</td>
<td>0.035</td>
</tr>
<tr>
<td>1 year mortality</td>
<td>24 (4.1%)</td>
<td>80 (34%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>2 year mortality</td>
<td>39 (6.7%)</td>
<td>100 (42.6%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Cost of hospitalization per patient ($S)</td>
<td>3707</td>
<td>4606</td>
<td>0.085</td>
</tr>
</tbody>
</table>

Lim S, et al., Clin Nutr 2012;31:345

Malnutrition in the Surgical Patient

- Prospective observational evaluation
- Objective
  - To investigate the nutritional status of patients in a general surgery ward and
  - To define the correlation between malnutrition risk and clinical outcome
- n = 100 surgical patients
  - Able to complete nutrition screening
  - MST screening tool

Ben-Ishay O. Gastroenterol Res Pract 2011: 840512
Development of a New Construct for Defining Malnutrition

  - Representatives from multiple international nutrition societies
- Define adult malnutrition syndromes in developed countries using an etiology-based approach that incorporates an appreciation of the continuum of inflammatory response
- Recognize the contributors to the development of malnutrition:
  - Semi starvation
  - Inability to assimilate nutrients consumed
  - Systemic inflammatory response

Etiology Based Malnutrition Definitions

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

Inflammation present? No / Yes

- 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)
Nutrition Risk Identification

- Nutrition Screening
  - A requirement by regulation agencies
  - Validated screening tools
    - Malnutrition Screening Tool (MST)
    - Mini Nutritional Assessment (MNA)

- Nutrition Assessment and Diagnosis
  - Three etiologic categories
  - Assess for presence of inflammation

“Practical” Indicators of Inflammation?

- Lab
  - Albumin, pre-albumin
  - C-reactive protein (CRP)
  - Cytokines - IL-6
  - Procalcitonin

- Clinical signs
  - Fever, leukocytosis, hyperglycemia

The degree/duration of change in which of the above parameters that best reflects inflammation in which condition/disease state is unknown at this time.

A Vision for the Identification of Malnutrition in all Settings

Wouldn’t it be amazing to have standardized definitions/characteristics and to know the prevalence of Adult Malnutrition in…

Our Health System

Our Country

Our World
Characteristics to Identify Adult Malnutrition

- Attributes
  - Basic parameters (hallmarks, few in total #)
  - Support diagnosis
  - Characterize severity
  - Increase/decrease as nutritional status changes
  - Evidence-based (when possible) / expert opinion
  - Will change over time as evidence of validity accrues

Any 2 or more characteristics must be used to identify Adult Malnutrition

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.
  - Results in down regulation of visceral protein synthesis

Inflammation can blunt favorable responses to nutrition intervention

Nutrition alone is ineffective in preventing muscle loss in inflammation

Academy Evidence Analysis: Albumin/Prealbumin

- Does serum albumin correlate with weight loss in four models of prolonged protein-energy restriction: anorexia nervosa, non-malabsorptive gastric partitioning bariatric surgery, calorie-restricted diets or starvation?
  - In the four models of prolonged protein-energy restriction, there was no correlation between serum albumin and weight loss.
  - Grade II

- Does serum prealbumin correlate with weight loss in four models of prolonged protein-energy restriction: Anorexia nervosa, non-malabsorptive gastric partitioning bariatric surgery, calorie-restricted diets or starvation?
  - In the four models of prolonged protein-energy restriction, there was no correlation between serum prealbumin and weight loss.
  - Grade III
Characteristics to Identify Severe Malnutrition

- Inability/unwillingness to eat
- Compromised intake of varying degree and duration
- Evidence of suboptimal intake
  - ≥ 5 days with intake of ≤ 50% of total estimated energy requirement (acute illness/injury category)
  - ≥ 1 month with intake of < 75% total estimated energy intake (chronic category)
  - ≥ 1 month with intake of < 50% total estimated energy intake (environmental/social circumstances category)

Characteristics to Identify Non-Severe (Moderate) Malnutrition

- Inability/unwillingness to eat
  - Compromised intake of varying degree and duration
  - Evidence of suboptimal intake
    - > 7 days with a nutrient intake of ≤ 75% of total estimated energy requirements (acute injury/illness category)
    - > 1 month days with a nutrient intake of ≤ 75% of total estimated energy requirements (chronic illness/condition category)
    - > 3 months with a nutrient intake of ≤ 75% of total estimated energy requirements (environmental/social circumstances categories)

Characteristics to Identify Severe Malnutrition

- Unintended weight change
  - Interpretation of Percent Weight Loss**

<table>
<thead>
<tr>
<th>Percentage Weight Loss</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 20</td>
<td>1 year</td>
</tr>
<tr>
<td>&gt; 10</td>
<td>6 months</td>
</tr>
<tr>
<td>&gt; 7.5</td>
<td>3 months</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>1 month</td>
</tr>
<tr>
<td>≥ 2</td>
<td>1 week</td>
</tr>
</tbody>
</table>

**Height, weight and usual weight need to be obtained in order to determine the percentage and interpret the significance of weight loss.

Acute = 1 week, 1 month or 3 months
Chronic = 1 month, 3-12 months
Characteristics to Identify Non-Severe (Moderate) Malnutrition

- Unintended weight change
  - Interpretation of Percent Weight Loss

<table>
<thead>
<tr>
<th>Percentage Weight Loss</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>1 week</td>
</tr>
<tr>
<td>5</td>
<td>1 month</td>
</tr>
<tr>
<td>7.5</td>
<td>3 months</td>
</tr>
<tr>
<td>10</td>
<td>6 months</td>
</tr>
<tr>
<td>20</td>
<td>1 year</td>
</tr>
</tbody>
</table>

**Note: Height, weight, and usual weight need to be obtained in order to determine the percentage and interpret the significance of weight loss.**

Acute = 1 week, 1 month or 3 months
Chronic = 1 month, 3-12 months

Characteristics to Identify Malnutrition

- Changes in Body Composition
  - Loss of Subcutaneous Fat
    » Orbital, triceps, fat overlying the ribs
    » Mild to severe
  - Muscle Loss
    » Temples (temporalis muscle)
    » Clavicles (pectoralis & deltoids)
    » Shoulders (deltoids)
    » Interosseous muscles
    » Scapula (latissimus dorsi, trapezius, deltoids)
    » Thigh (quadriiceps) and calf (gastrocnemius).

Loss Of Subcutaneous Fat
Loss of Muscle Mass

Physical Assessment – Fat Loss

<table>
<thead>
<tr>
<th>Exam Area</th>
<th>Tips</th>
<th>Severe Malnutrition</th>
<th>Non-Severe Malnutrition</th>
<th>Normally Nourished</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below the Eye</td>
<td>Touch above the cheekbone</td>
<td>Hollow look, depressions, dark circles, loose skin</td>
<td>Slightly dark circles, somewhat hollow look</td>
<td>Slightly bulged fat pads.</td>
</tr>
<tr>
<td>Neck</td>
<td>View patient from front and side</td>
<td>Individual muscles (sternomastoid, trapezius and clavicles) well visualized</td>
<td>Individual muscle anatomy less apparent. Clavicles less prominent</td>
<td>Subcutaneous fat present; muscles not easily visualized</td>
</tr>
<tr>
<td>Ribs/Lower back</td>
<td>Have patient press hard against a solid object</td>
<td>Depression between ribs very apparent</td>
<td>Ribs apparent, depressions between them less pronounced</td>
<td>Chest is full; ribs do not show</td>
</tr>
<tr>
<td>Triceps/Biceps</td>
<td>Arm bent, roll skin between fingers</td>
<td>Very little space between folds, fingers touch</td>
<td>Some depth to pinch but not ample</td>
<td>Ample fat tissue obvious between folds of skin</td>
</tr>
</tbody>
</table>

Physical Assessment – Muscle Loss

<table>
<thead>
<tr>
<th>Exam Area</th>
<th>Tips</th>
<th>Severe Malnutrition</th>
<th>Non-Severe Malnutrition</th>
<th>Normally Nourished</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temple</td>
<td>Ask patient to turn head side to side</td>
<td>Hollowing, sunken, depression</td>
<td>Slight depression</td>
<td>Can see feel well defined muscle</td>
</tr>
<tr>
<td>Neck</td>
<td>View patient from front and side</td>
<td>Individual neck muscles (sternomastoid, trapezius) notably reduced</td>
<td>Muscle mass moderately decreased. Clavicles less prominent</td>
<td>Approp muscle mass present</td>
</tr>
<tr>
<td>Shoulder</td>
<td>Patient arms at side observe shape</td>
<td>Shoulders to arm joint looks square, bones prominent. Acromion process very prominent</td>
<td>Rounded, curves at arm/shoulder/neck</td>
<td></td>
</tr>
<tr>
<td>Clavicle</td>
<td>Make sure patient isn’t hunched over</td>
<td>Protruding, prominent bone</td>
<td>Visible in male, some protrusion in female</td>
<td>Not visible in male, but not prominent in female</td>
</tr>
</tbody>
</table>
Physical Assessment – Muscle Loss

<table>
<thead>
<tr>
<th>Exam Area</th>
<th>Tips</th>
<th>Severe Malnutrition</th>
<th>Non-Severe Malnutrition</th>
<th>Normally Nourished</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interosseous Muscle</td>
<td>Look at thumb side of hand; look at pads of thumb when tip of forefinger touches tip of thumb</td>
<td>Depressed area between thumb–forefinger</td>
<td>Slight depression</td>
<td>Muscle bulges, could be flat in some well nourished people</td>
</tr>
<tr>
<td>Knee</td>
<td>Ask patient to sit with leg propped up bent at knees</td>
<td>Bones prominent, slight sign of muscle around knee</td>
<td>Knee cap less prominent, more rounded</td>
<td>Muscles prominent, bones not prominent</td>
</tr>
<tr>
<td>Quadriceps (front thigh)</td>
<td>Ask patient to sit, grasp quads to differentiate muscle</td>
<td>Depression/line on thigh, obviously thin</td>
<td>Mild depression on inner thigh</td>
<td>Well rounded, well developed</td>
</tr>
</tbody>
</table>

Characteristics to Identify Malnutrition

• Changes in Body Composition
  – Fluid accumulation\(^\text{**}^\)  
    » Localized (hand, lower extremity or scrotal edema)  
    » Generalized fluid accumulation - clinically evident edema on examination  
    » Extremity edema (hand/arm, ankle/leg)  
    » Vulvar/Scrotal edema  
    » Generalized edema  
    » Anasarca

\(^\text{**}\) May mask weight loss, might be reflected as weight gain

Assessing Edema

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+</td>
<td>2 mm depression, barely detectable. Immediate rebound</td>
</tr>
<tr>
<td>2+</td>
<td>4 mm deep pit A few seconds to rebound</td>
</tr>
<tr>
<td>3+</td>
<td>6 mm deep pit 10-12 seconds to rebound</td>
</tr>
<tr>
<td>4+</td>
<td>8 mm: very deep pit &gt;20 seconds to rebound</td>
</tr>
</tbody>
</table>

Characteristics to Identify Malnutrition

- **Measures of Physical Function/Performance**
  - **Hand Grip Strength** *
    - Dynamometer
    - Standards (excellent, good, average, fair, poor) for dominant hand by gender and age
    - Maximum reading (kg) from 3 attempts, allow 1 minute rest between attempts
  - 4-meter/other walk tests *
  - Stair climbing/chair rising/balance *
  - Fair results - Moderate Malnutrition
  - Poor results – Severe malnutrition
  - Peak Expiratory Flow/Lung Function being explored

*Strongest correlation to date with muscle mass and nutritional status
* Elderly populations

---

Severe Malnutrition in Adults

**J Acad Nutr Diet. 2012;112(5): 730-738**

For Example: ICD-9 Code 262*

<table>
<thead>
<tr>
<th>For Example: ICD-9 Code 262*</th>
<th>Acute Illness/Injury</th>
<th>Chronic Illness</th>
<th>Social/Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>10%/month &lt; 3 months</td>
<td>&lt; 50%/month</td>
<td>&lt; 50% week/2 months</td>
</tr>
<tr>
<td>Energy Intake</td>
<td>&lt; 10% for 4 days</td>
<td>&lt; 10% for 2 months</td>
<td>&lt; 10% for 2 months</td>
</tr>
<tr>
<td>Body Fat</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Muscle Mass</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Fluid Accumulation</td>
<td>Moderate/Mild</td>
<td>Severe/Mild</td>
<td>Severe/Mild</td>
</tr>
<tr>
<td>Grip Strength</td>
<td>Not Recommended in ICU</td>
<td>Reduced for Age/Gender</td>
<td>Reduced for Age/Gender</td>
</tr>
</tbody>
</table>

* 2012 ICD-9-CM Physician Volumes 1 and 2. American Medical Association

---

Non-Severe Malnutrition in Adults

**J Acad Nutr Diet. 2012;112(5): 730-738**

For Example: ICD-9 Code 263.0 *

<table>
<thead>
<tr>
<th>For Example: ICD-9 Code 263.0 *</th>
<th>Acute Illness/Injury</th>
<th>Chronic Illness</th>
<th>Social/Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>10%/month &lt; 3 months</td>
<td>&lt; 50%/month</td>
<td>&lt; 50% week/2 months</td>
</tr>
<tr>
<td>Energy Intake</td>
<td>&lt; 10% for 4 days</td>
<td>&lt; 10% for 2 months</td>
<td>&lt; 10% for 2 months</td>
</tr>
<tr>
<td>Body Fat</td>
<td>Mild Depletion</td>
<td>Mild Depletion</td>
<td>Mild Depletion</td>
</tr>
<tr>
<td>Muscle Mass</td>
<td>Mild Depletion</td>
<td>Mild Depletion</td>
<td>Mild Depletion</td>
</tr>
<tr>
<td>Fluid Accumulation</td>
<td>Mild</td>
<td>Mild</td>
<td>Mild</td>
</tr>
<tr>
<td>Grip Strength</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

* 2012 ICD-9-CM Physician Volumes 1 and 2. American Medical Association
Patient Case Application

Case 1

- DD is an 81-year-old male transferred from his skilled facility d/t urinary tract infection and altered mental status
  - Significant PMH for CAD with CABG X 3, cardiomyopathy, IDDM, CKD, s/p total knee replacement
- Height: 6’2”, Adm Weight: 177# BMI: 24
- Nutrition history
  - 195# 3 months PTA
  - No record of meal consumption or tolerance PTA
- Hospital course
  - Liberal DM diet with PO supplements HD #1-8
    - Consuming 25% to 50% most meals; others refused
  - HD#9, DD c/o diffuse abdominal pain, N/V
- HD#10 – Diet changed to NPO
- Abdominal film HD#9 – fecal impaction and ileus
- NST c/s to begin PN – HD#10
- Physical Exam
  - Mild bilateral ankle edema
  - No evidence of fat or muscle loss
- Clinical Parameters
  - WBC: 12.6 K, afebrile, Albumin: 1.6 g/dL; Prealbumin: 5.6 mg/dL
Severe Malnutrition in Adults

<table>
<thead>
<tr>
<th>IC9-9 Code</th>
<th>Acute Illness Injury</th>
<th>Chronic Illness</th>
<th>Social/Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>&gt;15% for ≥4 weeks</td>
<td>&gt;15% for ≥6 months</td>
<td>&gt;15% for ≥6 months</td>
</tr>
<tr>
<td>Energy Intake</td>
<td>&lt;50% for ≥4 weeks</td>
<td>&lt;75% for ≥1 month</td>
<td>&lt;50% for ≥1 month</td>
</tr>
<tr>
<td>Body Fat</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Muscle Mass</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Fluid Accumulation</td>
<td>Moderate Severe</td>
<td>Severe</td>
<td>Severe</td>
</tr>
<tr>
<td>Grip Strength</td>
<td>Not Recommended in ICU</td>
<td>Reduced for Age/Gender</td>
<td>Reduced for Age/Gender</td>
</tr>
</tbody>
</table>

Case 2

- 60 yr male diagnosed with laryngeal cancer
- s/p radical laryngectomy with esophageal reconstruction and grafting
- Received enteral feeding X 6 days in hospital
- Discharged to home health care on oral diet
- Proceeds with adjuvant chemo and radiation therapy (6 week course)
- Ht: 5’, 10”, Current Wt: 140#, Usual Body Wt: 165# BMI 20
- Nutrition history
  - Reduced eating pre-op X 1 month due to dysphagia
  - Improved following surgery
  - Profound eating difficulty following chemo/radiation
  - Consuming only bites and sips of food
Severe Malnutrition in Adults

For Example:
ICD-9 Code 262*

<table>
<thead>
<tr>
<th>Acute Illness/Ijury</th>
<th>Chronic Illness</th>
<th>Social/Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>&gt;5%/1 month</td>
<td>&gt;7.5%/3 months</td>
</tr>
<tr>
<td>Energy Intake</td>
<td>&gt;200% for 2 days</td>
<td>&gt;200% for 1 month</td>
</tr>
<tr>
<td>Body Fat</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Muscle Mass</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Fluid Accumulation</td>
<td>Moderate Severe</td>
<td>Severe</td>
</tr>
<tr>
<td>Grip Strength</td>
<td>Not Recommended in ICU</td>
<td>Reduced for Age/Gen</td>
</tr>
</tbody>
</table>

* 2012 ICD-9-CM Physician Volumes 1 and 2 American Medical Association

Case 3
• HR is a 78 year old female admitted with abdominal pain
  – 1-month history of pain, nausea and vomiting
  – Long history of gastric dysfunction with previous gastric surgeries
  – Patient underwent partial gastrectomy with revision of roux-en-y gastrojejunostomy
    • J tube placement
  • Provided with TPN for 2 weeks pre-op due to severe malnutrition
  • Height: 64", Adm Weight: 98#
  • Transitioned to enteral nutrition 10 days post-op
  • Ongoing enteral intolerance issues with excessive stooling combined with nausea
    – Required 3-4 weeks to achieve goal maintenance energy requirements

Case 3
• Ongoing issues with abdominal abscesses
• Nutrition assessment two months after admission
• Weight: 90#
  – 8% loss
• Physical Exam
  – Evidence of moderate to severe fat and muscle loss
    • Orbital fat loss
    • Very visible clavicle and scapula
    • Very prominent knee bone
• Clinical Parameters
  – Normal WBC, afebrile, Albumin: 2.9 g/dL, Prealbumin 12 mg/dL
Severe Malnutrition in Adults

For Example:
ICD-9 Code 262*

<table>
<thead>
<tr>
<th>For Example: ICD-9 Code 262*</th>
<th>Acute Illness/Isoy</th>
<th>Chronic Illness</th>
<th>Social/Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>&gt;2%/1 week</td>
<td>&gt;5%/1 month</td>
<td>&gt;7.5%/3 months</td>
</tr>
<tr>
<td>Energy Intake</td>
<td>&lt;50% for 2 days</td>
<td>&lt;50% for 1 month</td>
<td>&lt;50% for 1 year</td>
</tr>
<tr>
<td>Body Fat</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Muscle Mass</td>
<td>Moderate Depletion</td>
<td>Severe Depletion</td>
<td>Severe Depletion</td>
</tr>
<tr>
<td>Fluid Accumulation</td>
<td>Moderate Severe</td>
<td>Severe</td>
<td>Severe</td>
</tr>
<tr>
<td>Grip Strength</td>
<td>Not Recommended in ICU</td>
<td>Reduced for Age/Gender</td>
<td>Reduced for Age/Gender</td>
</tr>
</tbody>
</table>

* 2012 ICD-9-CM Physician Volumes 1 and 2. American Medical Association

Strategy for Malnutrition Diagnostic Implementation

- Develop an “Implementation Team”
  - Clinical Nutrition
  - Medical Staff
  - Nursing
  - Finance
  - Documentation Specialists/Coders
  - Information System
  - Quality Management

Develop Implementation Plan

- Outline nutrition assessment process
  - Adult malnutrition characteristics are standardized
- Specify documentation process
  - RD/MD collaboration
- Develop education plan
  - Medical staff
  - Documentation specialists
  - Coders
Malnutrition Process Work Flow

- Nutrition Screening by Patient Care Services upon admission
  - MST – score of ≥ 2 generates referral
- RD assess patient
- RD reviews malnutrition findings with MD
  - Collaborates on documentation and plan of care
- Upon discharge, coders review medical record and assign ICD-9 malnutrition code

Future Malnutrition Activities

- Feasibility and Validity Study
  - Acute care hospitals
- Expand criteria development for other populations
  - Ambulatory care setting
- A.S.P.E.N. Nutrition Care Registry
  - Sustain©
    - Currently focused on home parenteral nutrition
    - Next focus will be on malnutrition in hospital setting

Characteristics Summary

- Reduced food/caloric intake
- Unintended/non-volitional weight loss
- Loss of muscle
- Loss of subcutaneous fat
- Evidence of fluid accumulation
- Diminished hand grip strength

Any 2 or more characteristics should be used to identify Adult Malnutrition
Thank You!!

“Obstacles don’t have to stop you. If you run into a wall, don’t turn around and give up. Figure out how to climb it, go through it, or work around it.”
~Michael Jordan~