OVERVIEW AND APPLICATION

NUTRITION-FOCUSED PHYSICAL EXAMINATION:
OMINOVATION AND APPLICATION
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OVERVIEW

Malnutrition
Nutrition-Focused Physical Exam
Documentation and Application

HOSPITAL MALNUTRITION IS WIDESPREAD

- ASPEN (American Society of Parenteral and Enteral Nutrition), Nov 2013, *JPEN*
- Multiple studies find that approximately one in every three patients admitted to a hospital in the United States is suffering from malnutrition.
**IMPACT OF HOSPITAL MALNUTRITION**

- Morbidity and Mortality
  - Development of pressure ulcers
  - Reduced muscle mass → decreased strength/debility → risk of falls
  - Nosocomial infections
  - Quality of life
- Increased length of stay (LOS)
- Readmission and Institutionalization
- Cost

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**NO SINGLE PARAMETER IS DEFINITIVE FOR ADULT MALNUTRITION**

- MUST MEET AT LEAST 2 OF THE 6 CRITERIA FOR DIAGNOSIS:
  - Insufficient energy intake
  - Weight loss
  - Loss of muscle mass
  - Loss of subcutaneous fat
  - Localized or generalized fluid accumulation (that may sometimes mask weight loss)
  - Diminished functional status as measured by hand-grip strength

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*White et al. 2012*
NUTRITION-FOCUSED PHYSICAL EXAM
PART OF THE NUTRITION CARE PROCESS

NUTRITION CARE PROCESS

Nutrition Assessment
Monitoring & Evaluation
Nutrition Diagnosis
Nutrition Intervention

NUTRITION ASSESSMENT

Food/Nutrition-Related History
Biochemical Data, Medical Tests and Procedures
Anthropometric Measurements
Nutrition-Focused Physical Findings
Client History
NUTRITION-FOCUSED PHYSICAL EXAM

GETTING STARTED:
• Prepare for patient interaction
• Standard and universal precautions
• Physical exam techniques:
  • Inspection—close observation
  • Palpation—tactile examination
  • Percussion—elicit a sound wave
  • Auscultation—listening to body sounds

OVERALL APPEARANCE/FIRST IMPRESSIONS

• The NFPE begins with a general observation of the patient.
• First impression and physical characteristics to note during interview:
  ✓ What is the apparent state of health?
  ✓ What is the level of consciousness?
  ✓ Does the patient show signs of physical distress?
  ✓ How is the patient dressed?
  ✓ Do you see any obvious signs of nutrient deficiencies?
  ✓ Is there any involuntary movements or signs of paralysis?

OVERALL APPEARANCE/FIRST IMPRESSIONS

✓ Body positioning (muscle contractures, paralysis)
✓ Body Language
✓ Body habitus
✓ Amputations
✓ Ability to communicate
✓ Affect

Litchford, 2013
ASSESSING FOR MUSCLE LOSS

• Regions to assess:
  • Upper body:
    • Temple
    • Collar bone
    • Shoulder
    • Shoulder blade
    • Hand
  • Lower body:
    • Thigh/knee
    • Calf

ASSESSING FOR MUSCLE LOSS

Temporalis

Clavicular region:
Pectoralis major, deltoid, trapezius muscles
ASSESSING FOR MUSCLE LOSS

Shoulder region:
Deltoid muscle

Image: Nicholls, Horace (Photographer) [Public domain], via Wikimedia Commons

ASSESSING FOR MUSCLE LOSS

Scapular region:
Trapezius, deltoid, supraspinatus, infraspinatus

ASSESSING FOR MUSCLE LOSS

Hand: interosseous muscle

Image: Litchford 2013
ASSESSING FOR MUSCLE LOSS

Anterior thigh / patellar region:
Quadriceps femoris group

Posterior calf:
Gastrocnemius and soleus

ASSESSING FOR FAT LOSS

• Regions to assess:
  • Orbital region (orbital fat pads)
  • Upper arm region (triceps brachii)
  • Mid-axillary at the iliac crest
  • Ribs
ASSESSING FOR FAT LOSS

• Orbital region (orbital fat pads)

ASSESSING FOR FAT LOSS

• Upper arm: triceps brachii

ASSESSING FOR FAT LOSS

• Mid-axillary, just above the iliac crest
ASSESSING FOR FAT LOSS

• Ribs

ASSESSING FLUID STATUS

• Edema
  • Definition: abnormal retention of fluid in interstitial spaces and cavities
  • Commonly found: ankles, feet, sacrum, scrotum, vulva

• Ascites

• Anasarca

ASSESSING FLUID STATUS

ETIOLOGY:

• When plasma proteins are depleted, there is decreased oncotic pressure (colloid osmotic pressure), and thus increased capillary filtration. This results in increased fluid accumulation in the interstitial spaces (edema).

• Several common conditions are associated with fluid accumulation. Rule these out before using fluid retention as a malnutrition criteria.
  • CHF
  • Kidney disease
  • Liver disease
  • Lymphatic obstruction
  • Critical illness
ASSESSING FLUID STATUS

PITTING EDEMA:

• Excess interstitial fluid
• Presence of pitting after pressure is applied for at least 5 seconds
• No universally agreed upon definition of grades
• Typically classified as 1+ (mild) to 4+ (severe)
• Useful for relative changes

ASSESSING FLUID STATUS

PITTING EDEMA:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Rebound Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+</td>
<td>Barely detectable impression</td>
<td>2 mm depression,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>immediate rebound</td>
</tr>
<tr>
<td>2+</td>
<td>Slight indentation – 15 seconds to</td>
<td>4 mm pit, a few</td>
</tr>
<tr>
<td></td>
<td>rebound</td>
<td>seconds to rebound</td>
</tr>
<tr>
<td>3+</td>
<td>Deeper indentation – 30 seconds to</td>
<td>6 mm deep pit, 10-12</td>
</tr>
<tr>
<td></td>
<td>rebound</td>
<td>seconds to rebound</td>
</tr>
<tr>
<td>4+</td>
<td>&gt;30 seconds to rebound</td>
<td>8 mm very deep pit,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;20 seconds to rebound</td>
</tr>
</tbody>
</table>

ASSESSING FLUID STATUS

PITTING EDEMA:

Source: health.net/images/10437462/image001.jpg
ASSESSING FLUID STATUS

• HYDRATION:
  • Skin turgor/elasticity
  • Skin tenting

Skin with decreased turgor remains elevated after being pulled up and released.

ASSESSING FLUID STATUS

• OBJECTIVE MEASURES:
  • Vital signs
  • Intake/output
  • Weight
  • Fluid may mask weight and/or muscle loss
  • History
  • Urine concentration
  • Imaging

• APPEARANCE:
  • Skin/Mucous membranes

Physical Exam – Parameters Used in the Assessment of Nutritional Status

<table>
<thead>
<tr>
<th>Area</th>
<th>Observation</th>
<th>Reaction</th>
<th>Assessment</th>
<th>Action/Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neck</td>
<td>Subcutaneous fat</td>
<td>Loss of fat</td>
<td>Loss of muscle</td>
<td>Ample fat tissue obvious between folds of skin</td>
</tr>
<tr>
<td>Head</td>
<td>Bone</td>
<td>Prominent</td>
<td>Prominent bone</td>
<td>Visible in male, some protrusion in female</td>
</tr>
<tr>
<td>Chest</td>
<td>Bones</td>
<td>Prominent</td>
<td>Prominent bone</td>
<td>Visible in male, slight to no protrusion of the iliac crest in female</td>
</tr>
<tr>
<td>Torso</td>
<td>Overlying fat</td>
<td>Loss of fat</td>
<td>Loss of muscle</td>
<td>Ample fat tissue obvious between folds of skin</td>
</tr>
<tr>
<td>Upper arms</td>
<td>Muscles</td>
<td>Prominent</td>
<td>Prominent muscle</td>
<td>Visible in male, slight to no protrusion of the iliac crest in female</td>
</tr>
<tr>
<td>Lower arms</td>
<td>Muscles</td>
<td>Prominent</td>
<td>Prominent muscle</td>
<td>Visible in male, slight to no protrusion of the iliac crest in female</td>
</tr>
</tbody>
</table>
### Physical Exam – Parameters Useful in the Assessment of Nutritional Status

<table>
<thead>
<tr>
<th>Region</th>
<th>Parameters Used in Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scapula</strong></td>
<td><strong>Bone Region</strong></td>
</tr>
<tr>
<td></td>
<td>Trapezius, Supraspinus, Infraspinus Muscles</td>
</tr>
<tr>
<td></td>
<td>Ask patient to extend hands straight out, push against solid object.</td>
</tr>
<tr>
<td></td>
<td>Prominent, visible bones, depressions between ribs/scapula or shoulder/spine</td>
</tr>
<tr>
<td></td>
<td>Mild depression or bone may show slightly depressed</td>
</tr>
<tr>
<td></td>
<td>Bones not prominent, no significant depressions</td>
</tr>
<tr>
<td><strong>Dorsal Hand</strong></td>
<td>Interosseous Muscle</td>
</tr>
<tr>
<td></td>
<td>Look at thumb side of hand; look at pads of thumb when tip of forefinger touching tip of thumb</td>
</tr>
<tr>
<td></td>
<td>Depressed area between thumb - forefinger</td>
</tr>
<tr>
<td></td>
<td>Slightly depressed</td>
</tr>
<tr>
<td></td>
<td>Muscle bulges, could be flat in some well-nourished people</td>
</tr>
<tr>
<td><strong>Lower body less sensitive to change</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Patellar Region</strong></td>
<td>Quadriceps Muscle</td>
</tr>
<tr>
<td></td>
<td>Ask patient to sit with leg propped up, bent at knee</td>
</tr>
<tr>
<td></td>
<td>Bones prominent, little sign of muscle around knee</td>
</tr>
<tr>
<td></td>
<td>Knee cap less prominent, more rounded</td>
</tr>
<tr>
<td></td>
<td>Muscles protrude, bones not prominent</td>
</tr>
<tr>
<td><strong>Anterior Thigh Region</strong></td>
<td>Quadriceps Muscles</td>
</tr>
<tr>
<td></td>
<td>Ask patient to sit, prop leg up on low furniture.</td>
</tr>
<tr>
<td></td>
<td>Grasp quads to differentiate amount of muscle tissue from fat tissue.</td>
</tr>
<tr>
<td></td>
<td>Depression/line on thigh, obviously thin</td>
</tr>
<tr>
<td></td>
<td>Mild depression on inner thigh</td>
</tr>
<tr>
<td></td>
<td>Well rounded, well developed</td>
</tr>
<tr>
<td><strong>Posterior Calf Region</strong></td>
<td>Gastrocnemius Muscle</td>
</tr>
<tr>
<td></td>
<td>Grasp the calf muscle to determine amount of tissue</td>
</tr>
<tr>
<td></td>
<td>Thin, minimal to no muscle definition</td>
</tr>
<tr>
<td></td>
<td>Not well developed</td>
</tr>
<tr>
<td></td>
<td>Well-developed bulb of muscle</td>
</tr>
</tbody>
</table>

**Notes:**
1. Introduce yourself to the patient/family
2. Provide rational for examination request
3. Ask the patient for permission to examine them
4. Wash/dry hands thoroughly; wear gloves
5. Use standard precautions to prevent disease transmission

**References:**

This table was developed by Jane White, PhD, RD, FADA, LDN, Louise Merriman, MS, RD, CDN, Terese Scollard, MBA, RD and the Cleveland Clinic Center for Human Nutrition, Content was approved by the Adult Malnutrition Education and Outreach Committee, a joint effort of the Academy of Nutrition and Dietetics and the American Society of Parenteral and Enteral Nutrition.


### OTHER NFPE AREAS TO ASSESS

- Hair
- Skin
- Nails
- Eyes
- Perioral

Findings may be indicative of macro- or micronutrient deficiencies.
“Nutrition-Focused Physical Findings” may be used as a heading in your chart notes.
Sub-heading may include: Overall appearance; Body language; Cardiovascular-pulmonary system; Extremities, muscles and bones; Digestive system (mouth to rectum); Head and eyes; Nerves and cognition; Skin; Vital signs.

May use your findings in your PES statement; can support/strengthen a diagnosis of malnutrition.

- Academy of Nutrition & Dietetics

PES Statement Examples:
- Malnutrition (severe, protein-calorie) related to altered GI function (EC fistula) as evidenced by unintentional weight loss of 9% of body weight in the past 3 months and muscle wasting.
- Malnutrition (moderate) related to inadequate oral intake as evidenced by unintentional weight loss of 5% of body weight in the past month, subcutaneous fat loss in the triceps region, and temporal muscle wasting.
DOCUMENTATION

• PES Statement Examples:
  • Malnutrition (severe, protein-calorie) related altered GI function (gastroparesis) as evidenced by unintentional weight loss of 14% of body weight in the past 6 months, and the physical signs of fat loss, muscle loss, hair loss, and angular stomatitis.

NUTRITION CARE PROCESS

Nutrition Assessment
Monitoring & Evaluation
Nutrition Diagnosis
Nutrition Intervention

PROPER IDENTIFICATION OF HOSPITAL MALNUTRITION

• Early identification and appropriate nutrition interventions lead to:

- Potential for increased reimbursement with malnutrition as a comorbid/complicating condition.
- Morbidity and Mortality
  • Development of pressure ulcers
  • Reduced muscle mass → decreased strength/debility → risk of falls
  • Nosocomial infections
  • Quality of life
- Length of stay (LOS)
- Readmission and Institutionalization
- Cost
**NUTRITION-FOCUSED PHYSICAL EXAMINATION**

**WHERE CAN I LEARN MORE?**

**FOR MORE INFORMATION…**

- Academy of Nutrition and Dietetics Nutrition Focused Physical Exam Hands-On Training Workshops.
- NFPE Workshop at Rutgers Department of Nutritional Sciences, Institute of Nutritional Interventions, Newark, NJ.
REFERENCES


QUESTION?

THANK YOU!