Protein-Energy Malnutrition Definition

Merck Manual Professional Edition

Protein-energy undernutrition (PEU), previously called protein-energy malnutrition, is an energy deficit due to chronic deficiency of all macronutrients. It commonly includes deficiencies of many micronutrients. PEU can be sudden and total (starvation) or gradual. Severity ranges from subclinical deficiencies to obvious wasting (with edema, hair loss, and skin atrophy) to starvation. Multiple organ systems are often impaired. Diagnosis usually involves laboratory testing, including serum albumin. Treatment consists of correcting fluid and electrolyte deficits with IV solutions, then gradually replenishing nutrients, orally if possible.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Normal</th>
<th>Mild Undernutrition</th>
<th>Moderate Undernutrition</th>
<th>Severe Undernutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal weight (%)</td>
<td>90–110</td>
<td>85–90</td>
<td>75–85</td>
<td>&lt; 75</td>
</tr>
<tr>
<td>Body mass index</td>
<td>19–24*</td>
<td>18–18.9</td>
<td>16–17.9</td>
<td>&lt; 16</td>
</tr>
<tr>
<td>Serum albumin (g/dL)</td>
<td>3.5–5.0</td>
<td>3.1–3.4</td>
<td>2.4–3.0</td>
<td>&lt; 2.4</td>
</tr>
<tr>
<td>Serum transferrin (mg/dL)</td>
<td>220–400</td>
<td>201–219</td>
<td>150–200</td>
<td>&lt; 150</td>
</tr>
<tr>
<td>Total lymphocyte count (per mm3)</td>
<td>2000–3500</td>
<td>1501–1999</td>
<td>800–1500</td>
<td>&lt; 800</td>
</tr>
<tr>
<td>Delayed hypersensitivity index†</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

*In the elderly, BMI < 21 may increase mortality risk.
†Delayed hypersensitivity index uses a common antigen (e.g., one derived from Candida sp or Trichophyton sp) to quantitate the amount of induration elicited by skin testing. Induration is graded: 0 = < 0.5 cm, 1 = 0.5–0.9 cm, 2 = ≥ 1.0 cm.

Last full review/revision June 2007 by John E. Morley, MB, BCh. Content last modified June 2007

ICD-9 Codes that cause the resident to be coded on the MDS into at High Risk for PU Development:

- 260 Kwashiorkor – a syndrome usually in children
- 261 Nutritional marasmus (children) (Malnutrition codes are used for all age groups; Coding Clinic, 4th quarter 1992, p. 25)
- 262 Other severe, protein-calorie malnutrition
- 263.0 Malnutrition of moderate degree
- 263.1 Malnutrition of mild degree
- 263.2 Arrested development following protein-calorie malnutrition
- 263.8 Other protein-calorie malnutrition (specified, but not listed above 260-263.2)
- 263.9 Unspecified protein-calorie malnutrition
- Dystrophy due to malnutrition
- Malnutrition (calorie) NOS

This material was prepared by TMF Health Quality Institute, the Medicare Quality Improvement Organization for Texas, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. 9SOW-TX-PS-09-61