

## Adult Malnutrition Criteria

Document is a reference for clinical application, as interpreted from evidence-based literature and practical experience for use at Cleveland Clinic Health System Hospitals. This document is a reasonable guideline for the identification of malnutrition in the adult population (medical, surgical, rehabilitation and behavioral health) when used with professional clinical judgment.

- *If clinical dietitian/nutritionist identifies evidence from nutritional assessment that patient meets criteria below, the physician is contacted to discuss findings. At least two criteria are required to identify Severe or Non-Severe malnutrition.*
- *Criteria may apply at all Body Mass Index calculations.*
- *If appropriate, adult patients can be coded for one malnutrition ICD-10 code (E44.1, E44.0, E43, and E46), and other nutritionally relevant ICD-10 codes.*
- *Criteria noted below may encompass patient data prior to admission as determined from medical record documentation and/or information provided by the patient/reliable care givers.*

<b>ICD-10 Code: E43 Severe Protein-Calorie Malnutrition</b>	<b>Severe Malnutrition in context of Acute Illness/Injury</b>	<b>Severe Malnutrition in context of Chronic Illness</b>	<b>Severe Malnutrition in the context of Social/Behavioral/Environmental Circumstances</b>
<b>Weight Loss</b> – is evaluated in light of other clinical findings including hydration. Weight change over time is reported as a percentage of weight lost from baseline.	<b>Weight Loss</b> > 2% in 1 week > 5% in 1 month > 7.5% in 3 months	<b>Weight Loss</b> > 5% in 1 month > 7.5% in 3 months > 10% in 6 months > 20% in 12 months	<b>Weight Loss</b> > 5% in 1 month > 7.5% in 3 months > 10% in 6 months > 20% in 12 months
<b>Intake</b> – RD obtains diet history and estimates energy needs. Suboptimal intake is determined as a percentage of estimated needs over time.	<b>Energy Intake</b> ≤ 50% energy intake compared to estimated energy needs for ≥ 5 days	<b>Energy Intake</b> < 75% energy intake compared to estimated energy needs for ≥ 1 month	<b>Energy Intake</b> ≤ 50% energy intake compared to estimated energy needs for ≥ 1 month
<b>Physical Assessment</b> – loss of subcutaneous fat i.e. orbital, triceps, fat overlying ribcage.	<b>Body Fat</b> Moderate depletion	<b>Body Fat</b> Severe depletion	<b>Body Fat</b> Severe depletion
<b>Physical Assessment</b> – loss of muscle i.e. temples, clavicles, shoulders, scapula, thigh and calf	<b>Muscle Mass</b> Moderate depletion	<b>Muscle Mass</b> Severe depletion	<b>Muscle Mass</b> Severe depletion
<b>Physical Assessment</b> – general or local fluid accumulation i.e. extremities, ascites or vulvar/scrotal edema	<b>Fluid Accumulation</b> Moderate to Severe	<b>Fluid Accumulation</b> Severe	<b>Fluid Accumulation</b> Severe
<b>Functional Assessment</b> – based on standards supplied by manufacturer of dynamometer	<b>Reduced Grip Strength</b> <i>Not recommended in Intensive Care Setting</i>	<b>Reduced Grip Strength</b> <i>Measurably reduced for age and gender</i>	<b>Reduced Grip Strength</b> <i>Measurably reduced for age and gender</i>

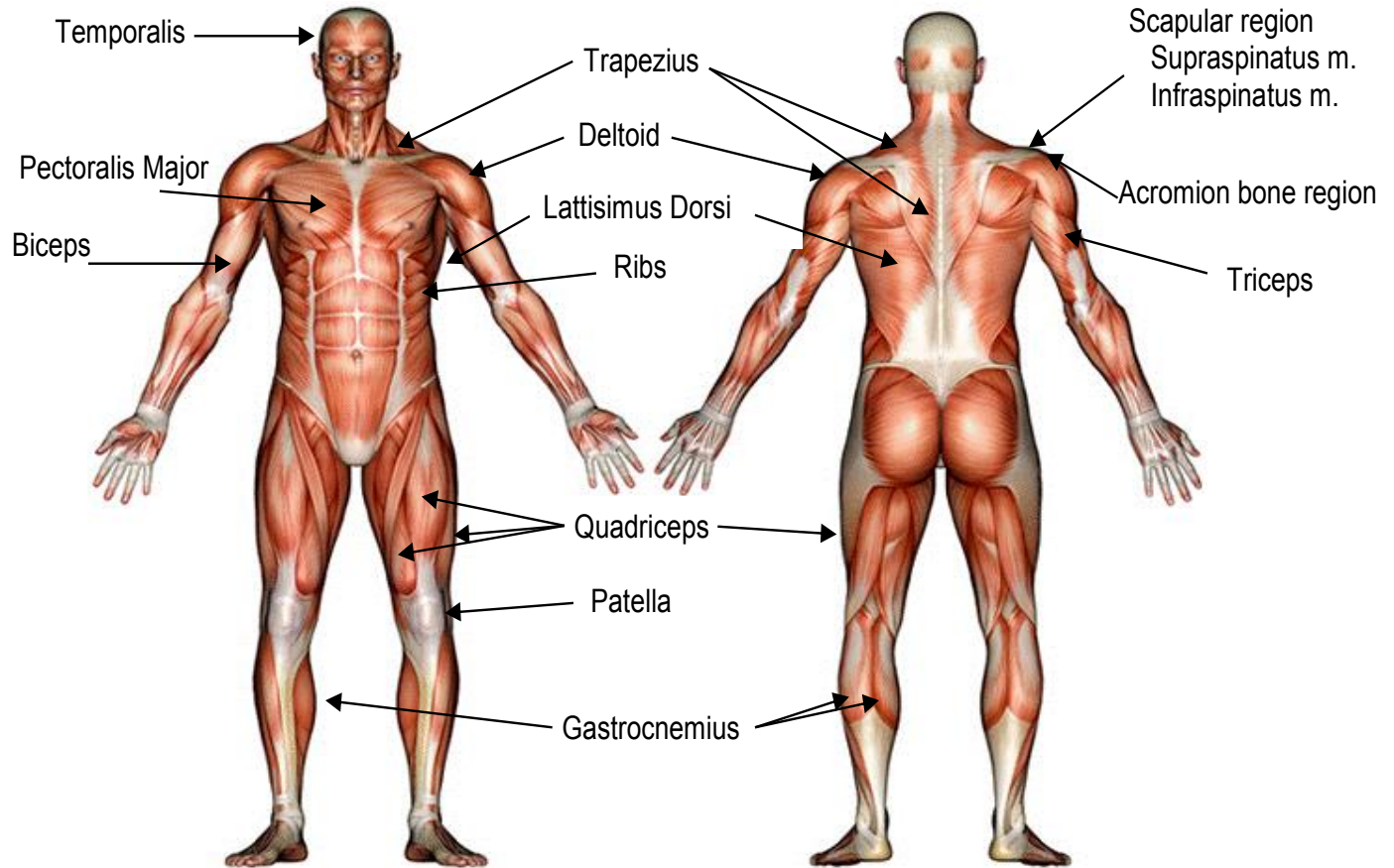
## Adult Malnutrition Criteria

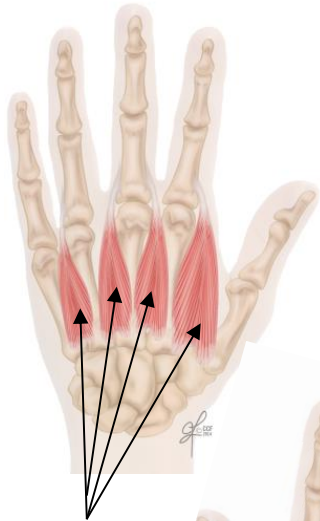
ICD-10 Code: E44.0 Malnutrition of Moderate Degree	Moderate Malnutrition in context of Acute Illness/Injury	Moderate Malnutrition in context of Chronic Illness	Moderate Malnutrition in the context of Social/Environmental Circumstances
<p><b>Weight Loss</b> – is evaluated in light of other clinical findings including hydration. Weight change over time is reported as a percentage of weight lost from baseline.</p>	<p><b>Weight Loss</b> 1-2% in 1 week 5% in 1 month 7.5% in 3 months</p>	<p><b>Weight Loss</b> 5% in 1 month 7.5% in 3 months 10% in 6 months 20 % in 12 months</p>	<p><b>Weight Loss</b> 5% in 1 month 7.5% in 3 months 10% in 6 months 20 % in 12 months</p>
<p><b>Intake</b> – RD obtains diet history and estimates energy needs. Suboptimal intake is determined as a percentage of estimated needs over time.</p>	<p><b>Energy Intake</b> &lt; 75 % energy intake compared to estimated energy needs for &gt; 7 days</p>	<p><b>Energy Intake</b> ≤ 75% energy intake compared to estimated energy needs for ≥ 1 month</p>	<p><b>Energy Intake</b> &lt; 75% energy intake compared to estimated energy needs for ≥ 3 months</p>
<p><b>Physical Assessment</b> – loss of subcutaneous fat i.e. orbital, triceps, fat overlying ribcage.</p>	<p><b>Body Fat</b> Mild depletion</p>	<p><b>Body Fat</b> Mild depletion</p>	<p><b>Body Fat</b> Mild depletion</p>
<p><b>Physical Assessment</b> – loss of muscle i.e. temples, clavicles, shoulders, scapula, thigh and calf</p>	<p><b>Muscle Mass</b> Mild depletion</p>	<p><b>Muscle Mass</b> Mild depletion</p>	<p><b>Muscle Mass</b> Mild depletion</p>
<p><b>Physical Assessment</b> – general or local fluid accumulation i.e. extremities, ascites or vulvar/scrotal edems</p>	<p><b>Fluid Accumulation</b> Mild</p>	<p><b>Fluid Accumulation</b> Mild</p>	<p><b>Fluid Accumulation</b> Mild</p>
<p><b>Functional Assessment</b> – based on standards supplied by manufacturer of dynamometer</p>	<p><b>Reduced Grip Strength</b> <i>Not applicable</i></p>	<p><b>Reduced Grip Strength</b> <i>Not applicable</i></p>	<p><b>Reduced Grip Strength</b> <i>Not applicable</i></p>
<p><b>ICD-10 Code: E44.1 Malnutrition of Mild Degree</b></p>	<p>The Academy and A.S.P.E.N. experts agree that it is not possible to distinguish mild malnutrition from normal nutritional status and therefore did not develop definitions and criteria for mild malnutrition at this time. At Cleveland Clinic the identification of 1 characteristic will be considered as mild malnutrition.</p>		
<p><b>ICD-10 Code: E46 Protein-Calorie Malnutrition</b></p>	<p>Reference criteria for ICD-10 Codes E44.0 and E43, if possible.</p>		
<p><b>Reference</b></p>	<p>White JV, Guenter P, Jensen G, et al. Consensus Statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: Characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). JPEN. 2012;36:275.</p>		

## Physical Exam – Parameters Useful in the Assessment of Nutritional Status

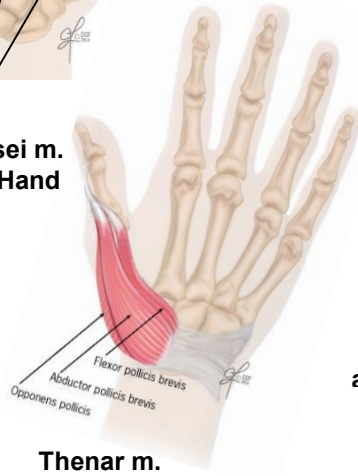
<b>Exam Areas</b> <i>Subcutaneous fat loss</i>	<b>Tips</b>	<b>Severe</b>	<b>Mild-Moderate Malnutrition</b>	<b>Well Nourished</b>
Orbital Region – Surrounding the Eye	View patient when standing directly in front of them, touch above cheekbone	Hollow look, depressions, dark circles, loose skin	Slightly dark circles, somewhat hollow look	Slightly bulged fat pads. Fluid retention may mask loss
Upper Arm Region – Triceps/biceps	Arm bent, roll skin between fingers, do not include muscle in pinch	Very little space between folds, fingers touch	Some depth pinch, but not ample	Ample fat tissue obvious between folds of skin
Thoracic and Lumbar Region – Ribs, Lower Back, Midaxillary line	Have patient press hands hard against a solid object	Depression between the ribs very apparent. Iliac Crest very prominent	Ribs apparent, depressions between them less pronounced. Iliac Crest somewhat prominent	Chest is full, ribs do not show. Slight to no protrusion of the iliac crest.
<b><i>Muscle Loss - Upper Body</i></b>				
Temple Region – Temporalis Muscle	View patient when standing directly in front of them, ask patient to turn head side to side	Hollowing, scooping, depression	Slight depression	Can see/feel well-defined muscle
Clavicle Bone Region – Pectoralis Major, Deltoid, Trapezius Muscles	Look for prominent bone. Make sure patient is not hunched forward	Protruding, prominent bone	Visible in male, some protrusion in female	Not visible in male, visible but not prominent in female

<b>Exam Areas</b> <i>Subcutaneous fat loss</i>	<b>Tips</b>	<b>Severe</b>	<b>Mild-Moderate Malnutrition</b>	<b>Well Nourished</b>
Clavicle and Acromion Bone Region – Deltoid Muscle	Patient arms at side; observe shape	Shoulder to arm joint looks square. Bones prominent. Acromion protrusion very prominent	Acromion process may slightly protrude	Rounded, curves at arm/shoulder/neck
Scapular Bone Region – Trapezius, Supraspinatus, Infraspinatus Muscles	Ask patient to extend hands straight out, push against solid object.	Prominent, visible bones, depressions between ribs/scapula or shoulder/spine	Mild depression or bone may show slightly	Bones not prominent, no significant depressions
Dorsal Hand – Interosseous Muscle	Look at thumb side of hand; look at pads of thumb when tip of forefinger touching tip of thumb	Depressed area between thumb-forefinger	Slightly depressed	Muscle bulges, could be flat in some well nourished people
<b><i>Muscle Loss - Lower Body (less sensitive to change)</i></b>				
Patellar Region – Quadricep Muscle	Ask patient to sit with leg propped up, bent at knee	Bones prominent, little sign of muscle around knee	Knee cap less prominent, more rounded	Muscles protrude, bones not prominent
Anterior Thigh Region – Quadriceps Muscles	Ask patient to sit, prop leg up on low furniture. Grasp quads to differentiate amount of muscle tissue from fat tissue.	Depression/line on thigh, obviously thin	Mild depression on inner thigh	Well rounded, well developed
Posterior Calf Region- Gastrocnemius Muscle	Grasp the calf muscle to determine amount of tissue	Thin, minimal to no muscle definition	Not well developed	Well-developed bulb of muscle
<b><i>Edema</i></b>				
Rule out other causes of edema, patient at dry weight	View scrotum/vulva in activity restricted patient; ankles in mobile patient	Deep to very deep pitting, depression lasts a short to moderate time (31-60 sec) extremity looks swollen (3-4+)	Mild to moderate pitting, slight swelling of the extremity, indentation subsides quickly (0-30 sec)	No sign of fluid accumulation

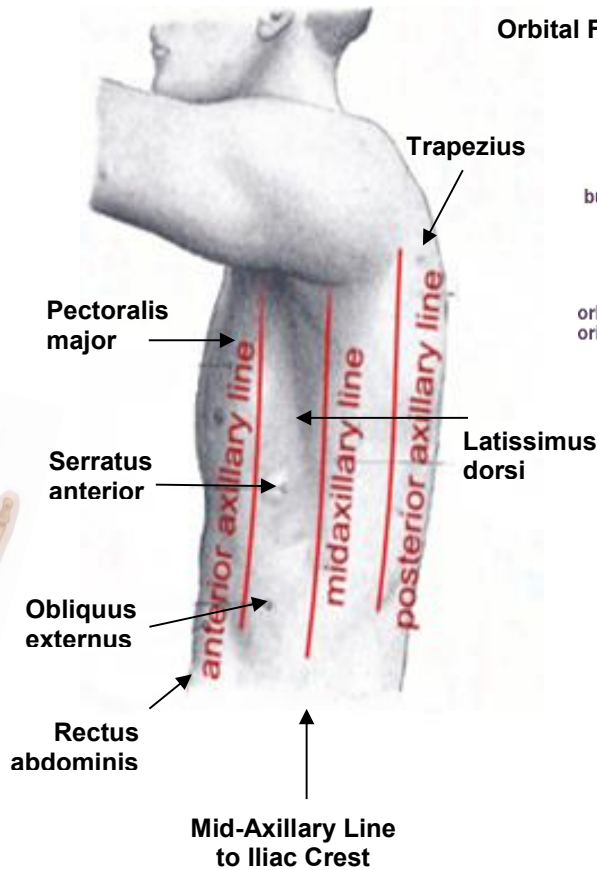




**Interossei m.  
Dorsal Hand**



**Thenar m.  
Palmer Hand**



**Pectoralis  
major**

**Serratus  
anterior**

**Obliquus  
externus**

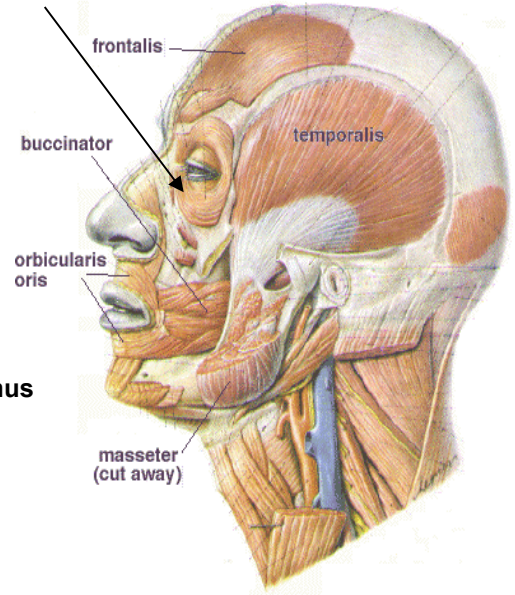
**Rectus  
abdominis**

**Trapezius**

**Latissimus  
dorsi**

**Mid-Axillary Line  
to Iliac Crest**

**Orbital Fat Pad**



**Facial Muscles**

## Micronutrient Deficiencies

### SYSTEM

<b>Skin</b>	Color	Pallor—iron, folate, or B12 deficiency
	Lesions, pigmentation	Dermatitis—essential fatty acid, zinc, niacin, or riboflavin deficiency Pellagrous dermatitis—niacin or tryptophan deficiency Flaky paint dermatitis; hyperpigmented areas on thighs, buttocks—protein deficiency Petechiae, ecchymosis—Vitamin C or K deficiency
	Wound healing, pressure ulcers	Poor wound healing—zinc, vitamin C, and/or protein deficiency
	Moisture, turgor	Poor skin turgor—dehydration, Sweating increases fluid requirements Edema—generalized (anasarca) with accumulation of serum in connective tissue
	Texture	Scaly, dry—vitamin A or essential fatty acid deficiency Small lumps (or nodules) on elbows or eyelids – hypercholesterolemia
	Temperature	Increased ambient temperature increases fluid and energy requirements; decreased ambient temperature increases energy requirements
<b>Nails</b>	Shape, color, angle contour, lesions	Spoon shape (koilonychia)—iron deficiency; Lackluster, dull—protein deficiency Mottled, pale, poor blanching—vitamin A or C deficiency
<b>Scalp/hair</b>	Shape and symmetry of scalp; masses; hair distribution, color, texture	Dull, lackluster, thin, sparse—protein, iron, zinc, or essentially fatty acid deficiency Easily pluckable—protein deficiency
<b>Face (general)</b>	Shape and symmetry	Moon face, bilateral temporal wasting—protein-energy deficiency
<b>Eyes</b>	Vision impairments	Night blindness—vitamin A deficiency
	Skin color and texture, cracks	Cracked and reddened corners of eyes brows, lids (angular pappebritis)—riboflavin or niacin deficiency

	Sclerae	Foamy spots on eyes (Bitot's spots) or dull, dry rough appearance—vitamin A deficiency, Pallor—iron, folate, or B12 deficiency
	Conjunctiva	Dull, dry rough appearance to inner lids (conjunctival xerosis)—vitamin A deficiency
	Cornea	Dull, milky, or opaque (corneal xerosis) or softening (keratomalacia)—vitamin A deficiency
<b>Nose</b>	Shape, septum, nares, mucosa, discharge	Skin scaly, greasy, with gray or yellowish material around nares (nasolabial seborrhea)—riboflavin or pyridoxine deficiency
<b>Lips</b>	Color, temperature, cracking, lesions, symmetry	Bilateral cracks, redness of lips (angular stomatitis) – riboflavin, niacin, and/or pyridoxine deficiency Vertical cracks of lips (cheilosis)—riboflavin or niacin deficiency
<b>Mucosa (mouth)</b>	Color, texture, lesions, integrity, moisture	Pallor—iron, B12 or folate deficiency; Dryness—dehydration; Cracking—vitamin C deficiency; General inflammation—vitamin B complex, C or iron deficiency
<b>Tongue</b>	Color	Magenta color—riboflavin deficiency, Beefy red color—niacin, folate, riboflavin, iron, or deficiency
	Texture, moisture, lesions Distorted taste (dysgeusia), diminished taste (hypogeusia)	Smooth, slick, loss of papillae—folacin, niacin, iron, riboflavin, B12 deficiency Zinc deficiency
<b>Teeth</b>	State of repair, missing, dentures	Influence ability to chew; caries-tooth decay; enamel erosion associated with bulimia
<b>Gums</b>	Lesions, integrity, moisture, color	Spongy, bleeding, receding—vitamin C deficiency, Dry—dehydration, Pale—iron deficiency
<b>Neck</b>	Vasculature appearance Symmetry, midline structures (trachea, thyroid) Parotid glands	Distended neck veins—fluid overload Enlarged thyroid—iodine deficiency Bilateral enlargement—protein deficiency or bulimia