

# NUTRITION & THE LIVER

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## OBJECTIVES

- Identify nutrition markers for malnutrition in liver disease
- List one intervention for treating malnutrition in the person with liver disease

## PRE-TEST

- What is the best way to assess nutrition status in liver disease?
  - A) BMI
  - B) Albumin
  - C) Subjective Global Assessment (SGA)
  - D) Diet recall & Physical exam

## PRE-TEST

- Which of these is a criteria for diagnosing malnutrition?
  - A) Fluid accumulation
  - B) Low albumin
  - C) Diminished functional status
  - D) A & C only
  - E) All of the above

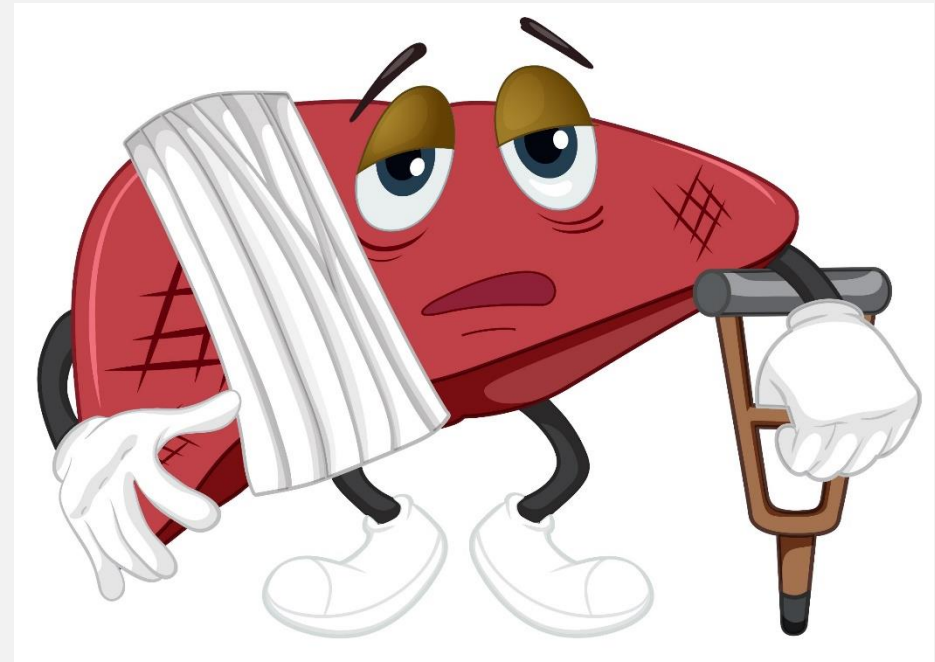
# THE HEALTHY LIVER & NUTRITION

- Digests food
- Processes toxins
- Regulation of BG



# MALNUTRITION & LIVER DISEASE

- Decreased protein synthesis
- Malabsorption of fat
- Inability to regulate BG
- Reduced intake



# MALNUTRITION & LIVER DISEASE

- LDUST – Screening Tool
  - How have you been eating lately?
  - Have you lost any weight in the last year?
  - Have you noticed any loss of body fat or thinning of your arms or ribs?
  - Have you noticed any muscle loss in your temples, legs, clavicle or shoulders?
  - Do you have any fluid or swelling in your abdomen or legs?
  - Are you able to participate in your usual activities? (Walking, carrying groceries, etc)

# ASSESSING NUTRITION FOR LIVER HEALTH

- BMI accuracy?
- Albumin accuracy?
- Subjective Global Assessment
  - History in weight changes
  - Physical exam
  - Dietary recall
  - Changes in appetite, taste, satiety







ELSEVIER

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From the Academy

# Critical Role of Nutrition in Improving Quality of Care: An Interdisciplinary Call to Action to Address Adult Hospital Malnutrition

Kelly A. Tappenden PhD, RD, FASPEN  , Beth Quatrara DNP, RN, CMSRN, Melissa L. Parkhurst MD, Ainsley M. Malone MS, RD, Gary Fanjiang MD, Thomas R. Ziegler MD

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Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
% Time	% Time	% Time	% Time	% Time	% Time
1-2%: 1 week	> 2%: 1 week	5%: 1 month	> 5%: 1 month	5%: 1 month	> 5%: 1 month
5%: 1 month	> 5%: 1 month	7.5%: 3 months	> 7.5%: 3 months	7.5%: 3 months	> 7.5%: 3 months
7.5%: 3 months	> 7.5%: 3 months	10%: 6 months	> 10%: 6 months	10%: 6 months	> 10%: 6 months
		20%: 1 year	> 20%: 1 year	20%: 1 year	> 20%: 1 year

([Blackburn, 1977](#); [Klein, 1997](#); [Rosenbaum, 2000](#); [Keys, 1948](#)).

History in  
weight  
changes

Physical  
exam

Dietary  
recall

Changes in  
appetite,  
taste, satiety





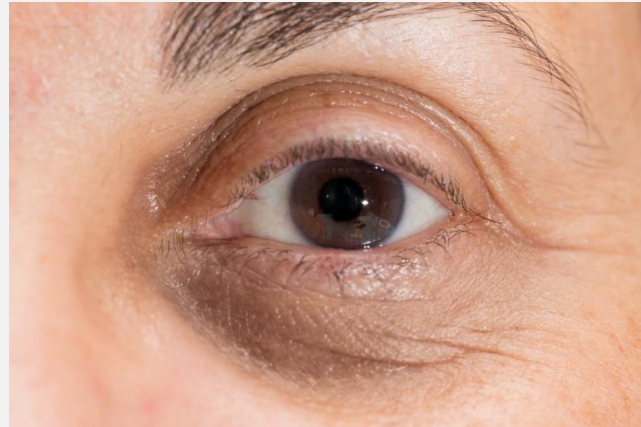
Exam Areas	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
<b>Subcutaneous Fat Loss</b>				
<b>Orbital region—surrounding the eye</b>	View patient when standing directly in front of them, touch above cheekbone.	Hollow look, depressions, dark circles, loose skin	Slightly dark circles, somewhat hollow look	Slightly bulged fat pads, fluid retention may mask loss
<b>Upper arm region—triceps/biceps</b>	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
<b>Thoracic and lumbar region—ribs, lower back, midaxillary line</b>	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

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Exam Areas	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
<b>Muscle Loss</b>				
<b>Temple region—temporalis muscle</b>	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
<b>Clavicle bone region—pectoralis major, deltoid, trapezius muscles</b>	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>Clavicle and acromion bone region—deltoid muscle</b>	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
<b>Scapular bone region—trapezius, supraspinus, infraspinus muscles</b>	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
<b>Dorsal hand—interosseous muscle</b>	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

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Normative Grip Strength Data <sup>23</sup>

Age	Hand	Males		Females	
		Mean	SD	Mean	SD
6-7	R	32.5	4.8	28.6	4.4
	L	30.7	5.4	27.1	4.4
8-9	R	41.9	7.4	35.3	8.3
	L	39.0	9.3	33.0	6.9
10-11	R	53.9	9.7	49.7	8.1
	L	48.4	10.8	45.2	6.8
12-13	R	58.7	15.5	56.8	10.6
	L	55.4	16.9	50.9	11.9
14-15	R	77.3	15.4	58.1	12.3
	L	64.4	14.9	49.3	11.9
16-17	R	94.0	19.4	67.3	16.5
	L	78.5	19.1	56.9	14.0
18-19	R	108.0	24.6	71.6	12.3
	L	93.0	27.8	61.7	12.5
20-24	R	121.0	20.6	70.4	14.5
	L	104.5	21.8	61.0	13.1
25-29	R	120.8	23.0	74.5	13.9
	L	110.5	16.2	63.5	12.2
30-34	R	121.8	22.4	78.7	19.2
	L	110.4	21.7	68.0	17.7
35-39	R	119.7	24.0	74.1	10.8
	L	112.9	21.7	66.3	11.7
40-44	R	116.8	20.7	70.4	13.5
	L	112.8	18.7	62.3	13.8
45-49	R	109.9	23.0	62.2	15.1
	L	100.8	22.8	56.0	12.7
50-54	R	113.6	18.1	65.8	11.6
	L	101.9	17.0	57.3	10.7
55-59	R	101.1	26.7	57.3	12.5
	L	83.2	23.4	47.3	11.9
60-64	R	89.7	20.4	55.1	10.1
	L	76.8	20.3	45.7	10.1
65-69	R	91.1	20.6	49.6	9.7
	L	76.8	19.8	41.0	8.2
70-74	R	75.3	21.5	49.6	11.7
	L	64.8	18.1	41.5	10.2
75+	R	65.7	21.0	42.6	11.0
	L	55.0	17.0	37.6	8.9

History in  
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- *Tell me about how you eat throughout the day.*
- *When do you usually wake up?*
- *What's the first thing you eat or drink?*
- *What's after this?*
- *Any other drinks or snacks throughout the day?*
- *Any intake through the night?*

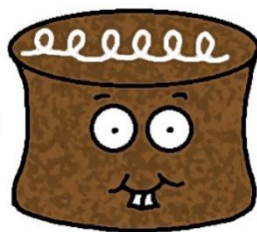
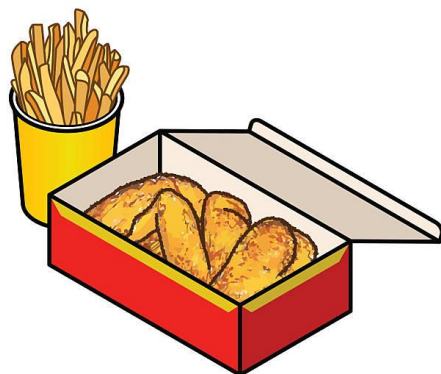


Breakfast

Lunch

Snack

Dinner



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- *Does anything affect your ability to chew or swallow?*
- *Have you noticed any changes to your taste or smell?*
- *Have you noticed any change in your appetite in the last 2 weeks?*



“MALNUTRITION IS THE RESULT OF INADEQUATE FOOD AND NUTRIENT INTAKE OR ASSIMILATION; THUS RECENT INTAKE COMPARED WITH ESTIMATED REQUIREMENTS IS A PRIMARY CRITERION DEFINING MALNUTRITION.”

- Weight loss
- Insufficient energy intake
- Loss of subcutaneous fat
- Loss of muscle mass
- Localized or generalized fluid accumulation
- Diminished functional status (hand grip strength)

# NUTRITION INTERVENTIONS

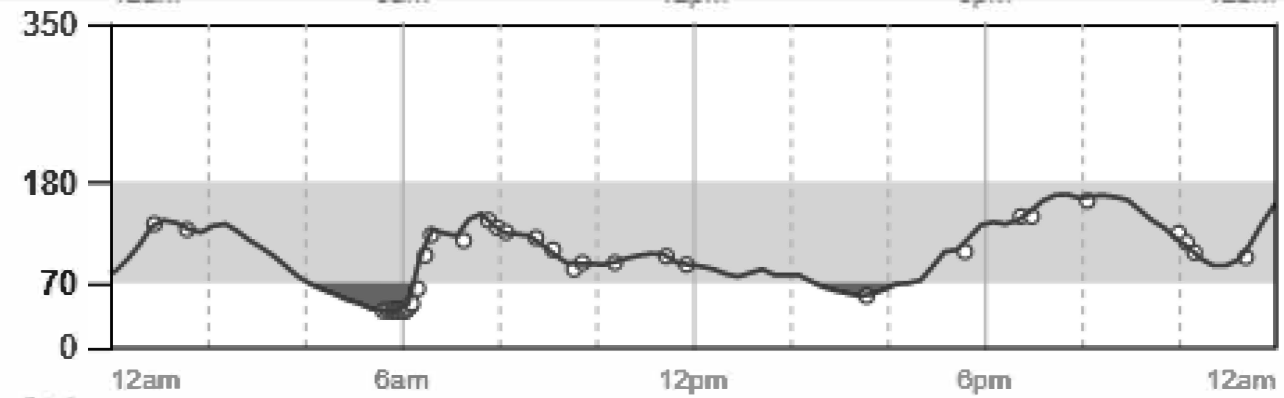
## GENERAL HEALTHFUL

- 25kcal/kg
- 1.25g protein/kg

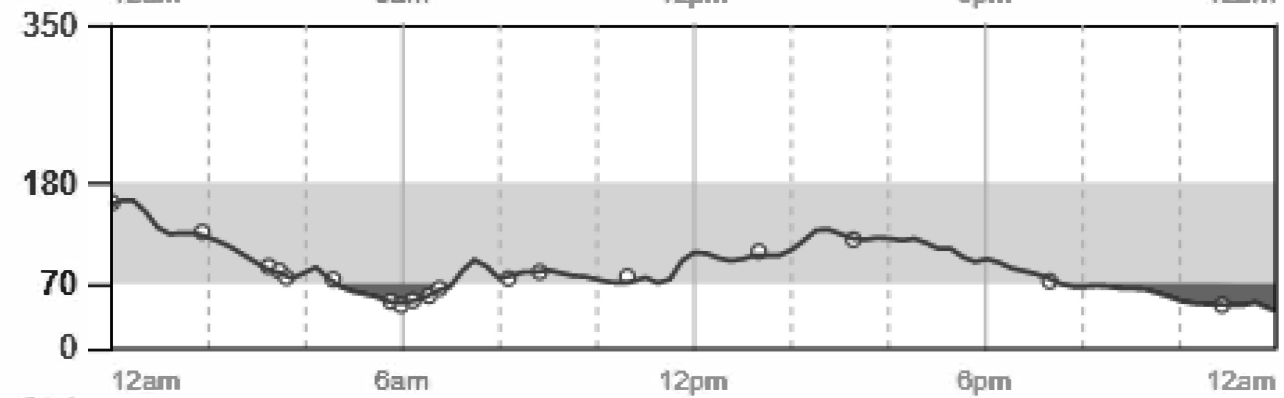
## LIVER DISEASE

- 30-35 kcal/kg
- 1-1.5g protein/kg
- At least a standard multivitamin
- 4-6 small meals a day
- Ensure CHO consistency

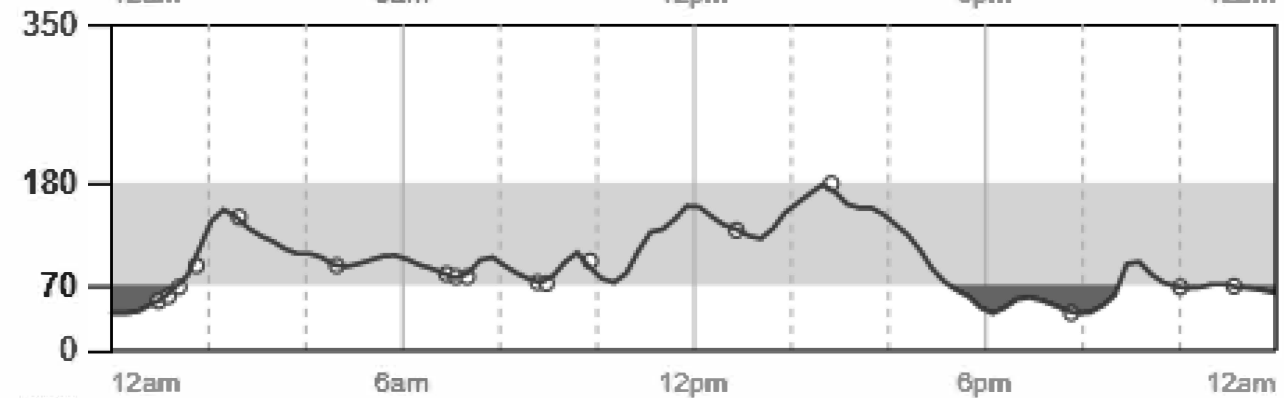
**Fri  
Jul 2**



**Sat  
Jul 3**

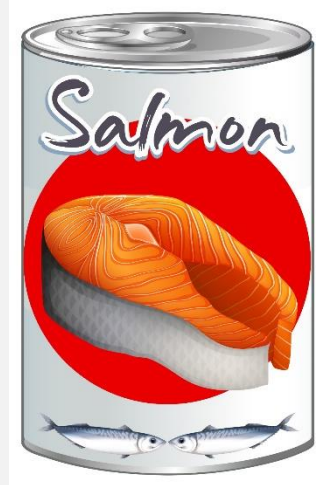
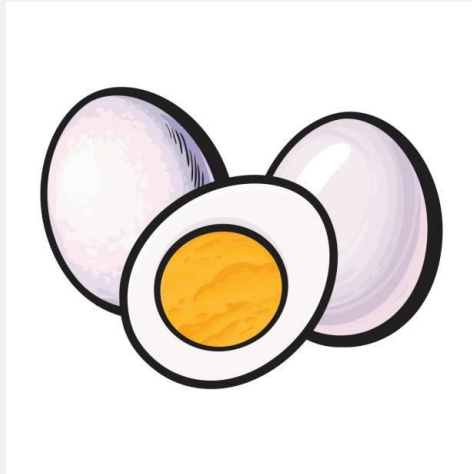


**Sun  
Jul 4**






# EASY SOURCES OF PROTEIN





# EASY SOURCES OF PROTEIN



**CONDUENT**  **Enteral Nutrition Certificate of Medical Necessity, Page 1 of 2**

MEMBER INFORMATION		ORDERING PROVIDER INFORMATION	
Member Name: <input type="text"/> <small>(Last, First, MI)</small>		Ordering Provider's Name: <input type="text"/>	
Alaska Medicaid Member ID: <input type="text"/>		Provider Medicaid ID or NPI: <input type="text"/>	
Date of Birth (MM/DD/YY): <input type="text"/>	Age: <input type="text"/>	Phone Number: <input type="text"/> Ext. <input type="text"/>	
Type of Request <input checked="" type="checkbox"/> Initial Request <input type="checkbox"/> Revised Prescription – Authorization ID <input type="text"/> <input type="checkbox"/> Prescription Renewal			
<b>CLINICAL INFORMATION</b> <small>(This section MUST be completed by the ordering physician, physician assistant, or nurse practitioner.)</small>			
Date of Last Physician Visit Related to Nutrition <input type="text"/>		ICD-10 Diagnosis Codes <small>(Enter all Dx related to need for enteral nutrition therapy.)</small> <input type="text"/>	
Answer Questions 1 – 6 (Y = Yes, N = No)			
1. INITIAL REQUESTS ONLY – Are enteral products needed to discharge from hospital setting?		<input type="checkbox"/> Y or <input checked="" type="checkbox"/> N Discharge Date: <input type="text"/>	
2. UNDER 21 YRS – Consultation with registered dietician or licensed nutritionist in last 12 months? <small>* Consultation may be through the Alaska WIC Nutrition Program or Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program.</small>		<input checked="" type="checkbox"/> Y or <input type="checkbox"/> N Consult Date: <input type="text"/>	
3. Do member's medical records demonstrate a non-function or disease of the structures that normally permit food to reach the small bowel or disease of the small bowel which impairs digestion and absorption of an oral diet? <i>May be anatomic condition or motility disorder.</i>		<input type="checkbox"/> Y or <input checked="" type="checkbox"/> N	
4. Do member's medical records demonstrate that the member is unable to obtain sufficient caloric and protein intake from any regular, liquefied, or pureed foods?		<input checked="" type="checkbox"/> Y or <input type="checkbox"/> N	
5. Are enteral needs the result of a temporary condition that will be fully resolved within 3 months?		<input type="checkbox"/> Y or <input checked="" type="checkbox"/> N	
6. ORAL REQUESTS – Does member reside in an assisted living home (ALH) or long-term care (LTC) facility?		<input checked="" type="checkbox"/> Y or <input type="checkbox"/> ALH or <input type="checkbox"/> LTC	
Height <input type="text"/>	Weight <input type="text"/>	Target Weight <input type="text"/>	

## POST-TEST

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