



# Enteral & Parenteral Nutrition 101

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# Objective

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- Impact of malnutrition among patients
- Malnutrition assessment
- Nutrition interventions
  - Oral supplements
  - Enteral nutrition
  - Parenteral nutrition
- Cases

# Malnutrition impact

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- Is common in the hospital setting:
  - at least 30% of patients are malnourished upon admission
  - and more than 40% are classified as at risk
- Is often overlooked and undertreated in hospital leading to further decline in nutrition status during their inpatient stay and associated with poor outcomes
- ↑ complication rates, ↑ infection rates, ↓ wound healing
- ↑ length of hospital stay (3 – 4 days longer)
- ↑ re-admission rate
- ↑ morbidity and mortality
- ↑ cost of care (mean overall costs 35% higher)

Loss of lean body mass = ↑mortality

Loss of Total LBM	Complications	Associated Mortality
10%	Decreased immunity Increased infections	10%
20%	Decrease in healing, increase In weakness, infection	30%
30%	Too weak to sit, pressure ulcers, Pneumonia, lack of healing	50%
40%	Death, usually from pneumonia	100%

LBM=Lean Body Mass

Demling RH. Nutrition, anabolism, and the wound healing process: an overview. Eplasty 2009;9:e9.

How does a medical / surgical condition impact nutrition ?

Nutrition Impacts	Medical Conditions & Surgical Complications
Inadequate oral intake	Oesophageal and gastric cancer, Small bowel obstruction, Pseudo obstruction, Post-op ileus, Pancreatitis
Increased requirement	Sepsis, Infected surgical wound, GI cancers
Malabsorption	Diarrhoea, High losses from a stoma or an enterocutaneous fistula, Short bowel syndrome

# Malnutrition

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- “a short on nutrients leading to a diminished biological function” vs
- “A subacute or chronic state of nutrition in which a combination of varying degrees of over- or undernutrition and inflammatory activity have led to a change in body composition and diminished function”
- According to the ESPEN Guidelines a severe risk on disease-related malnutrition occurs when at least one of the next criteria is met:
  - Weight loss > 10-15% within 6 months
  - BMI < 18.5
  - Subjective Global Assessment
  - Serum-albumin < 30 g/l (and no proof for liver or renal disturbances)

Weight loss \_\_\_\_ kg in the past 6 months

Ratings	Weight loss
7	0%
6	<3%
5	3–<5%
4	5–<7%
3	7–<10%
2	10–<15%
1	≥15%

If ↑ weight trend, add 1 point, if ↓ weight trend within 1 month, minus 1 point

**Dietary Intake (past 2 weeks)**

- 7) Good (Full share of usual meal)
- 6) Good ( $\geq \frac{3}{4}$  share of usual meal)
- 5) Borderline ( $\frac{1}{2}$ – $\frac{3}{4}$  share of usual meal), but increasing
- 4) Borderline ( $\frac{1}{2}$ – $\frac{3}{4}$  share of usual meal), no change or decreasing
- 3) Poor ( $< \frac{1}{2}$  share of usual meal), but increasing
- 2) Poor ( $< \frac{1}{2}$  share of usual meal), no change or decreasing
- 1) Starvation ( $< \frac{1}{4}$  share of usual meal)

**Gastrointestinal symptoms (that persisted for > 2 weeks)**

Nausea: \_\_\_\_ Vomiting: \_\_\_\_ Diarrhea: \_\_\_\_

- 7) No symptom
- 6) Very few intermittent symptoms (1x per day)
- 5) Some symptoms (2–3x per day)—improving
- 4) Some symptoms (2–3x per day)—no change
- 3) Some symptoms (2–3x per day)—getting worse
- 1–2) Some or all symptoms (> 3x per day)

**Functional status (nutrition related)**

- 6–7) Full functional capacity
- 3–5) Mild to moderate loss of stamina
- 1–2) Severe loss of functional ability (bedridden)

**Disease state affecting nutritional requirements**

- 6–7) No increase in metabolic demand (no or low stress)
- 3–5) Mild to moderate increase in metabolic demand (moderate stress)
- 1–2) Drastic increase in metabolic demand (high stress)

**Muscle wastage:** 6–7) No depletion in all areas  
(at least 3 areas) 3–5) Mild to moderate depletion  
1–2) Severe depletion

**Fat stores** 6–7) No depletion in all areas  
3–5) Mild to moderate depletion  
1–2) Severe depletion

**Edema:** 6–7) No edema  
(nutrition related) 3–5) Mild to moderate edema  
1–2) Severe edema

**RATINGS**  
(circle one rating for each category)

7	6	5	4	3	2	1
7	6	5	4	3	2	1
7	6	5	4	3	2	1
7	6	5	4	3	2	1
7	6	5	4	3	2	1
7	6	5	4	3	2	1
7	6	5	4	3	2	1

**Nutritional Status:** Well Nourished / Mildly to Moderately Malnourished / Severely Malnourished

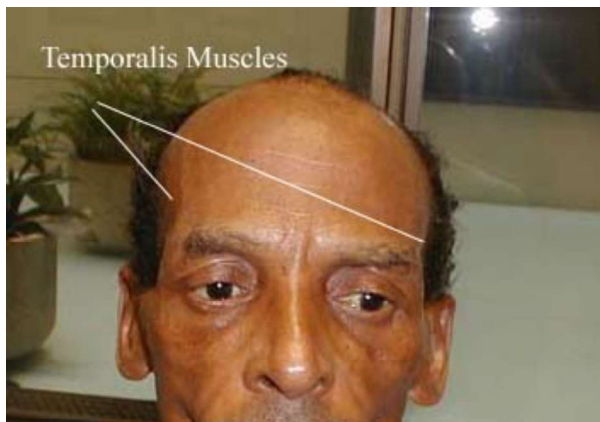
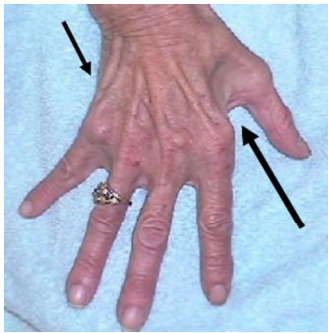
**Overall SGA Rating:** 7 6 5 4 3 2 1  
(circle one)

# Nutrition focused examination

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- Overall appearance
- Assessing muscle loss
  - Upper body: temple, collar bone, shoulder, scapula, hands
  - Lower body: thigh/knee, calf
- Assessing fat loss
- Assessing fluid status
- Other areas to assess: hair, eyes, nails, skins





# Nutritional support

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- Nutrient delivery for patients too sick to consume a normal diet
- Enteral nutrition ( EN)
  - Food
  - Tube feedings directly to the stomach or small intestine
- Parenteral nutrition (PN)
  - Nutrients provided intravenously
- When possible, enteral preferred over parenteral

# Nutritional support

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- Food First Approach
  - ↑ intake of high calorie
  - ↑ protein foods
  - Food fortifications



# Food can provide nutrition too!

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**440kcal**  
**22.5g/protein**

**vs**

**300kcal**  
**12g/protein**



**230kcal**  
**12g/protein**

**vs**

**228kcal**  
**14g/protein**



**Ensure**



**PHARMAC Funded**  
**PHARMAC Funded**



**PHARMAC Funded with Special Criteria**

**Partially  
PHARMAC Funded**



**Not PHARMAC Funded**

