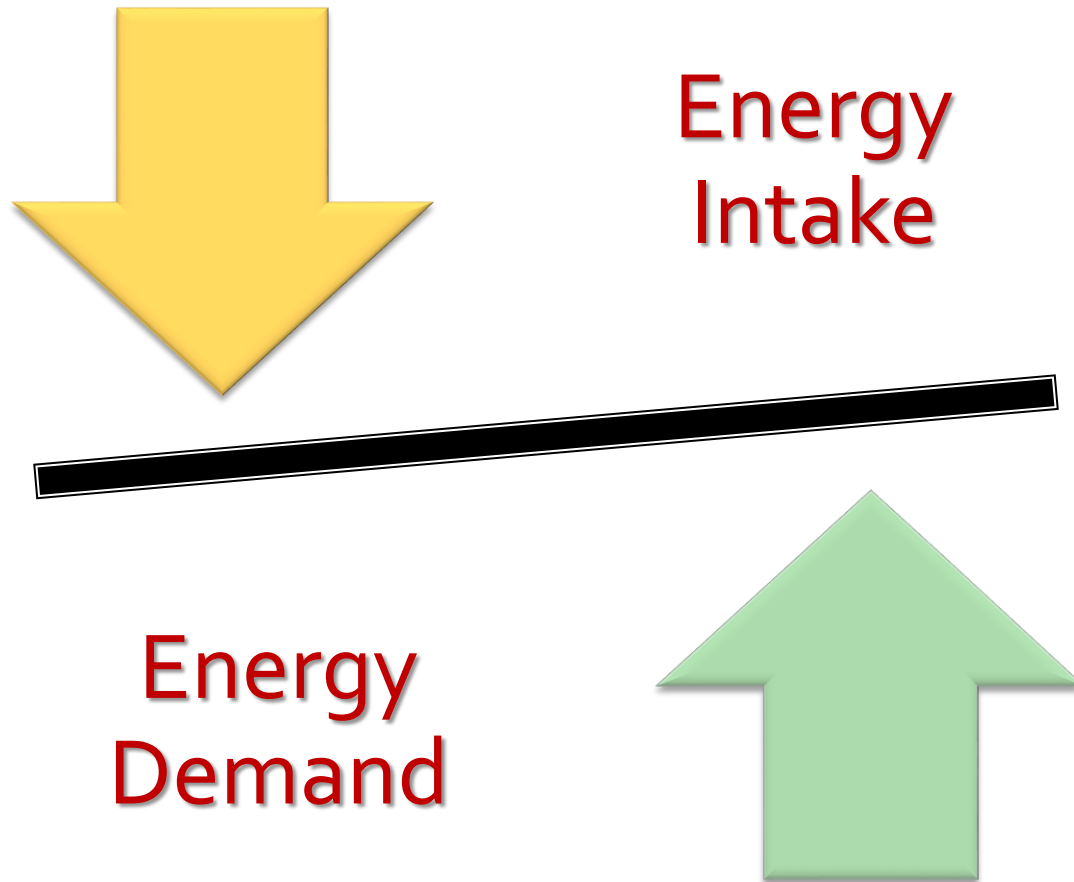# Malnutrition In Hospitalized patients

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Malnutrition

- Malnutrition is a global term representing any condition resulting from:
  insufficient, excessive, or imbalanced consumption, absorption, or utilization of nutrients.

Malnutrition

Prevalence

- Protein Energy Malnutrition is a <u>common</u>, frequently <u>unrecognized</u>, and often <u>inadequately treated</u> condition.

- <u>Older patients</u> and those with <u>critical illness</u> show particularly high rates of malnutrition.

Prevalence

- Its prevalence is reported :

    5% to 10% among community-dwelling older
    30% and 61% among hospitalized
    12% and 85% among older adults in long
    term and sub acute care facilities.

Malnutrition History

- **Previous causes :**
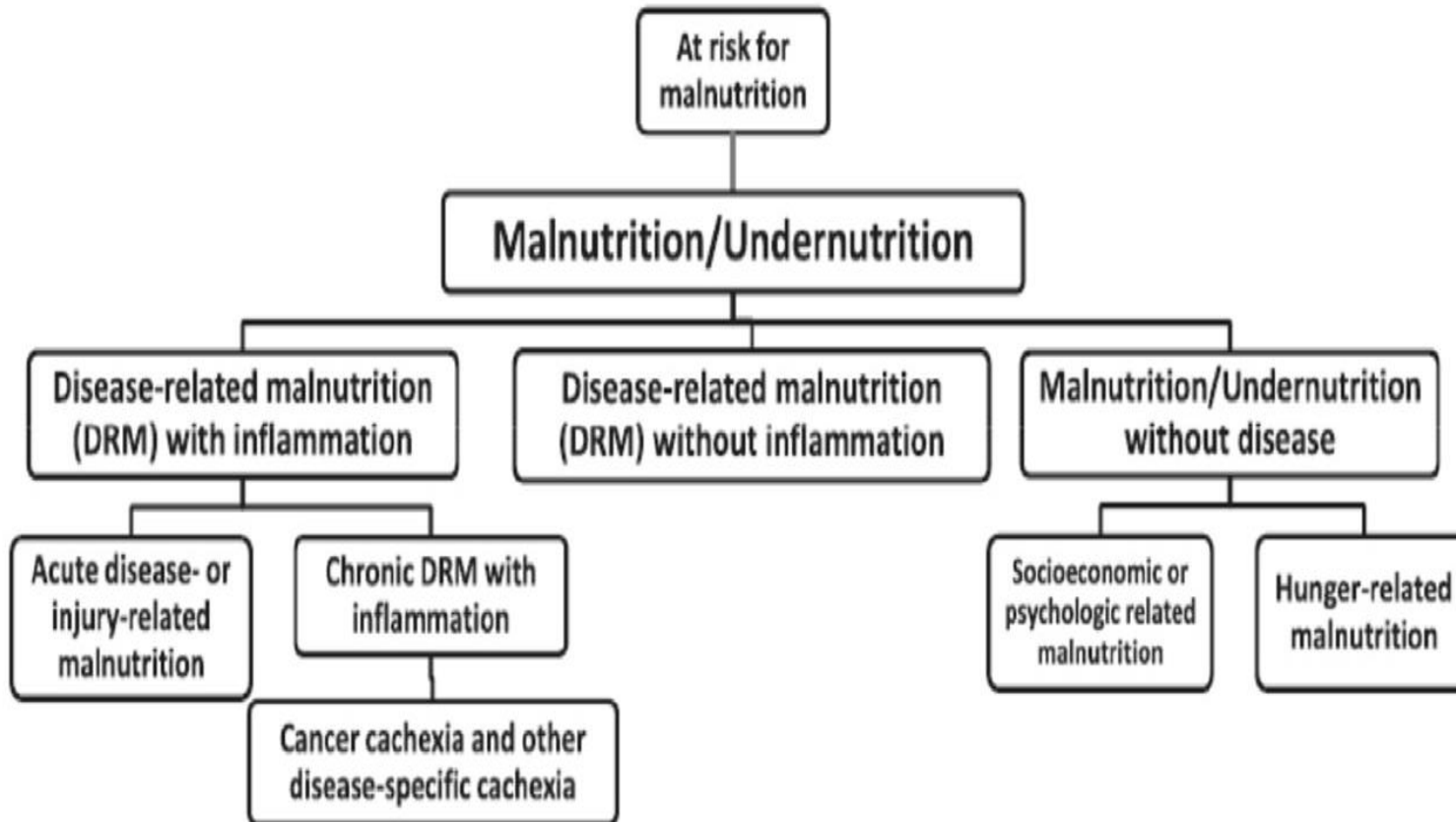 starvation
  famine

- **Nowadays:**
  Undernutrition,
  Micronutrient
  abnormalities,
  obesity,
  cachexia,
  sarcopenia,
  frailty

greater than 1 billion of the world's population

Etiology base definition

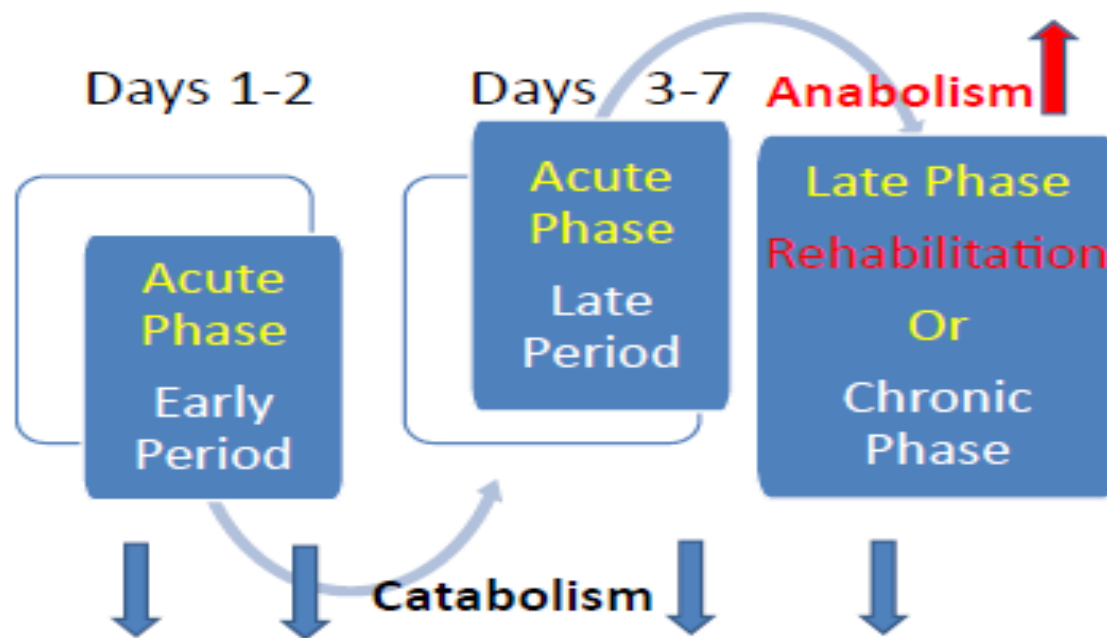# Disease Related Malnutrition with inflammation

Fig. 2. Description of the acute and late phases following infection/stress/injury. After injury, the acute phase is composed of an early and a late period. Then the post-acute phase can be progressing to convalescence and rehabilitation or chronicity and Prolonged Inflammatory and Catabolic Syndrome (PICS).

- The acute phase is composed of two periods:
an Early Period : (the ancient EBB phase),
defined by <u>metabolic instability</u> and severe
increase in catabolism.

a Late Period: (ancient FLOW phase)
defined by a significant muscle wasting and a
stabilization of the metabolic disturbances

- **The post-acute phase follows**:
with improvement and <u>rehabilitation</u> or <u>persistent inflammatory</u>/ catabolic state and prolonged hospitalization.

PEM Spectrum

SIMPLE
STARVATION .... CASHEXIA
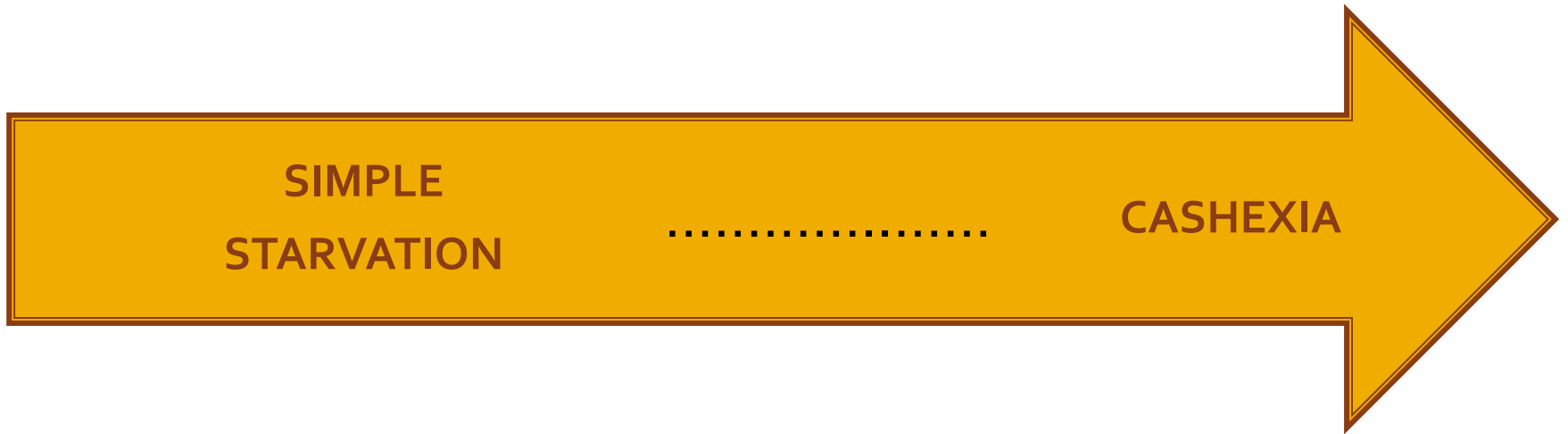
PEM Consequences

- altered immunity, decreased effective response to infections.

- impaired wound healing,

- Increased length of stay & readmission.

- increased costs.

- increased mortality.

Malnutrition Diagnosis

- Although malnutrition is a global concern associated with incremental morbidity, mortality, and cost, there has been a fundamental lack of <u>consensus on diagnostic criteria for application in clinical settings</u>.

Global Leadership Initiative on Malnutrition (GLIM)

Phenotypic Criteria		Etiologic Criteria	
Weight loss (%) >5% within past 6 months or >10% beyond 6 months		Reduced food intake or Assimilation 50% of ER > 1 week, or any reduction for >2 weeks, or any chronic GI condition that adversely impacts food Assimilation or absorption	
Low body mass index (kg/m2)	Asia: <18.5 if < 70 years, or <20 if >70 years	Inflammation	Acute disease/ injured, or chronic disease related
Reduced muscle mass	Reduced by validated body composition measuring techniquesa		

Phenotypic Criteria

- Weight

- Body mass index

- Body composition (Muscle mass)

Evaluation & Monitoring

Weight

- Weight loss is a cardinal manifestation of PEM.

- serial weights can be powerful tool for assessing protein-energy nutritional status.

- Even a slow loss of weight, is associated with an increased mortality risk.
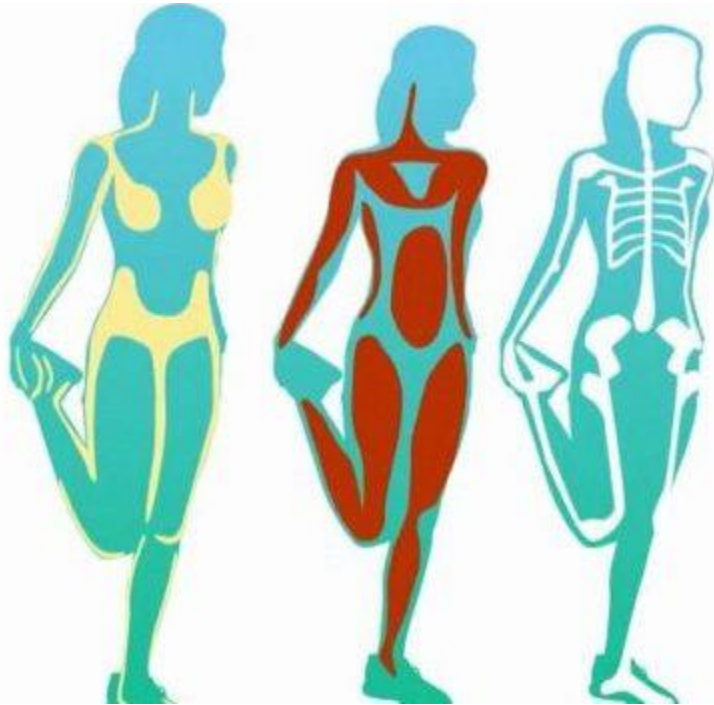
- when evaluating a weight history, notice to :
  fluctuations in total body water.
  voluntary from involuntary weight loss.

- Any weight loss in Elderly , even in <u>the obese</u>, should be considered potentially serious.

- Weight stability over time, however, does not exclude a clinically significant <u>change in body composition.</u>

Body Mass Index

Body Composition

FAT
MUSCLE
BONE

Imaging Tools For Malnutrition

- [DXA]

- [MRI]

- [CT]

- strength or performance tests (e.g., hand grip strength).

Etiologic Criteria

- food intake or any chronic GI condition that adversely impacts food Assimilation or absorption

- Acute disease/injured, or chronic disease related

Food Intake

- Unfortunately, obtaining <u>an accurate</u> estimate of <u>actual nutrient intake</u> is almost always a challenge.

- Having appropriately trained staff to perform <u>accurate nutrient intake assessments</u> on patients is vital.

Inflammation

- major <u>infections</u>, <u>burns</u>, <u>trauma</u>, and closed <u>head injury</u> are associated with acute inflammation of a severe degree.
- chronic organ diseases, like congestive heart failure, chronic obstructive pulmonary disease, rheumatoid arthritis, chronic kidney or liver disease and cancer, are associated with <u>chronic</u> or <u>recurrent inflammation</u> of a mild to moderate degree.

Malnutrition grading

Table 4
Thresholds for severity grading of malnutrition into Stage 1 (Moderate) and Stage 2 (Severe) malnutrition.

	Phenotypic Criteria[a]		
	Weight loss (%)	Low body mass index (kg/m²)[b]	Reduced muscle mass[c]
Stage 1/Moderate Malnutrition (Requires 1 phenotypic criterion that meets this grade)	5–10% within the past 6 mo, or 10–20% beyond 6 mo	<20 if < 70 yr, <22 if ≥ 70 yr	Mild to moderate deficit (per validated assessment methods – see below)
Stage 2/Severe Malnutrition (Requires 1 phenotypic criterion that meets this grade)	>10% within the past 6 mo, or >20% beyond 6 mo	<18.5 if < 70 yr, <20 if ≥ 70 yr	Severe deficit (per validated assessment methods – see below)

only the <u>phenotypic criteria</u> are proposed for the severity grading

nutritional biochemical markers

- (Alb, preAlb,transferrin) have <u>low specificity</u> as indicators of protein-energy <u>nutritional status</u>.

- They probably more strongly affected by <u>cytokine-associated inflammation</u> than nutrient intake.

- The <u>sensitivity</u> of these markers is also low.

Goal Of Assessment?

Adequate <u>nutrient intake</u> to maintain <u>body composition</u> and <u>physiologic function.</u>

- Medical nutrition therapy shall be considered for all patients staying in the ICU, mainly for more than 48 h.

Intervention

- **Basic recommendation** :

✓ Identification and elimination of potential <u>causes of malnutrition</u>.

✓ Avoidance of dietary restrictions.

✓   Routine screening ,assessment, monitoring Nutritional interventions as part of a multimodal and multidisciplinary team

- ordering a feeding status of nil per os (NPO) for the patient surrounding the time of diagnostic tests or procedures should be minimized.

Eliminate malnutrition causes

- Dysphagia
- Unfitted denture
- Dyspepsia
- Pschological disorders

Supportive Interventions

- ✓ Mealtime assistance in case of eating dependency.
- ✓ Sharing mealtimes with others .
- ✓ Energy-dense meals
- ✓ Nutritional information and education.

Food Modification

- ✓ food fortification
- ✓ additional snacks/meals*, finger food
- ✓ texture-modified, enriched foods
- ✓ organoleptic enhancement (flavor/taste/visual appearance)
- ✓ increasing variety of diet
- ✓ considering individual preferences

Oral Nutritional Supplement

- ONS should be given to all people with (risk of) malnutrition.

- these supplements should provide at least 400 kcal and a minimum of 30 g of protein per day.

ONS

NUTRITIONAL SUPPLEMENTS

Standard

Fibre supplemented

1 scoop : 36-38kcal
: 1.4-1.7 g protein

Glucose Intolerance

Enteral & Parenteral Nut

- for those who are unable to meet their nutritional requirements by the oral or enteral route, respectively, but have a reasonable prospect of general recovery or at least stabilisation of health and well-being.

Thanks for your attention