

Identifying and Treating Malnourished Patients to Improve Outcomes

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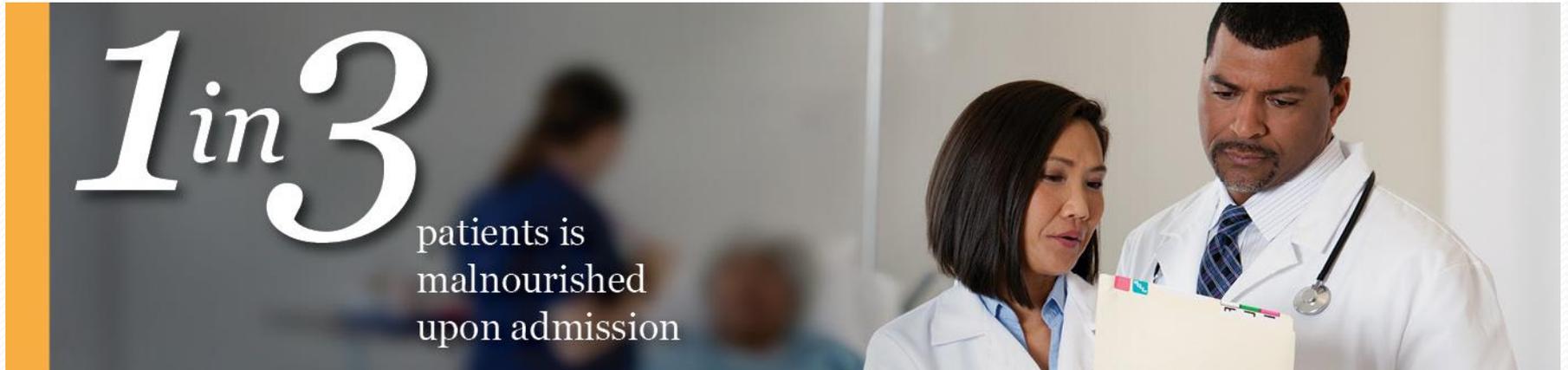
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Defining Malnutrition

“Malnutrition is a subacute or chronic state of nutrition in which a combination of varying degrees of over- or under-nutrition and inflammatory activity have led to a change in body composition and diminished function”

The Prevalence of Malnutrition

Malnutrition causes adverse effects on body function and clinical outcome₁ and can occur at any BMI, such as:



Because everyone has the potential to be affected by malnutrition, it is important to screen all patients.

Nutrition Day

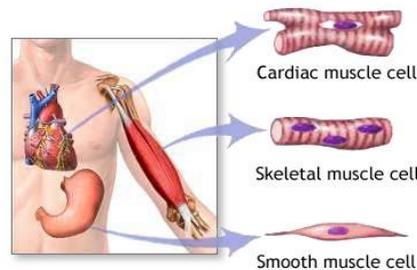
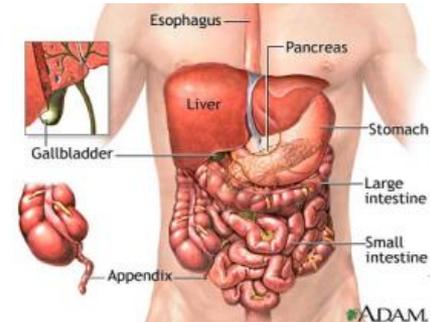
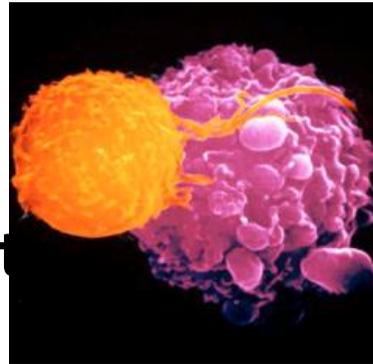
- A worldwide initiative to identify malnutrition in hospitals
- Started in 2004 in Europe. United States starting participating in 2009
- One day submission of nutrition data that allows calculation of MST score and shows snapshot of oral intake
- 64 countries, 7000 hospitals, >240,000 pts

Nutrition Day

- For the US, data has been analyzed for 2009-2015
- 9,959 patients from 245 hospitals
- Prevalence of malnutrition (MST 2 or >) was estimated 32.7 %

Importance of Adequate Nutrient Intake

- Adequate intake of both macronutrients (protein/amino acids, fat, carbohydrate and calories) and micronutrients (essential vitamins, minerals and trace elements) are critical for:
- Optimal cell function
- Immunity
- Organ function
- Muscle function and strength
- Wound healing

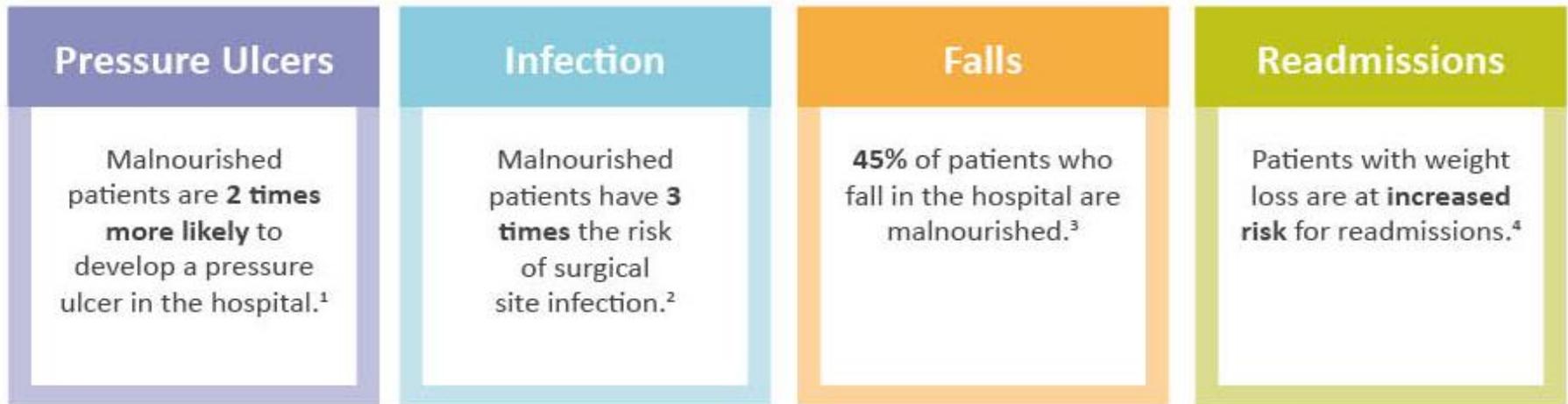


Inadequate Intake and link to 30 Day Mortality

- Nutrition Day Data
- 36% of patients consumed all their meals
- 25% ate a quarter of their meals
- 7% were not allowed to eat
- 7% consumed nothing despite being allowed
- Patients who did not eat despite permission had a mortality HR of 5.99 compared to those who ate all their meals
- Patients who had 25% to eat had a mortality HR of 3.24

Burden of Malnutrition

- The importance of identifying at-risk patients is highlighted by data showing that malnutrition is associated with many adverse outcomes:



1. Banks M et al. *Nutrition* 2010;26:896–901.; 2 Fry DE, et al. *Arch Surg.* 2010;145:148-151. ; 3 Bauer JD, et al. *J Hum Nutr Diet.* 2007; 20 :558-564 ; 4 Allaudeen N, et al. *J Hosp Med.* 2011;6:54-60

Malnutrition is More Important Than Ever

Hospitals face new challenges in quality patient care. Medicare and Medicaid will penalize hospitals for certain measures of patient quality care, such as:



Readmissions within 30 days of discharge



Hospital-acquired conditions, such as:

- Pressure ulcers
- Falls
- Surgical-site infections

Financial Impact of Malnutrition

- Hospital costs for patients diagnosed with malnutrition are on average twice as high as non-malnourished patients
- Average cost per readmission is 26% higher for patients with protein-calorie malnutrition
- Patients with malnutrition may have longer LOS , up to 4-6 days

What Clinicians Can Do

1

Recognize & diagnose all patients at risk of malnutrition

2

Rapidly implement appropriate nutritional interventions & monitor progress

3

Develop a discharge plan for patient nutrition care & education

Recognizing Malnutrition

- In 1996, Joint Commission required nutrition screening within 24 hours of admission (this is a must)
- One barrier is that malnutrition screening is often done “visually”
- It is critical to use a validated screening tool, e.g.,
 - Malnutrition Screening Tool (MST)
 - Mini Nutritional Assessment-Short Form (MNA-SF)
 - Malnutrition Universal Screening Tool (MUST)
 - Nutritional Risk Screening 2002 (NRS-2002)
 - Short Nutritional Assessment Questionnaire (SNAQ[©])

Example Screening Tool: MST

1. Have you lost weight recently without trying?

No 0

Unsure 2

If Yes, how much weight (kg) have you lost?

1 – 5 1

6 – 10 2

11 – 15 3

> 15 4

Unsure 2

Weight Loss Score:

2. Have you been eating poorly because of a decreased appetite?

No 0

Yes 1

Appetite Score:

Total MST Score (weight loss + appetite scores)

Example Screening Tool: MST

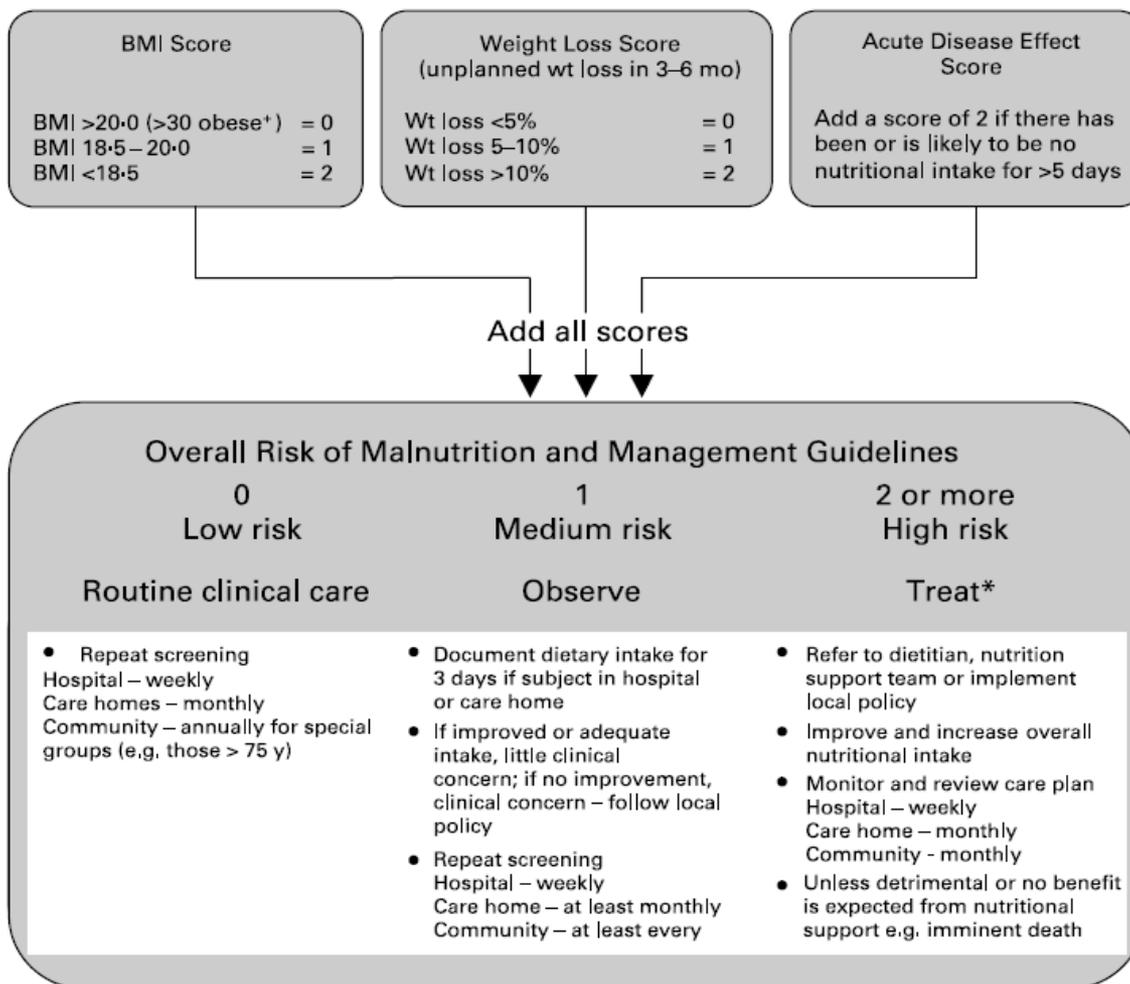
STEP 1: Screen with the MST	
1 Have you recently lost weight without trying?	
No	0
Unsure	2
2 If yes, how much weight have you lost?	
2-13 lb	1
14-23 lb	2
24-33 lb	3
34 lb or more	4
Unsure	2
Weight loss score: <input type="text"/>	
3 Have you been eating poorly because of a decreased appetite?	
No	0
Yes	1
Appetite score: <input type="text"/>	
Add weight loss and appetite scores	
MST SCORE: <input type="text"/>	

STEP 2: Score to determine risk
MST = 0 OR 1 NOT AT RISK Eating well with little or no weight loss If length of stay exceeds 7 days, then rescreen, repeating weekly as needed.
MST = 2 OR MORE AT RISK Eating poorly and/or recent weight loss Rapidly implement nutrition interventions. Perform nutrition consult within 24-72 hrs, depending on risk.

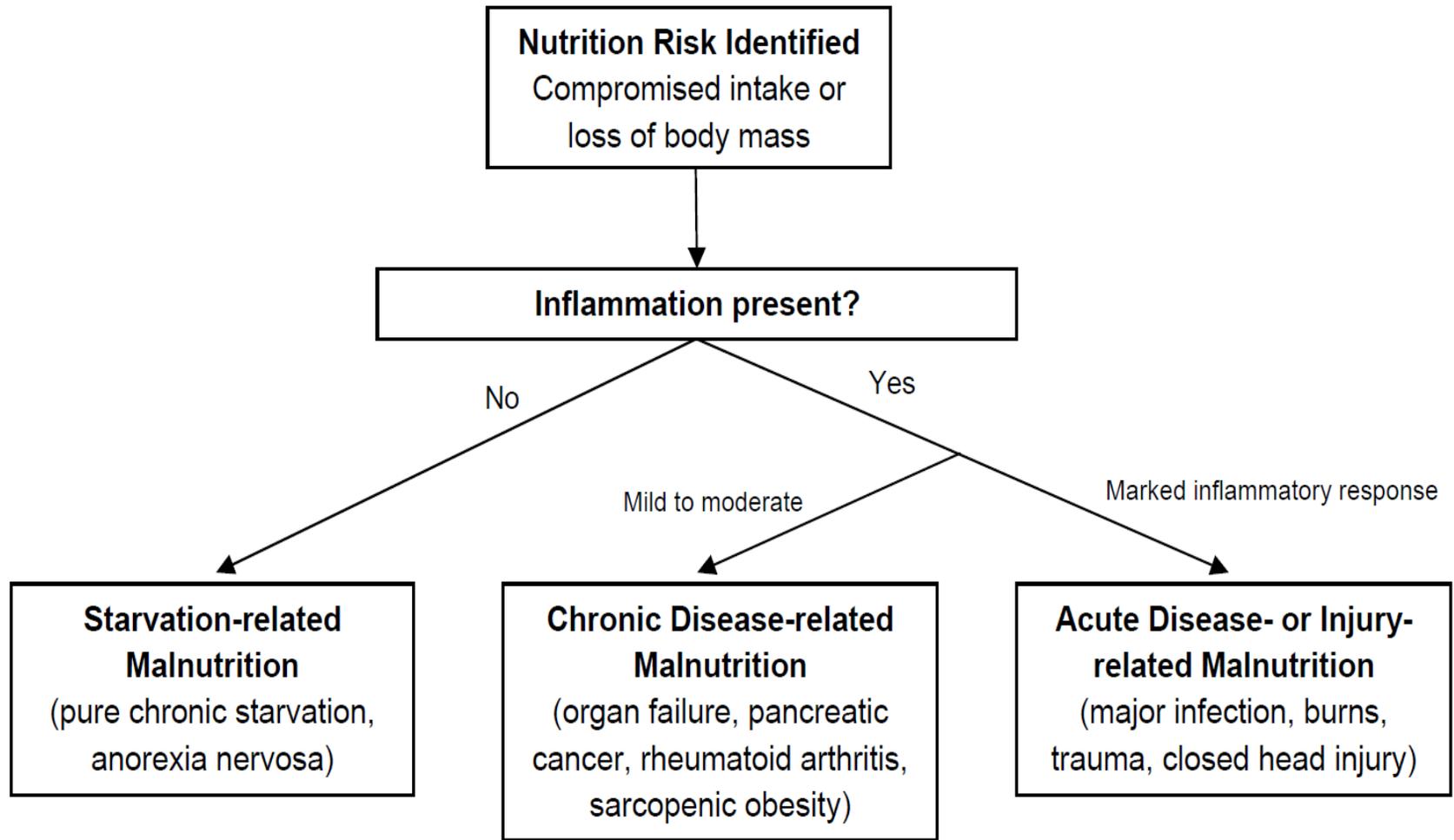
STEP 3: Intervene with nutritional support for your patients at risk of malnutrition.
Notes: _____ _____ _____ _____ _____ _____

Ferguson, M et al. *Nutrition* 1999 15:458-464

Example Tool: MUST



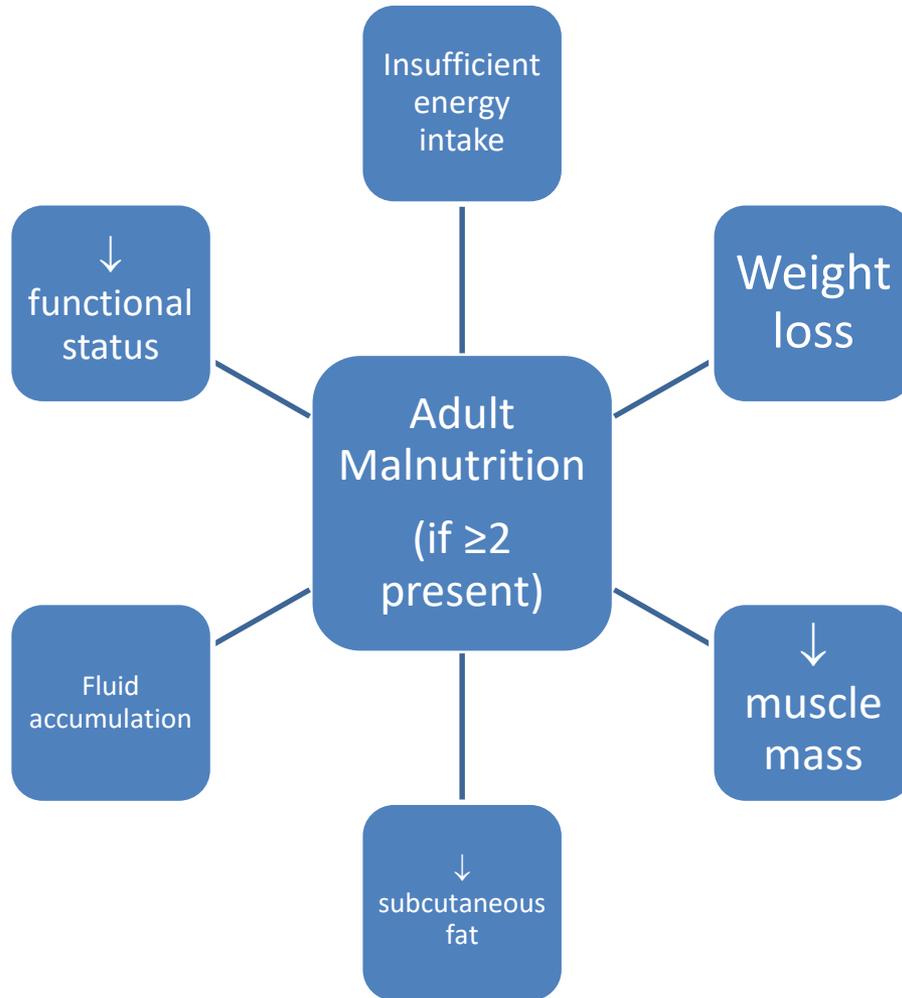
AND/A.S.P.E.N. Etiology-Based Definition of Malnutrition



Diagnosing Malnutrition

- **No single parameter is definitive for malnutrition; therefore, AND/A.S.P.E.N. proposed that malnutrition be diagnosed when at least two of the following six characteristics are identified:**
 - 1) insufficient energy intake
 - 2) weight loss
 - 3) loss of subcutaneous fat
 - 4) loss of muscle mass
 - 5) localized /generalized fluid accumulation that may sometimes mask weight loss
 - 6) diminished functional status.
- **The magnitude and temporal aspects of change among these dynamic characteristics can be used to distinguish between non-severe and severe malnutrition**

Defining Malnutrition



AND/A.S.P.E.N. Malnutrition Characteristics

Clinical characteristic	Malnutrition in the context of acute illness or injury		Malnutrition in the context of chronic illness				Malnutrition in the context of social or environmental circumstances					
	Moderate ^a		Severe ^b		Moderate ^a		Severe ^b		Moderate ^a		Severe ^b	
(1) Energy intake: 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. The clinician may obtain or review the food and nutrition history, estimate optimum energy needs, compare them with estimates of energy consumed, and report inadequate intake as a percentage of estimated energy requirements over time.	< 75% of estimated energy requirement for > 7 days		≤ 50% of estimated energy requirement for ≥ 5 days		< 75% of estimated energy requirement for ≥ 1 month		≤ 75% of estimated energy requirement for ≥ 1 month		< 75% of estimated energy requirement for ≥ 3 months		≤ 50% of estimated energy requirement for ≥ 1 month	
(2) Interpretation of weight loss: The clinician may evaluate weight in light of other clinical findings, including the presence of under- or over-hydration. The clinician may assess weight change over time reported as a percentage of weight lost from baseline. Physical findings: Malnutrition typically results in changes to the physical exam. The clinician may perform a physical exam and document any one of the physical exam findings below as an indicator of malnutrition.	<u>%</u> 1 – 2	<u>Time</u> 1 wk	<u>%</u> > 2	<u>Time</u> 1 wk	<u>%</u> 5	<u>Time</u> 1 mo	<u>%</u> > 5	<u>Time</u> 1 mo	<u>%</u> 5	<u>Time</u> 1 mo	<u>%</u> > 5	<u>Time</u> 1 mo
	5	1 mo	> 5	1 mo	7.5	3 mo	> 7.5	3 mo	7.5	3 mo	> 7.5	3 mo
	7.5	3 mo	> 7.5	3 mo	10	6 mo	> 10	6 mo	10	6 mo	> 10	6 mo
					20	1 yr	> 20	1 yr	20	1 yr	> 20	1 yr

AND/A.S.P.E.N. Malnutrition Characteristics (cont.)

Clinical characteristic	Malnutrition in the context of acute illness or injury			Malnutrition in the context of chronic illness		Malnutrition in the context of social or environmental circumstances
	Mild	Moderate	Mild	Severe	Mild	Severe
(3) Body fat: Loss of subcutaneous fat (eg, orbital, triceps, fat overlying the ribs).	Mild	Moderate	Mild	Severe	Mild	Severe
(4) Muscle mass: Muscle loss (eg, wasting of the temples, clavicles, shoulders, interosseous muscles, scapula, thigh, and calf).	Mild	Moderate	Mild	Severe	Mild	Severe
(5) Fluid accumulation: The clinician may evaluate generalized or localized fluid accumulation evident on exam (extremities, vulvar/scrotal edema, or ascites). Weight loss is often masked by generalized fluid retention (edema), and weight gain may be observed.	Mild	Moderate to severe	Mild	Severe	Mild	Severe
(6) Reduced grip strength: Consult normative standards supplied by the manufacturer of the measurement device.	NA	Measurably reduced	NA	Measurably reduced	NA	Measurably reduced

Intervening with Nutritional Therapy

Once a patient is diagnosed malnourished or at risk, hospitalists and other health care professionals should rapidly implement nutrition interventions and continue monitoring your patients.

Types of Nutritional Interventions

- **Nutrition intervention encompasses a broad spectrum of options, including:**
 - **Dietary modifications and counseling**
 - **Complete oral nutritional supplements**
 - **Specific oral supplements providing protein or calories alone**
 - **Complete multivitamin-trace element pills**
 - **Enteral nutrition (EN; e.g. tube feeding)**
 - **Parenteral nutrition (PN)**

Do we intervene?

- Nutrition Day data
- Patients that were allowed to eat but did not-> 14.7% received ONS or artificial nutrition
- Similar data for patients who ate 25% of their meals-> 13.8% received ONS or artificial nutrition
- May reflect poor recognition of patients who are eating poorly and missed opportunities for intervention

Efficacy of Oral Nutritional Supplementation (ONS)

- Available data, mostly in patients age ≥ 65 + malnutrition
Possible benefits of ONS in reducing readmission rates, LOS, pressure ulcers, total complications, 90 day mortality

- *Variable reduction in hospital readmissions*¹⁻²
- *Reduction in hospital length of stay (determined in quality improvement studies, not RCTs)*³⁻⁴
- *Up to 25% reduction in pressure ulcer incidence (meta-analysis)*⁵
- *A 14% reduction in complications (meta-analysis)*⁶
- *A decrease in 90 day mortality in older adults with malnutrition (RCT)*⁷

1. Gariballa S, et al. *Am J Med* 2006;119:693-9; 2. Beck AM et al. *Clin Rehab* 2013; 27: 19-27. 3. Brugler L et al. *J Qual Improv* 1999; 25: 191-206 4. Smith PE, et al. *Healthcare Financial Management* 1997;51:66-69. 5. Stratton RJ, Ek AC, Engfer M, et al. *Ageing Res Rev.* 2005;4:422-450. 6. Milne AC, et al. *Cochrane Database Syst Rev.* 2009 Apr 15(2): CD003288. DOI:10.1002/14651858.

Data Regarding Oral Nutritional Supplementation to Date

- **Most studies have been small and have used variable methods with generally poor methodological quality.**
- **Generally no impact on patient mortality or functional outcomes, although suggestions of improved morbidity and mortality and improved functional outcomes when ONS given to patients with pre-existing malnutrition.**
- **Nutritional indexes (energy+protein intake, body weight, lean body mass) improve with ONS**
- **Oral nutritional supplements provide essential nutrients (amino acids, essential fats, vitamins, mineral and trace elements, energy, protein) and are generally well tolerated**
- **Rigorous, well-designed, and adequately powered RCTS evaluating specific formulations are needed in at-risk patient subgroups**

Barriers to Overcome

Barriers to ideal nutrition interventions are varied, but often include:

- **NPO orders while patients await further assessments**
- **Inadequate food consumption due to poor appetite, disease processes, and interruptions to meal times**
- **Delay in assessment of nutrition status due to insufficient dietitian staffing**
- **Lack of nursing protocol orders for nutrition**
- **Dietitian recommendations not implemented due to the physician's focus on other medical concerns**
- **Physician uncertainty with product formulary and/or specific micronutrient therapy options in their hospitals**

Intervening with Nutrition Therapy

Collaborate with your care team to:

- **Create supportive mealtime environment**
- **Develop procedures to provide patients with meals at “off times”**
- **Take notice of patient meal consumption**
- **Ensure patients receive all EN or PN as prescribed**
- **If indicated, provide ONS between meals; consider a multivitamin-trace element order during hospitalization**

Intervening with Nutrition Therapy

- **Avoid disconnecting EN or PN for patient repositioning, ambulation, travel or procedures**
- **Consider managing symptoms of gastrointestinal distress while continuing to administer PO diet or EN**
- **Take action to reduce amount of time patient's intake is restricted**
- **Identify meds and disease conditions that interfere with nutrient absorption**

Helping Patients Consume Food

- **Make it as easy as possible for your patients to feed themselves or provide assistance**
- **Make sure tray/supplements are accessible**
- **Talk to your patients about the role nutrition plays in their recovery**
- **Monitor whether they have missed a meal**

Educating Patients and Caregivers

- **Lack of education among patients and their families**
- **Lack of “nutrition hand-off” to PCP’s and post-acute facilities**
- **It’s important for the care team to guide patients on**

1

Education

Provide instructions and education to patients upon discharge.

2

Communication

Speak with your patients about the importance of nutrition and answer any questions about their nutritional paths.

3

Compliance

Encourage patient compliance for continuous nutritional improvement.

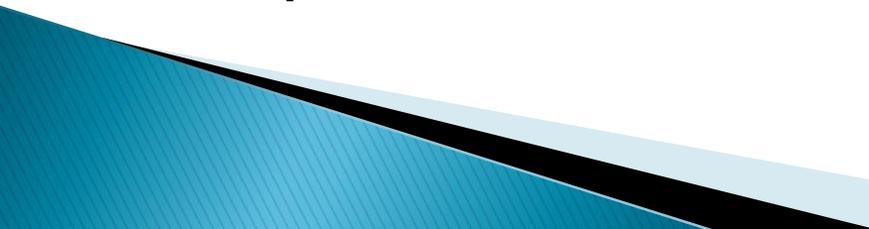
Developing a Discharge Plan

- **Nutrition care plan should be part of a comprehensive discharge process for all patients**
- **Dietitians should be informed of discharge timing**
- **Diet section of discharge instructions should provide a clear outline of the following:**
 - **Dietary needs**
 - **Calorie and protein goals; micronutrients**
 - **Successful hospital interventions**
 - **Goal for de-escalation of nutrition support (if indicated)**

What You Can Do...

- **Be aware of the nutritional status of your patients**
- **Ask screening questions when you admit or meet patients**
- **Look for the nutrition screening and assessments in the EHR**
- **Get to know your hospital dietitians; make them aware that you are reviewing their recommendations and want their professional input**
- **Gather data, e.g., calorie/protein counts, consumption of nutritional supplements, tube feed goals**
- **Incorporate nutrition into your daily rounds-notes, patient care huddles and conversations with patients/families**

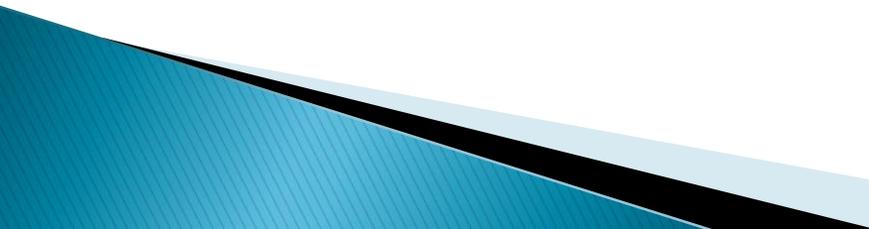
Specific examples– KUH

- ▶ Ordering privileges for RD's→ ONS, calorie counts, weights, vitamins
 - ▶ RD's send note to attending physician via EMR→ malnutrition diagnosis with ICD code. Request that physician add to progress note and problem list
 - ▶ RN's have specific line in I/O documentation for ONS consumption
 - ▶ Calorie count alert signs on patients' doors
 - ▶ Calorie count results flow to MD Rounds Report
- 

Specific Examples Cont...

- ▶ Physician champion to discuss with other physicians difficult cases
 - ▶ NPO over 72 hours triggers to RD
 - ▶ Nutrition Support Service to assist in PN management and transition to enteral nutrition
 - ▶ Enteral nutrition order set– mandatory use
 - ▶ Volume -based enteral feeding protocol
- 

Ideas moving forward..

- ▶ Calorie count results to automatically pull into daily notes
 - ▶ RD's participate in multidisciplinary team huddles
 - ▶ Calorie and protein goals posted in patient's room
 - ▶ ONS listed in MARS to increase visibility
 - ▶ Bedside RN can initiate ONS
 - ▶ RD can initiate oral diet change or EN order change
 - ▶ Discharge readiness check list in EMR– adequate po intake included
 - ▶ RD's to have access to discharge orders
- 

In Conclusion...

- ▶ **Nutrition is a core principle of recovery and wellness. Resist focusing on the battle and losing the war!**
- ▶ **Consider being a Physician Champion for your hospital. Optimal nutrition care is best achieved as a multidisciplinary effort**
- ▶ **Visit malnutrition.com for tools and resources**
 - Malnutrition Quality Improvement Initiative (MQii)**
 - Continuing education opportunities
 - Recent research studies on nutrition intervention
 - Insights and tools
 - Patient discharge materials

THANK YOU!!

QUESTIONS?

