

# Improving Oncology Outcomes with Nutrition: Interventions to Maximize Oral Intake

*to Maximize Oral Intake*  
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*and*

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# Objectives

- Identify common Nutrition Impact Symptoms that may occur during oncology treatment
- Identify the characteristics of malnutrition in the adult oncology patient
- List 3 nutrition intervention strategies that improve intake or tolerance
- Identify one nutrition intervention appropriate for the case study

# Disclosure

The content of this program meets the continuing education criteria of being evidence-based, fair and balanced, and non-promotional.

This educational event was developed through the Oncology Nutrition Dietetic Practice Group and was supported by Abbott Nutrition.

# Cancer Treatment Overview

- **Nutritional status of patients with cancer varies when treatment begins**
- Those who enter treatment with nutritional problems may have complicated treatments and recovery
- Cancer treatment may have direct (mechanical) or indirect (metabolic) effects on nutritional status.
- Success of treatment influenced by ability to tolerate therapy

# Cancer Treatment: Surgery

- **Surgery** – primary modality, *local* treatment
  - **Most patients will have some kind of surgery**
  - May be preceded or followed by other modalities (chemo, radiation)
  - Malnutrition increases risk for post-operative complications
  - Mechanical and physiologic barriers (i.e. short gut syndrome); increase metabolic needs for healing

# Cancer Treatment: Radiation

## • **Radiation** - *local* treatment

- Normal tissue in the treatment area can be affected
- Also given in combination with chemotherapy



esophagitis, dysphagia, or reflux



diarrhea, nausea, vomiting, enteritis,  
malabsorption



40-60% experience swallowing difficulties



# Cancer Treatment: Chemotherapy

- **Chemotherapy** – *systemic* treatment, administered multiple routes
  - Pharmacologic action on cell reproduction/cell cycle
  - Narrow therapeutic index
  - Dose reduction or delay may have negative impact on survival
- **Nutrition related side effects of chemotherapy**
  - **Chemotherapy Induced Nausea/Vomiting (CINV)**
    - Acute, delayed and/or anticipatory



# Cancer Treatment: Chemotherapy

- **Oral mucositis** in 30%-40% of patients receiving standard-dose **chemotherapy**
  - Antimetabolites, antitumor antibiotics, alkylating agents, plant alkaloids
- **Constipation** risk:
  - Vinca alkaloids can cause neurotoxicity that affect the smooth muscles of the GI tract, leading to decreased peristalsis or ileus
- **Appetite (Anorexia)**

# Cancer Treatment: Biotherapy

- **Biotherapy** (targeted therapies) – target either the tumor cell itself or intracellular processes
  - MoAbs (monoclonal antibodies): rituximab, cetuximab, trastuzumab
    - Predominantly IV
  - Nibs (small molecule inhibitors): erlotinib, lapatinib, sorafenib, sunitinib
    - Predominantly PO
    - Increase risk of food-drug/drug-drug interactions
    - Complex dosing schedules

# Nutrition Outcomes Data

- Hospital Admissions or Re-admissions
- Hospital Length of Stay
- Quality of Life
- Radiation Treatment Tolerance
- Chemotherapy Treatment Tolerance
- Cancer Treatment Outcome
- Cost of Health Care

# Nutrition Outcomes Data: EAL

RELATIONSHIP BETWEEN NUTRITION STATUS AND MORBIDITY OUTCOMES AND MORTALITY IN ADULT ONCOLOGY PATIENTS



RELATIONSHIP BETWEEN NUTRITION STATUS AND MORBIDITY OUTCOMES AND MORTALITY IN ADULT ONCOLOGY PATIENTS						
Studies	Morbidity					Mortality
	Hospital Admissions and Readmissions	Hospital Length of Stay	Quality of Life	Radiation Treatment Tolerance	Chemotherapy Treatment Tolerance	
<a href="#">Alexandre 2003</a>					+	
<a href="#">Amaral 2008</a>		+				
<a href="#">Antoun 2009</a>		+				
<a href="#">Barlow 2011</a>	NS	+				
<a href="#">Bauer 2005</a>			+			
<a href="#">Braga 1998</a>		+				
<a href="#">Capuano 2008</a>	+			+	+	+
<a href="#">Carey 2011</a>			+			
<a href="#">Correia 2007</a>			+			
<a href="#">Dewys, 1980</a>						+
<a href="#">Eriksson 1998</a>					+	
<a href="#">Fearon 2006</a>			+			+
<a href="#">Gioulbasanis 2011</a>						+
<a href="#">Gupta 2010</a>						+

**KEY**

NS = Nonsignificant effect on outcome.

⊕ = Positive effect on outcome.

There were no negative effects on outcome.

# Nutrition Outcomes Data: EAL

## RELATIONSHIP BETWEEN NUTRITION STATUS AND MORBIDITY OUTCOMES AND MORTALITY IN ADULT ONCOLOGY PATIENTS



	Hospital Admissions and Readmissions	Hospital Length of Stay	Quality of Life	Radiation Treatment Tolerance	Chemotherapy Treatment Tolerance	Mortality
<a href="#">Hammerlid 1998</a>			NS			+
<a href="#">Hill 2011</a>	+			+	+	
<a href="#">Horsley 2005</a>		+				
<a href="#">Hvltander, 2005</a>		NS	+			
<a href="#">Ionescu 2009</a>		+				
<a href="#">Isenring 2003</a>			+			
<a href="#">Iverson 2010</a>			+			
<a href="#">Kathiresan, 2011</a>	+					
<a href="#">Laky 2010</a>		+	+			
<a href="#">Martin 2009</a>						+
<a href="#">Martin 2010</a>						+
<a href="#">Nourissat 2008</a>			+			
<a href="#">Odelli, 2005</a>				+		
<a href="#">Ollenschlaeger 1992</a>			+			
<a href="#">Persson 1999</a>						+
<a href="#">Phippen 2011</a>					+	
<a href="#">Piquet 2002</a>	+					
<a href="#">Pressoir 2010</a>		+				+
<a href="#">Prado, 2007</a>					+	

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# Nutrition Outcomes Data: EAL

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<a href="#">Prado, 2008</a>						+
<a href="#">Prado, 2009</a>					+	
<a href="#">Prado, 2011</a>					+	
<a href="#">Ravasco, 2003</a>			+	+		
<a href="#">Ravasco, 2005 (JCO)</a>			+	+		
<a href="#">Ravasco, 2005 (H&amp;N)</a>			+	+		
<a href="#">Robinson 2008</a>					+	+
<a href="#">Ross 2004</a>					+	+
<a href="#">Shahmoradi 2009</a>			+			
<a href="#">Sorenson 2008</a>		+				+
<a href="#">Tan 2009</a>						+
<a href="#">Yoon 2011</a>						+

## KEY

NS = Nonsignificant effect on outcome.

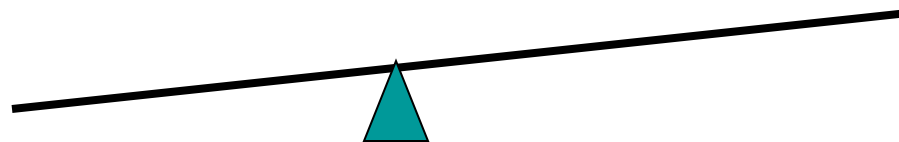
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There were no negative effects on outcome.

# Involuntary Weight Loss: Definitions and Implications

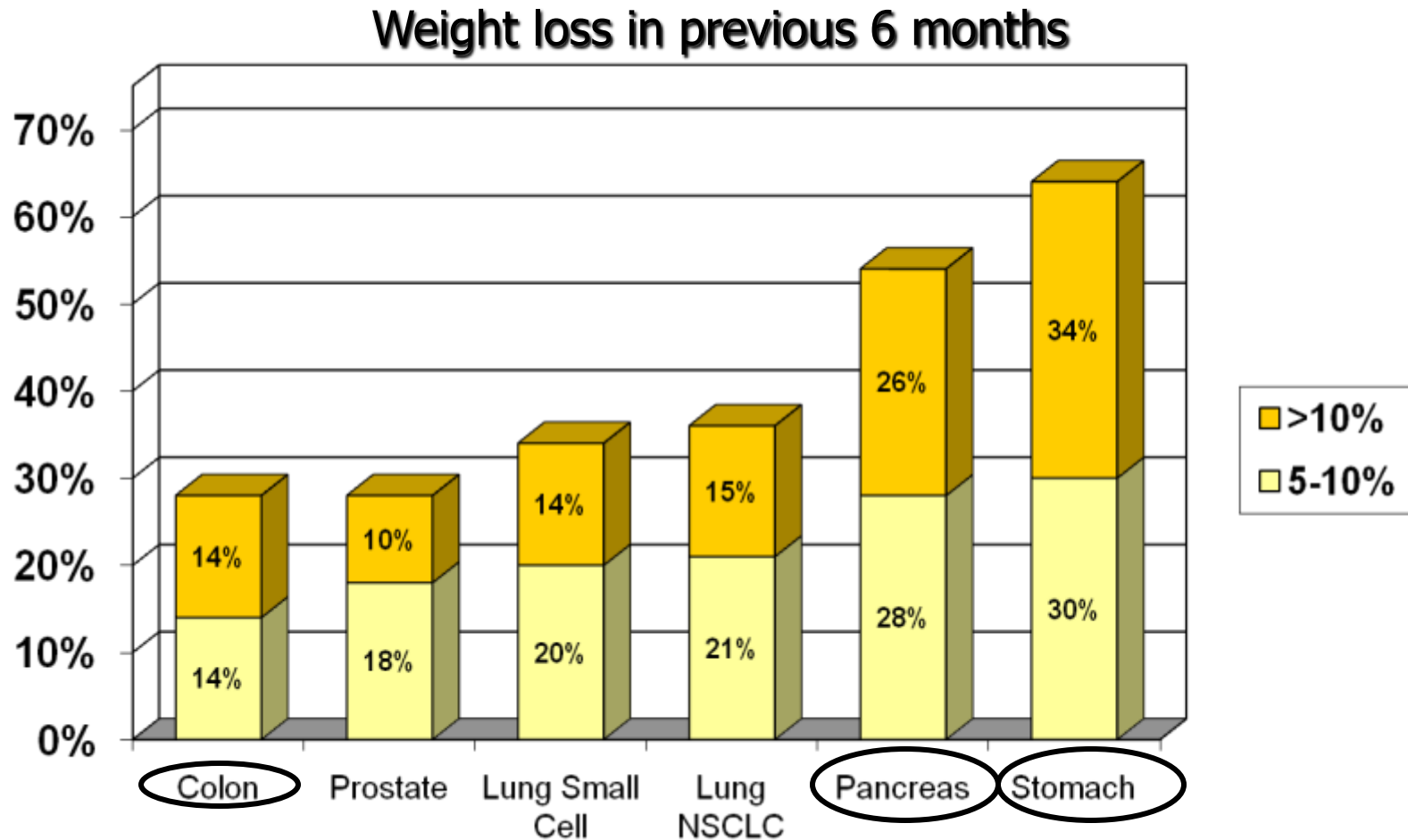
- Involuntary weight loss (IWL):
  - Unintentional, undesirable weight loss that is generally multifactorial in etiology and catabolic in nature
  - Losses of weight and lean tissue are associated with adverse outcomes
  - Sarcopenic obesity: worse outcomes in obese weight loss
- Anabolic Competence:
  - The state that optimally supports anabolism, i.e., protein synthesis and lean body mass, as well as global aspects of organ function, immunocompetence, functionality and quality of survivorship

Catabolism



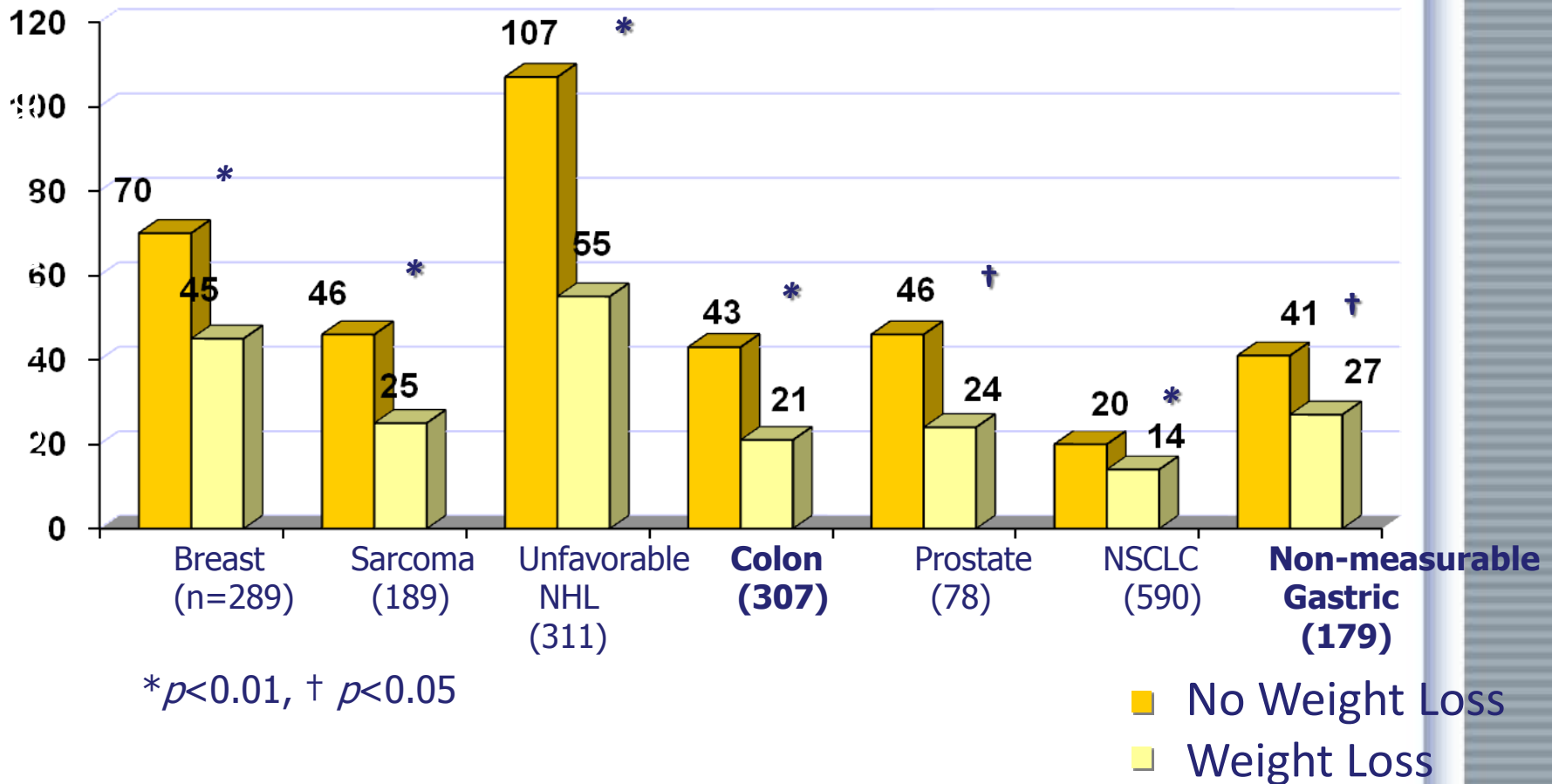
Anabolism

# Involuntary Weight Loss (IWL) Frequency by Site





# Effects of IWL on Cancer Survival: Tumor Type



All patients were beyond the scope of curative surgery or radiation therapy.  
Adapted from DeWys WD et al. *Am J Med* 1980;69:491-497.

# Lean Tissues: Functional Issues

- **Skeletal Muscle**

- ↑ Fatigue
- ↓ Activity
- ↑ Bed rest
- ↑ Risk DVT, PE
- ↑ Decubitus risk
- ↓ Ability to cough
- ↓ Ability to clear pulmonary secretions

- **Smooth Muscle**

- Delayed gastric emptying
- Delayed intestinal transit
- Loss of cardiovascular responsiveness and stability

- **Other Components**

- ↓ Visceral protein
- ↓ Antibodies
- ↓ Growth factors
- Altered enzymes

# The Goals of Nutrition Intervention

- Protect QOL

  - Palliation of symptoms:

    - Pharmaceuticals (RN, MD, RPh)
    - Behavior Modification in Treatment (RD, RN)
    - Lifestyle Changes (RD, RN)
    - Use of evidence based “Medical Nutrition Therapy” or MNT (RD)

- Protect treatment plan

  - How do you find patients with early nutrition decline?

# Lean Body Mass and Cancer Treatment

- **Sarcopenia** in cancer patients:
  - poor functional status
  - shorter time to tumor progression
  - shorter survival
  - higher incidence of dose-limiting toxicity
  - may impact metabolism of cytotoxic agents

# Lean Body Mass and Cancer Treatment

- **Sarcopenia** observed in cancer patients with **any BMI**; variety of body compositions
- Sarcopenia has been identified in cohorts of cancer patients
  - Advanced breast cancer - 25% (Prado et al.)
  - Metastatic renal cell - 54.5% overall and 40% among overweight/obese (Antoun et al.)
  - Pancreatic cancer - 60% with 16.2% sarcopenic-obese (Tan et al.)
  - Non-small cell lung cancer, advanced lung and colorectal cancer



# Lean Body Mass and Cancer Treatment

- Relationship between body composition and drug dosing???
- **Majority of chemotherapy dosing is based on body surface area (BSA)**
  - Uses height and weight
  - More predictable indicator of pharmacokinetics than just weight
  - Does not account for other factors
  - Predictor of drug clearance

# Lean Body Mass and Cancer Treatment

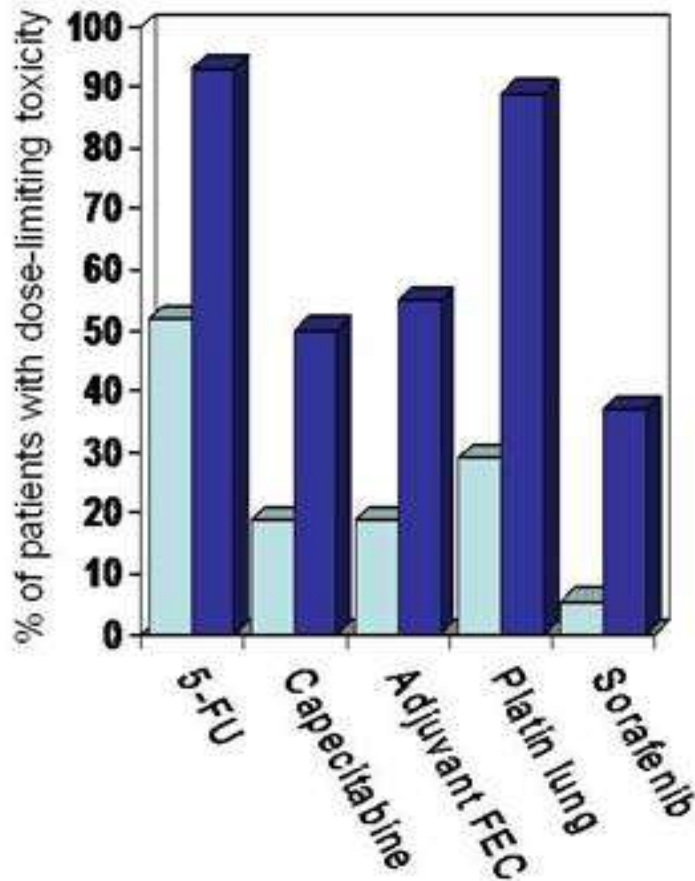
- **What about obese patients?**
- American Society of Clinical Oncology (ASCO) practice guidelines
  - Up to 40% of obese patients received limited chemotherapy doses
    - Actual weight vs. ideal weight
    - History of concerns about overdosing in obese patients unfounded
  - Recommendation: Full weight-based doses, especially when the goal of treatment is cure
  - Does not account for lean body mass

# Lean Body Mass and Cancer Treatment

- Impact of **sarcopenia** on chemotherapy dosing and toxicity?
  - Indicator of overall health status
  - **Higher incidence of dose-limiting toxicity (causing dose reduction, treatment delay or termination)**
  - Studies suggest an association between lean mass and drug toxicity
  - 30 Stage II and III colon cancer patients receiving 5-FU/leucovorin who experienced dose limiting toxicities
    - Patients with low lean mass = 93%
    - Higher lean mass = 52%



# Lean Body Mass and Cancer Treatment



Incidence of dose-limiting toxicity is increased in sarcopenic patients:

Colorectal: 5FU  $p=0.001$

Breast: Capecitabine  $p=0.039$

Breast: Adjuvant FEC  $p=0.03$

Lung: platinum regimen  $p=0.000$

Renal cell: Sorafenib  $p=0.04$

□ Normal  
■ Sarcopenic

# Identify Malnutrition

- ▶ Overall incidence of malnutrition in the oncology population is between 30-85%
- ▶ Patients with late-stage disease are more likely to present with and develop malnutrition than patients with early stage disease
- ▶ Mild or moderate nutritional deficits may be reversible with nutrition intervention
- ▶ Severe nutritional deficits are generally not reversible, goal is to stabilize and replete when possible

# Defining Nutrition Terminology

## **New consensus definition:**

### **Pre-cachexia, Cachexia, Refractory Cachexia**

- Malnutrition is more severe in the setting of inflammation
- Increased pro-inflammatory cytokines
- Weight loss even in the setting of adequate calories
- Altered energy expenditure

### **Nutrition Impact Symptoms:**

- Any barrier to intake, digestion, absorption, utilization of nutrients

### **New consensus definition: Malnutrition**

-ASPEN and AND “6 characteristics”

# Nutrition Impact Symptoms

- Fatigue, significant • 41%
- Constipation • 33%
- Poor appetite • 31%
- Xerostomia • 27%
- Nausea and / or emesis • 26%
- Gas / bloating • 23%
- Reflux / indigestion • 21% (28% Breast)
- Early Satiety • 21%

# Nutrition Impact Symptoms

- Diarrhea •20% (35% GI)
- SOB •17% (28% Lung)
- Smells bothersome •48%
- Mucositis •12%
- Dysphagia, swallowing •9%
- Pain, severe •7%
- Decreased smell •6%
- Dysphagia, chewing •3%

## FROM THE ACADEMY

### Consensus Statement



# Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition)

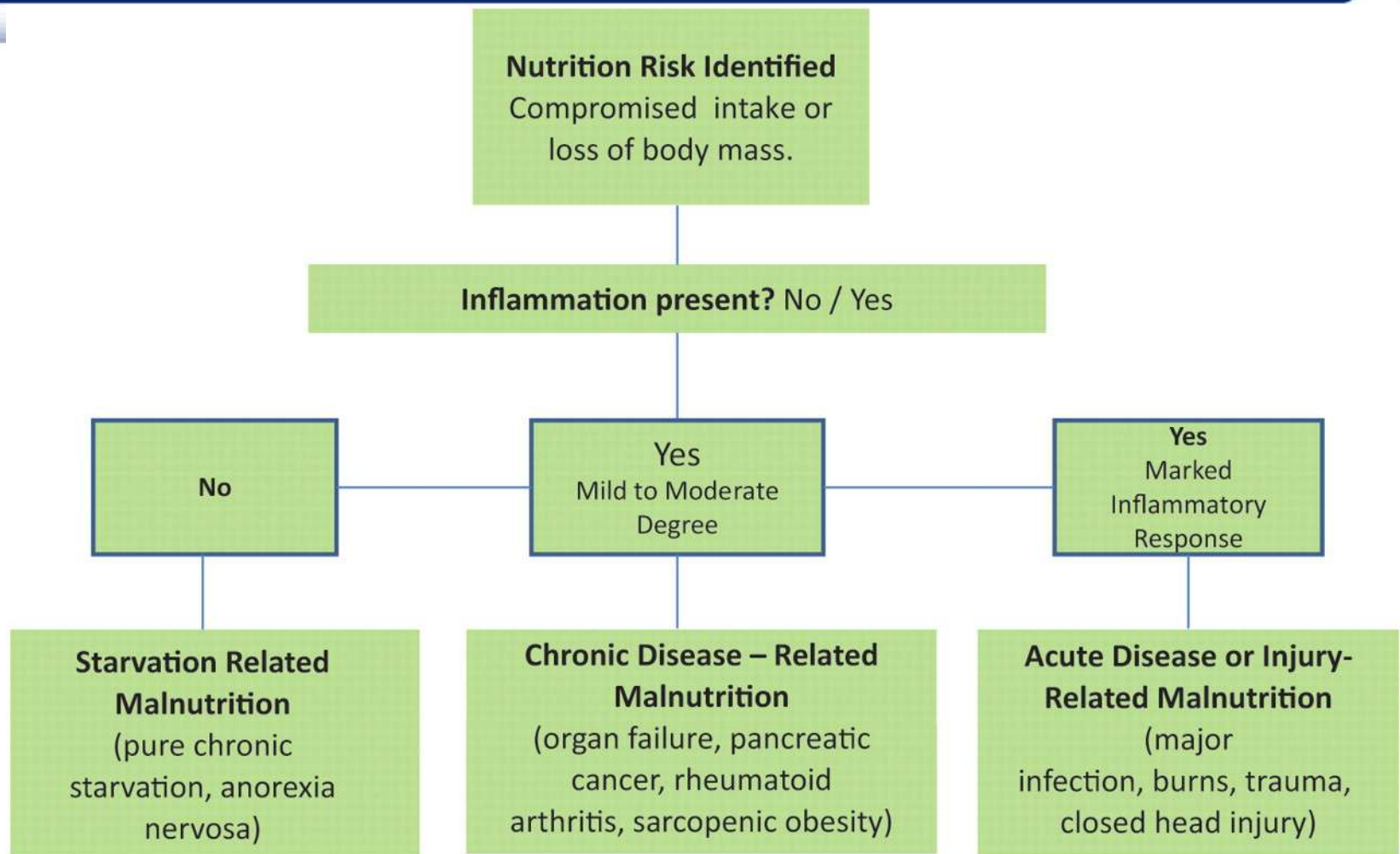
Jane V. White, PhD, RD, FADA; Peggi Guenter, PhD, RN; Gordon Jensen, MD, PhD, FASPEN; Ainsley Malone, MS, RD, CNSC; Marsha Schofield, MS, RD; the Academy Malnutrition Work Group; the A.S.P.E.N. Malnutrition Task Force; and the A.S.P.E.N. Board of Directors

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#### ABSTRACT

The Academy of Nutrition and Dietetics (Academy) and the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) recommend that a standardized set of diagnostic characteristics be used to identify and document adult malnutrition in routine clinical practice. An etiologically based diagnostic nomenclature that incorporates a current understanding of the role of the inflammatory response on malnutrition's incidence, progression, and resolution is proposed. Universal use of a single set of diagnostic characteristics will facilitate malnutrition's recognition, contribute to more valid estimates of its prevalence and incidence, guide interventions, and influence expected outcomes. This standardized approach will also help to more accurately predict the human and financial burdens and costs associated with malnutrition's prevention and treatment, and further ensure the provision of high quality, cost effective nutritional care. *J Acad Nutr Diet.* 2012;112:730-738.

# Figure 1. Etiology-based Malnutrition Definitions



# Malnutrition Diagnosis

- ▶ Decreased oral intake
  - ▶ Weight loss
  - ▶ Fat loss
  - ▶ Muscle wasting
  - ▶ Fluid accumulation
  - ▶ Decreased grip strength
- ▶ Presence of 2 out of the following 6 characteristics are now being used to diagnose malnutrition
  - ▶ Identification of presence of inflammation increases the severity level of the malnutrition



# Oncology Nutrition Assessment

## Oncology Considerations

- Timing within the treatment cycle
- Daily changes in appetite and intake
- Serial weight loss
- Altered lab values
- Medication effect (steroid use, neutropenia, use of neulasta or blood products)
- Altered fluid status



# Foods Preferred by Oncology Patients

- 69% Some fruits and vegetables
- 62% Soups
- 61% Poultry
- 55% Pasta
- 53% Fish
- 46% Meat
- 44% Dairy
- 41% Sweets
- 35% Oral Nutritional Supplements
- 35% High fiber foods
- 29% Crunchy foods
- 26% Salty foods
- 26% Asian dishes
- 22% Spicy foods/  
Mexican
- 14% Bland food (except  
first week after chemo)

# Oral Nutritional Supplement

*“Multi-nutrient, semi-solid or powder products that provide macronutrients and micronutrients with the aim of increasing oral nutritional intake”*

- Usual content:
  - 1.5 kcal/ml to 2.4 kcal/ml
  - ~300 kcal per serving
  - ~10-20 grams or protein per serving



Stratton & Elia, Proc Nutr Soc  
2010;69:477-87

# Oral Nutritional Supplement

- Improved nutrition outcomes with use of oral nutritional supplements
- Success may be related to:
  - Implementation of more structured eating and drinking, which results in increased number of meals/snacks
  - Liquid nutrition generally well tolerated during times of illness

# Nausea/Vomiting

## • **Prevention and Treatment of Chemotherapy Induced Nausea/Vomiting (CINV)**

- Prevention is primary goal
- Standardized protocol for pharmacologic management based on emetogenic potential and assessment of patient characteristics and risk factors
- **Drug classes**
  - Anxiolytics, cannabinoids, corticosteroids, dopamine antagonist, neurokinin-1 antagonist, serotonin antagonist
- **Nonpharmacologic Interventions**
  - Acupressure, Acupuncture; Guided imagery, music therapy, progressive relaxation
  - Psychoeducational support/information

# Nausea/Vomiting: Medical Interventions and Considerations

## INTRAVENOUS CHEMOTHERAPY

HIGH (>90%) AND MODERATE (30-90%) EMETIC RISK ALGORITHM	
Day 1	Day 2 through 4 – (MULTI DAY REGIMENS) <i>(optional unless high emetic risk chemotherapy given on days 2 through 4)</i>
<p>Chose one of the following:</p> <ul style="list-style-type: none"> <li>• Palonosetron 0.25 mg IV</li> <li>• Ondansetron 8-16 mg IV</li> <li>• Granisetron 1 mg IV</li> <li>• Dolasetron 100 mg PO</li> </ul> <p><b>AND</b> Dexamethasone 1-20 mg PO/IV</p> <p><b>AND (optional for moderate risk)</b> Fosaprepitant 150 mg IV <u>OR</u> Aprepitant 125 mg PO</p>	<p>Chose one of the following:</p> <ul style="list-style-type: none"> <li>• Ondansetron 8-24 mg PO</li> <li>• Granisetron 2 mg PO or 1 mg PO BID</li> <li>• Dolasetron 100 mg PO</li> </ul> <p><b>AND</b> Dexamethasone 1-20 mg PO/IV</p> <p><b>AND (optional for moderate risk)</b> Aprepitant 80 mg PO days 2 and 3 (if PO form given day 1)</p>
<b>+/- Lorazepam 0.25-1 mg PO/IV</b>	

LOW TO MINIMAL EMETIC RISK (10-30%)
<p><b>Chose ONE of the following prior to chemotherapy:</b></p> <p>Ondansetron 4-16 mg PO or IV            Dexamethasone 1-10 mg PO or IV            Prochlorperazine 5-10 mg PO            Metoclopramide 5-20 mg PO or IV</p>
<b>+/- Lorazepam 0.25-1 mg PO/IV</b>

# Nausea/Vomiting: Medical Interventions and Considerations



PROTOCOL

PC203 PRO

Provider order required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b><u>PROTOCOL II:</u></b>	<b>Nausea/Vomiting</b>
<b><u>CRITERIA FOR INTERVENTION:</u></b>	Patient reports <b>Grade 1</b> nausea/vomiting as defined by the National Cancer Institute toxicity grading scale.
<b><u>INTERVENTION:</u></b>	<p>Check patient's allergies. The following antiemetics may be given/ordered in the following order:</p> <ul style="list-style-type: none"><li>• Compazine 10 mg. PO every 6 hours prn. Exercise caution in patients &gt;60 years old.</li><li>• If Compazine is not working within 12-24 hours, may give<ul style="list-style-type: none"><li>○ Ondansetron 8 mg ODT every 8-12 hours prn.</li><li>○ Granisetron 1 mg PO every 12 hours, prn.</li><li>○ Dolasetron 100 mg PO every 24 hours, prn</li></ul></li><li>• If unable to obtain a 5HT<sub>3</sub>, give Phenergan 25mg. PO every 6 hours prn. Discontinue Compazine, if applicable.</li><li>• If patient received palonosetron within the previous 48 hours, and Compazine is not working, give metoclopramide 10 mg PO every 6 hours.</li></ul>

# Nausea/Vomiting Food Recommendations

- Assess timing of nausea and vomiting: Identify acute, delayed or anticipatory
- Review actual medication use vs. prescribed, and bowel regimen
- Assess for malignant or tx related gastroparesis
- Schedule frequent, small volume intake
- Avoid cooking odors
- Use cold plates to reduce smell and taste alteration, use straws
- Choose easy to digest foods, bland items
- Clear liquids, liquid nutrition, starchy foods
- Tart and sour food or beverages



# Oral Mucositis



- **Oral Mucositis Prevention and Management – Multinational Association of Supportive Care in Cancer (MASCC)**
  - No clear prevention strategies; focus on supportive care and palliation of symptoms
  - Regular assessment (validated tools), WHO's OM Pain Management (step recommendations)
  - **Oral Mucositis “Prevention”**
    - **Radiation** - Shields (salivary glands), Treatment Planning
    - **Chemotherapy** – Cryotherapy, Oral Rinses
    - Low level laser therapy (radiation and HSCT)

# Oral Mucositis: Medical Interventions and Considerations

## • Oral Mucositis Management and Treatment

- Oral care protocols (routine oral care, diet considerations, tobacco and alcohol cessation)
- Topical Treatments: Salt and Soda oral rinses; calcium/phosphate rinses; oral bandages; morphine rinse; Triple/Miracle/Magic Mouthwash; doxepin, tetracaine lollipops; phenol
- Stepwise approach to pain control: NSAIDS-  
Narcotics-transdermal fentanyl



# Mucositis Food Recommendations

- Can affect entire lining of the GI tract and can occur at any point from the mouth to the anus. Often precedes onset of diarrhea.
- Use of pain medications: Assess when chewing and swallowing
- Use soups and gravies to moisten or dip dry textures
- Encourage to eat soft texture foods: Avoid scratchy and high fiber foods
- Avoid acidic foods, avoid spicy foods if uncomfortable
- Use beverages with nutritional content as drinking may be easier than eating
- Use a wide straw to direct liquids away from sores or ulcerations

# Dysphagia ,Esophagitis Food Recommendations

- Patient describes “lump in the throat after swallowing” and “food gets stuck”, “food causes burning spasm”
- Soft foods, moisten food with gravy or sauce
- Use of a wide straw
- Instruct on adequate fluid intake
- Moderate temperatures may reduce pain
- Texturize foods to soft, puree or blended consistency
- May need nutritional beverages and soups to meet calorie/protein needs.

# Xerostomia and Hyposalivation

- **Xerostomia:** Sensation of dryness of the mouth
  - Saliva is necessary to maintain normal oral intake and adequate nutrition
  - Clinically significant acute and late effect of radiotherapy
    - When salivary gland is in radiation field
      - 50% decrease in unstimulated flow after **first week** of therapy
      - Salivary flow reaches < 10% within 2 weeks
      - Permanent xerostomia begins to occur above **25Gy**
  - Medications that cause xerostomia



# Xerostomia

## • **Medical Interventions/Considerations**

- Radioprotectant (Amifostine): lack of consensus
- Intensity-Modulated Radiation Therapy (IMRT)
- Submandibular gland transfer
- Stop smoking

## • **General Treatment of Xerostomia**

- Frequent mouth care
- Take frequent sips of water
- Modify diet as needed
- Sugar free candies
- Humidification
- Viscosity: guaifenesin
- Mucolytics: Alkalol
- Sugar-free moisturizers
- Fluoride treatments
- Dental follow-up
- Cleansing agents, lubricating agents/saliva substitutes, sialagogues, saturated electrolyte solutions, acupuncture

# Xerostomia Food Recommendations

- Rinse before and after meals with plain water or a homemade salt solution. Swish with club soda to loosen and remove dry or thick saliva.
- Grind, shred, or blend meats so they are soft, and then add back into main dishes.
- Moisten dry foods before eating. Alternate a bite of food with a sip of a liquid to help moisten before swallowing.
- If starchy foods, like breads and pasta, are difficult to chew and swallow, consider substituting other starchy but moist foods, like cereals, rice with gravy, mashed potatoes, or pork and beans.
- Beverages can be used in place or in addition to meals, and may be better tolerated, these can be convenience drinks or home made.
- Try tart foods or beverages, such as lemonade or cranberry juice alongside the meal. Try frozen fruit pops, fruit ices.

# Anorexia: Medical Interventions and Considerations

- **Anorexia**

- Megestrol acetate and corticosteroids are the only recommendations and have limited effectiveness
  - Mechanisms of action unknown
- Cannabinoides



# Anorexia, Early Satiety Food Recommendations

- Patients describe “waiting to feel hungry”, “nothing sounds good”
- Schedule or plan intake every 2-3 hours, minimum
- Educate on need to nourish vs. wait for appetite, focus on strength and energy
- Small portions are less overwhelming
- Use convenient, easy to prepare items
- Soft and moist, easy to chew and swallow
- Rotate through foods to avoid taste fatigue
- Use beverages with nutritional content as drinking may be easier than eating

# Create a “Culture of Nutrition”

- Collaborative management
  - Patient, family and healthcare team
- Use of standardized, evidence-based protocols, screening, assessment
- Interdisciplinary communication
  - Nursing, Pharmacy, Nutrition, Social Work, Integrative Medicine
- **Prevent treatment breaks!**



# Team collaboration: MSTI

- New patient Treatment Learning Class (TLC)
- New patient chart rounds
- Identification of high nutrition risk patients
- Malnutrition screening
- Access to oncology dietitians
- Nutrition Risk assignment for H/M/L to provide adequate follow up
- Spray and Weigh order sets
- Supportive Care Clinic for complex patients
- Survivorship Appointments
- Tumor boards



# Case Study: Lung Cancer

J.S . is a 76-year-old female

- C/o fatigue and back pain
- Ht 167cm Wt 56 kg BMI 20
- 11.3 kg weight loss over 4 months (16.8%)
- 52 pack-year smoker x 35 years
- Chest xray revealed a mass in her RUL and biopsy was positive for non-small cell lung cancer (NSCLC) stage IIB
- Candidate for chemo radiation therapy
- Initial Nutrition Impact Symptoms:
  - Anorexia
  - Early Satiety



# Case Study: Lung Cancer

Anorexia

Early Satiety

Fatigue

Nausea

Mucositis

Constipation

Dysgeusia

Weight loss

Esophagitis

Dysphagia

• J. S. treatment :Taxol and Carboplatin with combined radiation therapy.

• Week 1

• Week 2

• Week 3

• Week 4

• Week 5

• Week 6



# Case Study: Lung Cancer

- **Is this patient experiencing Malnutrition?**
- Physical findings: weight loss, muscle wasting, decreased grip strength, decreased functional status
- Decreased oral intake <50% of estimated needs
- Weight Loss (15.3 kg in 6 months)
  - Weight 55 kg, current BMI 19.7
  - Weight change is 21.7% / 6 months



# Resources for Patients and Health Care Professionals

- **American Cancer Society**

- *Patient materials for symptom management*

- <http://www.cancer.org/treatment/survivorshipduringandaftertreatment/nutritionforpeoplewithcancer/nutritionforthepersonwithcancer/index>

- *Nutrition and Physical Activity During and After Cancer Treatment* was published in the April/May 2012 issue of *CA: A Cancer Journal for Clinicians*. It is available for free online <http://onlinelibrary.wiley.com/doi/10.3322/caac.21142/abstract>

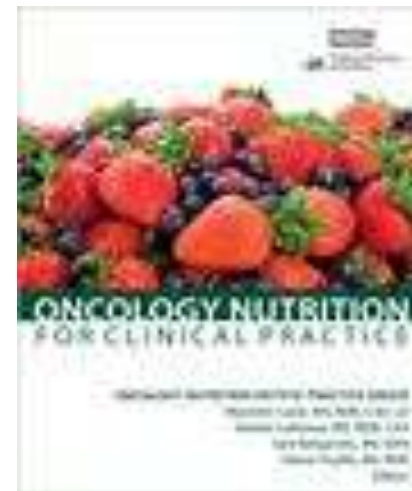
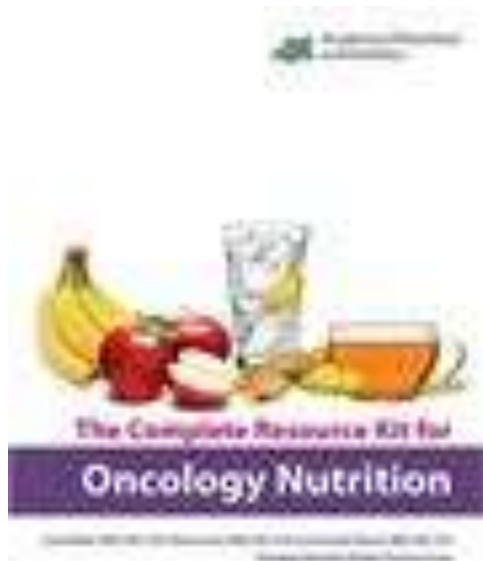
- **National Cancer Institute**

- <http://www.cancer.gov/cancertopics/coping/physicaleffects#Nutrition>

# Oncology Nutrition Resources

**The Complete Resource Kit for  
Oncology Nutrition**

**Oncology Nutrition for Clinical  
Practice**





# Malnutrition Resources

<http://malnutrition.andjrnl.org/>

- **Journal of the Academy of Nutrition and Dietetics Malnutrition Resource Center**

- peer-reviewed article collection on malnutrition; articles are “open access”
- reference articles on malnutrition from other healthcare journals and websites

<http://malnutrition.npjjournal.org/>

- **The Journal for Nurse Practitioners Malnutrition Resource Center**

complimentary CE self-study courses

[www.ahn.org/malnutrition](http://www.ahn.org/malnutrition)

- **Abbott Nutrition Health Institute**
  - complimentary CE, CNE

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# THANK YOU

## Questions and Answers