

THE UNIVERSITY OF KANSAS  
CANCER CENTER

**Nutrition and Cancer: Prevention,  
Active Treatment and  
Survivorship**

Emma Link, RD, CSO, LD

Project ECHO

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# Goals

- Recognize the nutritional challenges of a lung cancer diagnosis and treatment plan
- How nutrition plays an integral role in recovery
- Strategies for managing eating difficulties
- Understand what constitutes a healthy diet for cancer survivorship
- Facts vs. Myths
- Q&A
- Resource list

# Nutrition Related Risk Factors

- Weight loss prior to diagnosis
- Anorexia, poor appetite
- Swallowing difficulties/changes
- Nausea/vomiting
- Diarrhea/constipation
- Mucositis
- Altered taste

# Active Treatment

# Role of Nutrition during Active Treatment

- Maintain strength, energy, weight and the body's store of nutrients
- Better tolerate treatment-related side effects
- Lower risk of infection
- Heal and recover faster

# Protein

- Needed for growth, to repair body tissue, and to keep immune system healthy
- The body may break down muscle for fuel it needs
  - Delay recovery and lower resistance to infection
- Good sources: fish, poultry, lean red meat, eggs, dairy, nuts and nut butters, beans, lentils and soy foods
- Nutritional supplements: homemade protein shakes or RTD – Ensure/Boost/CIB

# Fats & Oils

- Rich energy source
  - Body breaks down fats and uses them to store energy, insulate body tissues and transport some vitamins through the blood
  - Choose mono and polyunsaturated fats mainly found in vegetable oils rather than saturated and trans fats
- High in calorie to help with weight maintenance
  - 1 tablespoon fat/oil = ~100 calories



# Carbohydrates

- Body's major source of energy
- Provides fuel for physical activity and organ function
- Best sources: fruits, vegetables, whole grains
  - Vitamins & minerals, fiber and phytonutrients





# Water

- Essential during treatment
- Recommend 80-100 ounces per day
  - Prevent dehydration from losses such as vomiting or diarrhea
  - All liquids count: soups, milk, gelatin



# Nutritional Challenges

# Nutritional Challenges of Cancer Treatment

- Increased nutrient needs
  - Eat enough calories and protein for weight maintenance and to preserve muscle mass
    - Men: 2500-2800 calories
    - Women: 2100-2500 calories
    - Protein: 1.3-1.5 g/kg
  - Add calories with healthy fats
  - Use nutritional supplements
- Side effect management
  - Decreased appetite, taste alterations, electrolyte imbalances, nausea/vomiting, bowel changes
- Immunosuppressed diet

# Malnutrition Risk

# Nutrition Screening

- Malnutrition Screening Tool
  - Unintentional weight loss
  - Eating poorly because of decreased appetite
  - Using alternative form of nutrition (EN vs PN)
- Diagnosing malnutrition
  - ASPEN malnutrition criteria

# Malnutrition Risk

- Malnutrition as a comorbidity increases readmissions in hospital, infection risk, and mortality

# ASPEN Malnutrition Criteria

	Malnutrition in the Context of Acute Illness or Injury		Malnutrition in the Context of Chronic Illness	
Clinical Characteristic	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
<b>Energy Intake</b>	<75% of est. energy reqrmt for > 7 days	<50% of est. energy reqrmt for ≥ 5 days	< 75% of est. energy reqrmt for ≥ 1 month	≤75% of est. energy reqrmt for ≥ 1 month
<b>Interpretation of wt loss (a)</b>	1-2% x 1 week 5% x 1 month 7.5% x 3 month	>2% x 1 week >5% x 1 month > 7.5% x 3 month	5% x 1 month 7.5% x 3 month 10% x 6 month 20% x 1 year	>5% x 1 month >7.5 % x 3 month > 10% x 6 month >20% x 1 year
<b>Physical Findings:</b>				
<b>Body Fat (b)</b>	Mild	Moderate	Mild	Severe
<b>Muscle Mass (c)</b>	Mild	Moderate	Mild	Severe
<b>Fluid Accumulation (d)</b>	Mild	Moderate to Severe	Mild	Severe
<b>Reduced Grip Strength (e)</b>	NA	Measurably Reduced	NA	Measurably Reduced

# Side Effect Management

- Appetite changes
- Constipation
- Diarrhea
- Mucositis
- Nausea
- Taste & smell changes



# Appetite Changes

- Eat several snacks, rather than 3 large meals
- Avoid liquids with meals or take small sips
- Choose nutrient dense snacks
  - High calorie / high protein
    - Full fat Greek yogurt
    - Full fat cottage cheese
    - Nut butters



# Constipation

- High fiber foods
- Drink extra fluids – water, prune juice, warm beverages



# Diarrhea

- Drink plenty of clear liquids
  - Sports drinks and Pedialyte for electrolytes
  - 1 cup after each loose BM
- Small, frequent meals and snacks
- Avoid greasy, spicy or very sweet foods
- Avoid gas causing food/drinks
- Increase soluble fiber foods
  - Applesauce, bananas, canned peaches/pears, oatmeal
- Avoid foods high in insoluble fiber
  - Whole grains, raw fruits/vegetables

# Mucositis

- Eat soft, bland foods
  - Creamed soups, cooked cereal, macaroni and cheese, yogurt, pudding
- Puree or liquefy to ease swallowing
- Cold or lukewarm foods to reduce irritation
- Drink through a straw to bypass mouth sores
- Avoid rough, dry, or coarse foods
- Avoid citrus and acidic foods
- High protein to speed healing
  
- Rinse: 1 quart water, 1 teaspoon baking soda, and 1 teaspoon salt

# Nausea

- Eat 6-8 small snacks/meals, instead of 3 large meals
- Dry foods – crackers, toast, dry cereals, every few hours
- Avoid strong odors
- Eat cool foods instead of hot or spicy
- Sip clear liquids frequently
- Suck on hard candy – peppermint, lemon or ginger

# Taste & Smell Changes

- Use plastic flatware and glass cups/plates/pans
- Lemon drops, gum, or mints
- Season foods with tart flavors – lemon, lime, orange, vinegar and pickled foods
- New tastes or spices
- Counter salty taste with added sweeteners, sweet taste with added lemon juice and salt
- Choose chicken, fish, eggs or cheese rather than red meats if they taste strange
  - Heme iron in blood
- Room temperature foods to avoid strong odors
- Drink through a straw

# Immunosuppressed Diet

- Changed from Neutropenic diet
  - National studies showed no benefit to strict neutropenic diet and incidence of foodborne illness versus liberalized food safety restrictions
- Heightened food safety to reduce risk of foodborne illness
- Any patient with ANC < 1000

# Immunosuppressed Diet

- General food safety: Clean, Separate, Cook, Chill
- Fresh F/V, clean well
- Lunchmeat to 165°F
- Take out food reheated to 165°F
- Hospital cafeteria food reheated by RNs to 165°F
- No eating out at restaurants
- Closely mimics pregnancy food safety

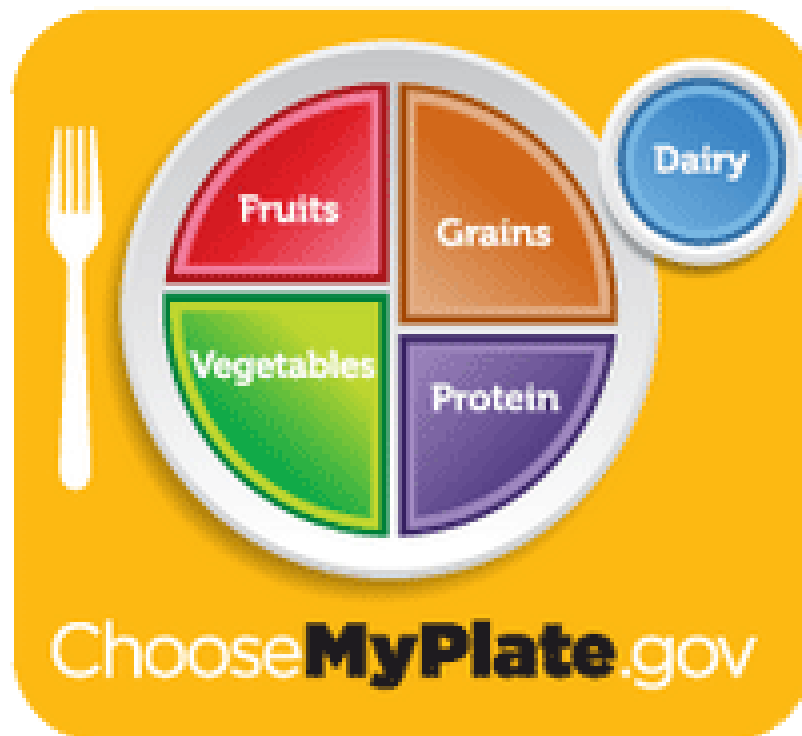


# Nutrition After Cancer Treatment

- Survivors should follow recommendations for cancer risk reduction
  - Plant based diet
  - Physical activity
  - Optimal weight
  - Reduce risk for other comorbidities



# Plant Based Diet



# Plant Based Diet Goals

- 4-5 cups of fruits and vegetables every day
  - 1 cup with each meal and 1-2 cups as snacks
- Protein
  - Choose beans, nuts or seeds as protein at least one meal per day
  - Limit meat portions to 3 ounces per meal
- 100% whole grains
  - 2-3 cups per day (4-6 servings)
- Fluids
  - 64 ounces per day
  - Flavor water with fruits/vegetables
- Flavor
  - Season foods with herbs and spices at home rather than purchasing pre-seasoned or adding salt

# Myths & Truths

## MYTH #1



- **MYTH: Sugar Feeds Cancer**
- **FACT:** All cells, cancerous or not, use glucose for every
  - The body does not pick and choose which cells get what energy
  - Even without any carbohydrate in the diet, the body will make sugar from other sources, including protein and fat
  - Avoidance of carbohydrate-containing foods is counter-productive for patients struggling to maintain their weight
  - Anxiety of trying to completely avoid “all sugar” creates stress which in turn increases productions of hormones that can raise blood sugar

## MYTH #2

- **MYTH: Acidic diets cause cancer**
- **FACT:** Insufficient evidence to prove that diet can manipulate whole body pH, or that it has an impact on cancer
  - Alkaline diets were made up by celebrities
  - kidneys and lungs keep our pH tightly regulated
  - What we eat and drink cannot significantly change our body pH
  - Strong acid foods are healthier choices and should be consumed in moderation anyway
  - Mildly acidic foods are being avoided which are healthy to consume: meat/fish, legumes, nuts, dairy



## MYTH #3

- **MYTH: Pesticides cause cancer, eat organic foods only**
- **FACT:** No studies have shown that people who consume organic foods have better health outcomes
  - Pesticides can cause cancer if exposed to very high levels
  - Amount of pesticides on conventionally grown produce is low
  - Personal preference
  - Organic brownies are not healthy

## MYTH #4

- **MYTH: Superfoods prevent cancer**
- **FACT: No such thing as a “superfood”**
  - Marketing term used to sell products and has no scientific basis
  - Oversimplification to say that any one food, on its own, could have a major influence over a persons chance of developing cancer
  - Just because foods are healthy for someone, does not make it a superfood





# TRUTH #1

- **TRUTH:** Consume a healthy, well-balanced diet
- **RECOMMENDATION:** Eat a balanced diet rich in a variety of colorful vegetables, fruits, whole grains and legumes
- **WHY?** Plant foods contain phytochemicals which may help prevent cancer and damage to cells' DNA
  - Color matters



## TRUTH #2

- **TRUTH:** Red and processed meats can cause colorectal cancer
- **RECOMMENDATION:** Limit consumption of red meats (beef, pork, lamb and game) to less than 18 ounces per week and avoid processed meats
- **WHY?** Experts have found convincing evidence that red and processed meat is a cause of colorectal cancer
  - Red meat contains substances that are linked to colon cancer. Heme iron, the compound that gives red meat its color, has been shown to damage the lining of the colon
  - When meat is preserved by smoking, curing or salting, or by the addition of preservatives (nitrates), carcinogens can form. These substances can damage cells in the body, leading to the development of cancer

## TRUTH #3

- **TRUTH:** Supplements don't prevent or cure cancer
- **RECOMMENDATION:** Don't rely on supplements to protect against cancer
- **WHY?** Lack of evidence to prove supplement use instead of a balanced diet will lead to better health outcomes
  - Supplements are needed when vitamin/nutrient levels are low
  - Turmeric better absorbed in food, paired with black pepper

## TRUTH #4

- **TRUTH:** Physical activity paired with a healthy well-balanced diet and lower cancer risk
- **RECOMMENDATION:** At least 30 minutes of physical activity daily
- **WHY?** The body functions best when it is used
  - Physical activity has been proven to reduce cancer-related fatigue, improve mood and maintain a healthy metabolism



# Questions?

# Resources

- *American Cancer Society Complete Guide to Nutrition for Cancer Survivors: Eating Well, Staying Well During and After Cancer*, 2nd Edition.
- Leser, M., Ledesma, N., Bergerson, S., & Trujillo, E. (2013). *Oncology Nutrition for Clinical Practice*. Oncology Nutrition Dietetic Practice Group of the Academy of Nutrition and Dietetics.
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- Moody K, Finlay J, Mancuso C, et al. Feasibility and safety of a pilot randomized trial of infection rate: neutropenic diet versus standard food safety guidelines. *J Pediatr Hematol Oncol.* 2006; 28:126-33.