

Nutrition and Cancer

Before, During, and After Treatment

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Presentation Objectives

- What to do before treatment begins
- Common nutrition impact symptoms
- Strategies for maintaining weight and nutritional status
- Dietary factors that can decrease reoccurrence

What to do

BEFORE TREATMENT BEGINS

Evaluate Changes

- Weight loss may have already occurred
- Nutrient stores may be depleted
- Nutritional status may be compromised
- Chewing and swallowing ability may be altered

Accept a New Way of Thinking about Diet and Food

- Cancer trumps everything
- Other dietary restrictions may not apply
- Weight loss is not desired
- Eating will not be normal
- Adequate nutrition is an essential part of treatment

Understand the Impact of Nutrition

- Protein - energy malnutrition is the most common secondary diagnosis in cancer patients
- Well nourished patients feel better and do better
- The success rates of cancer treatments are significantly better when patients maintain optimal nutritional status
- Being proactive with nutrition support can make a difference during treatment and for survival

Specifics

- Enough calories to spare protein
- Enough protein to fight and repair
- Adequate intake of essential vitamins and minerals
- Arginine - an amino acid that is high in nitrogen and has been associated with improved nitrogen balance and wound healing. Conditionally essential during times of metabolic stress.
- Glutamine – an amino acid that has a major role in protein synthesis and immune function.

Supplement Intake

- Build nutrient stores
- Stop weight loss
- Eat fortified and nutrient dense foods
- Supplement for immune health
 - commercial product that contains arginine, glutamine, omega 3 fatty acids, essential vitamins and minerals, calories and protein

Immune Boosting Nutrition

- Jianmin Xu, et al, World Journal of Surgery 2006; 30: 1284-1289
- GI cancer patients were randomized into two groups. One group (EN) used a standard liquid supplement and the other group (IM) used a supplement containing arginine, ribonucleic acid and omega 3 FAs 7 days prior to surgery.
- Shorter LOS and less postoperative complications were significant in the IM group.

See a Dietitian (RD)

The RD will

- Assess current nutrition and weight status
- Evaluate potential problems such as food availability, preparation, dental problems
- Address misconceptions

The patient will

- Receive strategies for maximizing intake
- Find solutions to possible barriers and identify resources that can help
- Learn what not to worry about

Combating Side Effects

**NUTRITION DURING
TREATMENT**

Common Problems

- Loss of appetite
- Weight loss
- Nausea and vomiting, diarrhea, constipation
- Early satiety
- Altered taste and smell
- Mouth sores, dry mouth
- Fatigue / depression

Loss of Appetite

- Cold foods work better than hot
- Frequent, small, high calorie snacks instead of meals
- Increase physical activity
- Change up the environment
- Eat with others

Weight Loss

- Part of the disease process
- Result of inadequate intake
- Added stress for the body
- Compromises immune system
- Effects functional status
- Decreases the effectiveness of treatments
- Effects survival

Strategies to Maintain Weight

- Small, frequent, high calorie snacks
- Protein and calorie boosters
- Commercial liquid supplements that provide at least 1.5 kcal / ml.
- Modular commercial add-ins

Calorie Boosters

- Corn syrup
- Butter
- Gravy
- Mayonnaise
- Half and Half, cream
- Ice cream

Calorie Add-ins

- MCT oil (Nestle) – 7.7 calories per ml
– 100% medium chain triglycerides
- Benecalorie (Nestle) – 7 calories per ml
- Microlipid (Nestle) 4.5 calories per ml
- Polycose (Ross) – 1.6 calorie per ml
– 100% carbohydrate
- And others.....

Protein Boosters

- Double milk (1 c whole milk + 1/3 c dry milk)
 - Use in place of all milk (pudding, soup, shakes)
- Instant breakfast powder with double milk
- Evaporated milk
- Eggs
- Chicken, tuna, egg salad, pimento cheese
- Nuts and peanut butter
- Yogurt and cottage cheese

Modular Protein Add-ins

- Unflavored
 - Add to beverages or foods that are not hotter than 180 degrees F.
- ProPass (Hormel) 6 grams; 30 calories
- Beneprotein (Nestle) 6 grams; 25 calories
- ProMod (Ross) 5 grams; 28 calories
- Hi ProCal (Hormel) 8 grams; 80 calories
- Many others

Protein Supplements

- Wide variety ranging from just protein to protein plus vitamins
- Special formulas with key amino acids, antioxidants
- Low in sugar
- Alternative to “milky” supplements
- Can supplement key nutrients for patients that don't need extra calories

Juven (Ross)

- **HMB** (β -hydroxy- β -methylbutyrate), Arginine, Glutamine helps build lean body mass and protects cell strength and structure.
- Orange and Grape
- 78 calories per packet

Arginaid (Nestle)

- Vitamin C, vitamin E and 4.5 grams of L-arginine per packet
- Mix with juice, water, soft drinks
- Clear liquid
- 35 calories per packet
- Cherry, Lemon, Orange

L-Emental (Hormel)

- **L-Emental™ Arginine Drink Mix**
Supplements are designed to assist in wound healing by delivering arginine, antioxidants, and zinc.
- Orange and Lemon-lime

Unjury

- Protein supplement powder
- One serving provides 20 grams of protein
- Whey protein isolate
- Vanilla, chocolate, strawberry sorbet, chicken soup and unflavored
- 100 calories per packet

Commercial Supplements

- Fortified with vitamins, minerals, protein
- Should be 375-600 calories per cup
- Wide variety and wide price range
- Availability can be an issue
- A necessity for tube feedings

2.25 calories / ml

Carnation instant Breakfast VHC
(Nestle)

560 calories per can with 23 g. protein
Lactose Free

2 calorie / ml

- Resource 2.0 (Nestle); 20 g protein per can
- Nutren 2.0 (Nestle); 20 g. protein per can
- Plus-2 (Hormel); 16 g protein per cup
- Med Pass 2.0 (Hormel); 20 g protein per cup
- TwoCal HN (Ross); 20 g protein per can

Early Satiety

- Small, frequent snacks
- Nutrient dense foods and beverages
- Drink liquids separate from meals
- Eat sitting up

Nausea

- Take anti-nausea medication
- Eat small amounts
- Have liquids and solids at separate times
- Bland, low fat foods
 - Crackers, toast, pretzels
 - Yogurt, sherbet
 - Angel food cake
 - Clear liquids
 - Cream of wheat, rice or oatmeal

Vomiting

- NPO until vomiting is under control
- Clear liquids
- 1 tablespoon every 10 minutes
- Gradually increase to small, frequent amounts of clear liquids

Diarrhea

- Drink plenty of fluids
- Start with clear liquids
- Avoid hot and cold liquids
- Avoid caffeine
- Avoid high fiber foods
- Avoid high fat foods
- Avoid foods with concentrated sugar

Constipation

- Drink plenty of fluids
- Prunes and prune juice
- Bran cereals
- Fresh fruits and vegetables
- Physical activity
- Fiber supplements

Altered Taste and Smell

- Use plastic utensils
- Cold foods (avoid cooking)
- Use sugar-free lemon drops, gum, or mints
- Cover liquid nutritional supplements to block smell; use a straw
- Experiment with marinades, spices, herbs

Mouth Sores / Dryness

- Cool or room temperature foods
- Soft and blended foods
- Use a straw to bypass tender spots
- High protein, high calorie foods
- Homemade mouthwash - 1 quart water, $\frac{3}{4}$ teaspoon salt, 1 tsp baking soda
- Glutamine solution (rinse and swallow)
- Prescription mouthwashes

Fatigue / Depression

- Stay hydrated
- Ask friends and family for help with shopping
- Have quick and easy foods on hand
- Small servings of nutrient dense foods and beverages
- Commercial nutritional supplements

Nutrition for

THE CANCER SURVIVOR

Eat Well, Be Well

- 7-9 servings of fruits and vegetables daily
- 3 or more servings of whole grains daily
- 3 servings of calcium rich foods
- Decreased processed meats
- Decreased grilled meats with charring
- Alcohol in moderations

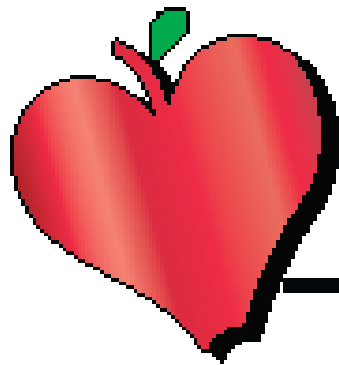
Healthy Weight

- Achieve a healthy weight to decrease the risk of breast, colon and some GI cancers
- BMI under 25

Summary

- Nutrition is a vital part of prevention, treatment, and survivorship.
- Reputable information can be found at
 - www.cancer.gov
 - www.cancer.org

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