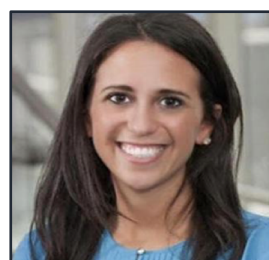


## Nutrition: What You Eat Does Matter

### Celebrating a Second Chance at Life Survivorship Symposium

April 29 – May 5, 2023



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## Learning Objectives

1. Understand the long-term nutritional consequences associated with stem cell transplantation: GVHD, Metabolic Syndrome and Osteoporosis
2. Describe tips on how to manage side effects that can impact nutritional status
3. Answer some common myths around cancer and nutrition and describe how to evaluate nutrition information

## Stem Cell Transplantation

- Survival rates have increased
- Therefore, long-term and late nutrition effects are of growing importance such as:
  - Chronic graft-vs-host disease (GVHD)
  - metabolic syndrome
  - cardiovascular issues
  - osteoporosis

## Chronic Graft-Versus Host Disease (GVHD)

A problem that occurs when the donor's immune system attacks the patients' organs and tissues

Can affect many body organs including mouth, stomach and gastrointestinal tract

## Chronic GVHD: Change in Calorie Needs

- Increased needs to repair damaged body tissues and help regain weight and strength
- Body may digest food less efficiently, thus requiring increased nutrient intake to maintain weight
- Some medications may increase appetite and cause weight gain
- Bottom line: chronic GVHD can cause **involuntary weight changes**

## Involuntary Weight Loss

- **Eat on a schedule**, don't wait until you feel hungry
- **Eat 5 or 6 small meals** each day instead of 3 large meals
- **Eat foods that are high in calories and protein:** Add sauces, gravies, cheese, butter, nut butter, cream, olive oil, avocado, honey, and jam to all foods
- **Include protein at every meal and snack:** Chicken, fish, turkey, eggs, nuts, beef, pork, yogurt, cottage cheese, milk, beans, tofu
- **Drink high calorie beverages** such as milkshakes, smoothies, juices or ready to drink ONS
- **Use "Double Milk"** instead of regular milk: 1 quart (4 cups) of whole milk with 1 cup of non-fat dry milk powder in a blender)

## Involuntary Weight Gain

- **Eat plenty of fruits and vegetables.** These are high in fiber and low in calories, and can help you feel full
- **Eat foods that are high in fiber** such as whole grain breads, cereals and pasta
- **Choose lean protein** such as fish and skinless poultry.
- **Choose low fat or non- fat dairy products** such as skim or 1% milk or low-fat or non-fat yogurt, low-fat cheese
- **Keep a food diary:** track what you eat, when you eat it as well as portion sizes
- **Increase your daily physical activity**

## Chronic GVHD: high risk for malnutrition

Nausea

Vomiting

Diarrhea

Difficulty swallowing

Taste changes

Dry mouth

Loss of appetite



## Managing Nausea

- Eat 6 to 8 small meals per day instead of 3 large meals
- Try not to skip meals as an empty stomach can sometimes make nausea worse.
- Try bland foods instead of fatty, greasy, or spicy foods
- Try ginger candies or ginger root tea, which may help to decrease nausea
- Eat dry foods like crackers, toast, dry cereal, breadsticks, or pretzels when you wake up and every few hours to settle your stomach.

## Managing Diarrhea

- **Drink plenty of fluids** to replace those you lose from diarrhea and prevent dehydration
  - Replace each loose stool with 1 cup of liquid
- **Consume foods and liquids with sodium and potassium**
  - Examples include broth, bananas and potatoes
- Eat several small meals throughout the day
- Lying down for 30 minutes after a meal may help slow digestion
- **Avoid foods or drinks that can make diarrhea worse**
  - high fiber foods, fried, greasy, sugar free products sweetened with xylitol or sorbitol

## Managing Dry Mouth

- Choose soft, bland foods that are cold or at room temperature
- Moisten foods in broth, soups, sauces, gravy, oils, or butter. You can also use these foods as dips.
- To increase saliva, try tart foods and drinks such as lemonade, lemon sorbet or cranberry juice
- Chew sugar-free gum or suck on sugar-free candy to stimulate saliva (citrus-flavored candies work best)
- Rinse your mouth before and after meals with plain water or a mild homemade mouth rinse (1 quart of water mixed with  $\frac{3}{4}$  teaspoon of salt and 1 teaspoon of baking soda)

## Managing Loss of Appetite

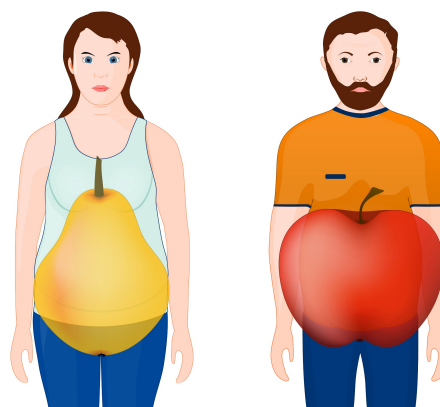
- **Eat 6 to 8 small meals and snacks daily** instead of 3 large meals
- **Eat “on the clock.”** Don’t wait until you are hungry to eat
- **Eat foods high in protein and calories** such as peanut butter, cheese, full fat yogurts, nuts, granola bars, dried fruits, trail mix
- **Drink nutrient-dense beverages** between meals to avoid feeling too full during meals
- **Exercise.** Being active can help improve your appetite

## Metabolic Syndrome

**Definition:** presence of at least 3 of the 5 following characteristics

- Apple vs. pear fat distribution/centralized obesity
- High blood fats (LDL “bad cholesterol or triglycerides)
- Low HDL (“good”) cholesterol
- High blood pressure
- High fasting blood sugar

Apple and Pear Body Shape

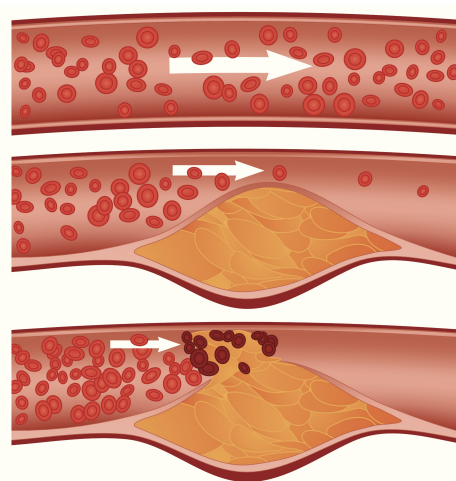


## Metabolic Syndrome: Cardiovascular Disease (CVD)

### What is cholesterol?

- Type of lipid (fat) in our bodies that forms cells, makes hormones and produces vitamin D
- Our bodies make both “good” and “bad” cholesterol
- Persistent high levels of cholesterol (LDL, “bad”) and triglycerides are associated with metabolic syndrome and increased risk for development of CVD

Cholesterol Blocks Normal Blood Flow



## What are normal blood lipid (fat) levels?

Total cholesterol	Below 200 mg/dL
LDL cholesterol (bad)	below 130 mg/dL Below 100 mg/dL is ideal
HDL cholesterol (good)	Men: over 40 mg/dL Women: over 50 mg/dL Over 60 mg/dL is ideal
Triglycerides	Below 150 mg/dL
Total cholesterol: HDL ratio	Less than 5 mg/dL Less than 3.5 mg/dL is ideal

## Dietary Fats: Unsaturated Fats and Omega-3's



Unsaturated fats help to lower LDL cholesterol

- Avocado, canola, olive (oils)
- Sesame and sunflower seeds and oils
- Whole grains
- Nuts: almonds, cashews, hazelnuts, peanuts, walnuts

Omega 3 Fat help to lower triglycerides:

- Wild, cold-water fish (salmon, sardines, tuna)
- Dark leafy greens
- Legumes (beans and lentils)
- Walnuts and flaxseeds
- Omega-3 eggs

## Dietary Fats: Saturated Fats

- Primarily animal sources
  - can increase LDL (bad cholesterol)
- Other Sources:
  - Processed meats, red meats
  - Full fat dairy products such as
    - whole milk, cream, half and half
    - butter
    - cheese
    - full fat yogurt
    - ice cream
  - Lard
  - Chocolate



## Types of Dietary Fats: Trans Fats



- Can increase LDL (bad) cholesterol and lower HDL (good) cholesterol
- Sources:
  - Margarine, shortening
  - Fried foods (pastries, potatoes, fast foods etc.)
  - Some crackers, chips and cookies

## Osteoporosis

**Healthy Bones**

Normal Vertebrae (Compact Bone)

Normal Bone Structure (Compact Bone)

Femoral Head

Femur

**Osteoporotic Bones**

Osteoporotic Vertebrae (Compressed Spongy Bone)

Bone with Osteoporosis (Spongy Bone)

Femoral Head

Hip Fracture

Femur

**Definitions:**

- *Osteo*: Bone
- *Porosis*: Full of holes

**Osteoporosis:**

- Bones that are full of holes

**BMT** 30 YEARS [infonet.org](http://infonet.org)

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## Why are transplant recipients at risk of developing osteoporosis?

- 50-60% incidence, common complication post transplant
- Primary causes and risk factors include:
  - Pre-existing bone disease
  - Hormonal changes
  - Long term steroid use
  - Sedentary lifestyle

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## Maintaining Good Bone Health After Transplant

- Aim for 1500 mg of calcium (will review on next slide)
- Check with your healthcare provider about calcium and vitamin D supplementation
- Include weight bearing exercises:
  - Walking
  - Stairs
  - Gardening
  - Low impact aerobics
  - Dancing
- Medications to slow bone loss may be prescribed

## Calcium Rich Foods & Beverages



Food	Portion size	Calcium in portion (mg)
Parmesan cheese	1½ ounces	503
Cheddar cheese	1½ ounces	307
Milk, low-fat	1 cup (8 ounces)	305
Yogurt, plain, nonfat	1 cup (8 ounces)	265
Soy milk, plain, calcium-fortified	1 cup (8 ounces)	301
Sardines	2 sardines	92
Collards, cooked	½ cup	134
Bok choy (Chinese cabbage), raw	1 cup	74
Almonds	¼ cup	96
Figs, fresh	2 medium figs	35

## Healthy or Harmful?

## Evaluating Nutrition Information

- Read information closely
- Get the whole story
- Maintain a healthy skepticism and a particular wariness of easy answers
- Turn to your doctor, or other health care provide for advice you can rely on





## Does Sugar Feed Cancer?

- All cells, including cancer cells, in our body use sugar (glucose) from our bloodstream for fuel.
- We get that blood sugar from foods we eat containing carbohydrates including:
  - healthful vegetables, fruits, whole grains
  - low-fat dairy sources.
- Some glucose is even produced within our bodies from protein.



## Does Sugar Feed Cancer?

- The connection between sugar and cancer is indirect:
  - Eating a lot of high-sugar foods → excess calories in your diet → lead to excess weight and body fat and excess body fat is linked to chronic disease
- **Bottom line:**
  - focus on having a balanced diet
  - indulge mindfully
  - choose sugars (or carbohydrates) with health benefits such as fruits and whole grains

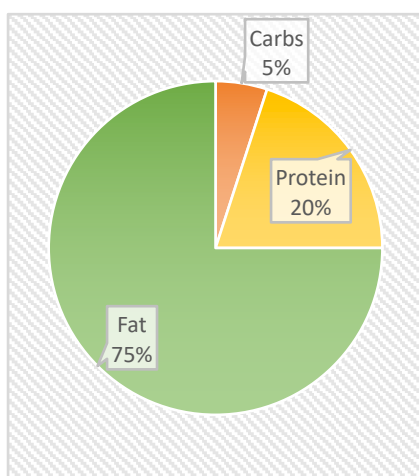


## Should I Follow a Ketogenic Diet?




- **What is it?** High fat, moderate protein, low carbohydrate diet (not to be mistaken for a high protein diet)
- **Definitions:** Keto= ketone; genic= producing; ketogenic= produces ketones in the body
- Ketones are formed when the body uses fat for its source of energy
- Normally, the body uses carbohydrates (such as sugar, bread, pasta) for its fuel but because the ketogenic diet is very low in carbohydrates, **fats become the primary fuel instead**

## Should I Follow a Ketogenic Diet?



- **To put things in perspective:**
  - 5% of carbohydrates based on a 2000 calorie per day diet = 25 grams of carbohydrates per day maximum
  - 1 medium apple= 25 grams of carbohydrates!



## Should I Follow a Ketogenic Diet?

- It is an acceptable medical option for treatment of epilepsy, and is being studied in people with brain cancer
- The use of the ketogenic diet during treatment for different types of cancer is also being studied
- **Bottom line: currently there is no recommendation for cancer patients to follow this restrictive diet**

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## Should I Follow a Gluten-Free (GF) Diet?

- Excludes any foods that contain gluten, which is a protein found in wheat, rye and barley
- In addition to foods like pizza, pasta, cereal and baked goods, gluten can be in everything from soy sauce and ice cream to certain medications, beauty products and dietary supplements
- Some people think going gluten-free means not eating any carbohydrates, but this isn't the case
  - Lots of foods that contain carbs, such as rice, potatoes and beans, don't contain gluten



## Should I follow a Gluten-Free Diet?

- A gluten-free diet is necessary for people with celiac disease, an autoimmune response to gluten that causes the body to attack the small intestine, causing belly pain, nausea, bloating or diarrhea.
- People with celiac disease can't tolerate gluten in any form, and need to follow a gluten-free diet for the rest of their lives
- If you cut all gluten out of your diet, there's a risk that you could miss out on nutritious whole grains, fiber and micronutrients
- **Bottom line: Unless you have celiac disease or experience discomfort when eating gluten, no need to avoid!**



## Are Supplements a Substitute for Nutrients in Food?

- The short answer is **no**
- Supplements are not a replacement for whole foods in your diet
- Most research indicates that protective nutrients in food are far preferable to pills
- Supplements may not be well-absorbed by the body, and, in high doses, may be potentially harmful
- Some supplements have been shown to interfere with medications; that's why it's important to tell your healthcare team about any supplements you are taking





## Do I Need to Eat All Organic Foods?

**“Organic” definition:** plant foods grown without pesticides or weed killers

- There are many reasons you may wish to choose organic, but it is not known whether organic foods help reduce cancer risk more than their non-organic counterparts
- If you do opt for organic, remember that organic cookies, chips and other snacks can contain the same number of calories, fat and sugar as conventional brands
- **Bottom line: You can still get a nutrient rich diet from a non-organic diet!**



## Do I Need to Follow a Vegetarian Diet?



- A vegetarian diet may be a healthier alternative to Western diets, but there is **no clear evidence** that a vegetarian diet is more protective against cancer than a **mostly plant-based** diet containing small amounts of meat and dairy foods
- A vegetarian meal plan should include a variety of foods, including
  - many different vegetables and fruits
  - whole grains
  - protein alternatives to meat (such as beans, eggs, tofu, fish or small amounts of low-fat cheeses)

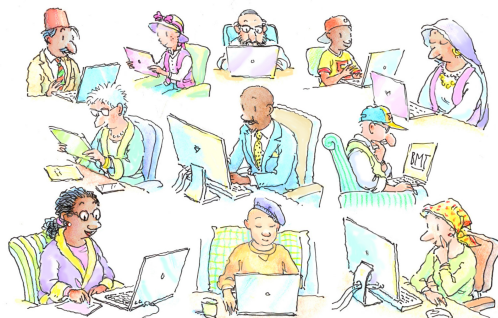


# QUESTIONS?



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