

Optimizing Nutrition after Transplant

Celebrating a Second Chance at Life
Survivorship Symposium

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Seattle Cancer Care Alliance



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Fred Hutch · Seattle Children's · UW Medicine

Optimizing Nutrition After Transplant

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Objectives

- Understand the long-term nutritional consequences associated with stem cell transplantation.
- Gain practical skills and tools to maintain a healthy diet post-transplant.
- Describe common myths associated with nutrition and cancer.

**Long-term nutritional consequences
associated with
stem cell transplantation**

Stem cell transplantation

- Survival rates have increased
- Therefore, long-term and late effects are of growing importance
- Chronic graft-vs-host disease (GVHD) and metabolic syndrome are common and impact life expectancy and quality of life

Chronic GVHD

- An immune mediated disorder that occurs between the patient and donor
- May affect many body organs including mouth, stomach, and gastrointestinal tract

Chronic GVHD may change the amount of needed calories:

- 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
 - Focus on small, frequent meals and snacks
 - Consume adequate protein
 - Use nutrient-dense healthy fats, such as extra virgin olive oil or avocados
- Some medications may increase appetite and cause weight gain
 - Monitor portions consumed
 - Avoid processed foods high in added sugar, salt, and fat

Protein

- Increased needs with chronic GVHD
- Important for growth and rebuilding tissue
- **Sources**
 - **Animal:** lean meats, poultry, fish, eggs, dairy products
 - **Plant:** legumes (lentils, black beans, etc.), nuts or nut butters, soy-based foods

Fluids

Increased needs due to:

- Immunosuppressive medications (cyclosporine; tacrolimus)
- Increased losses due to fever, sweat, diarrhea, vomiting, or rapid breathing

Good sources:

- Water
- Broth
- Smoothies
- Milk
(including soy, almond, or coconut milk)
- Yogurt
- Soups
- Vegetable juice
- Limit caffeine and alcohol

**Long-term nutritional consequences
associated with stem-cell transplantation:
Metabolic Syndrome**

Metabolic Syndrome

- Metabolic factors associated with increased risk for diabetes and cardiovascular disease
- Over 50 million Americans have metabolic syndrome; transplant patients are at higher risk of developing

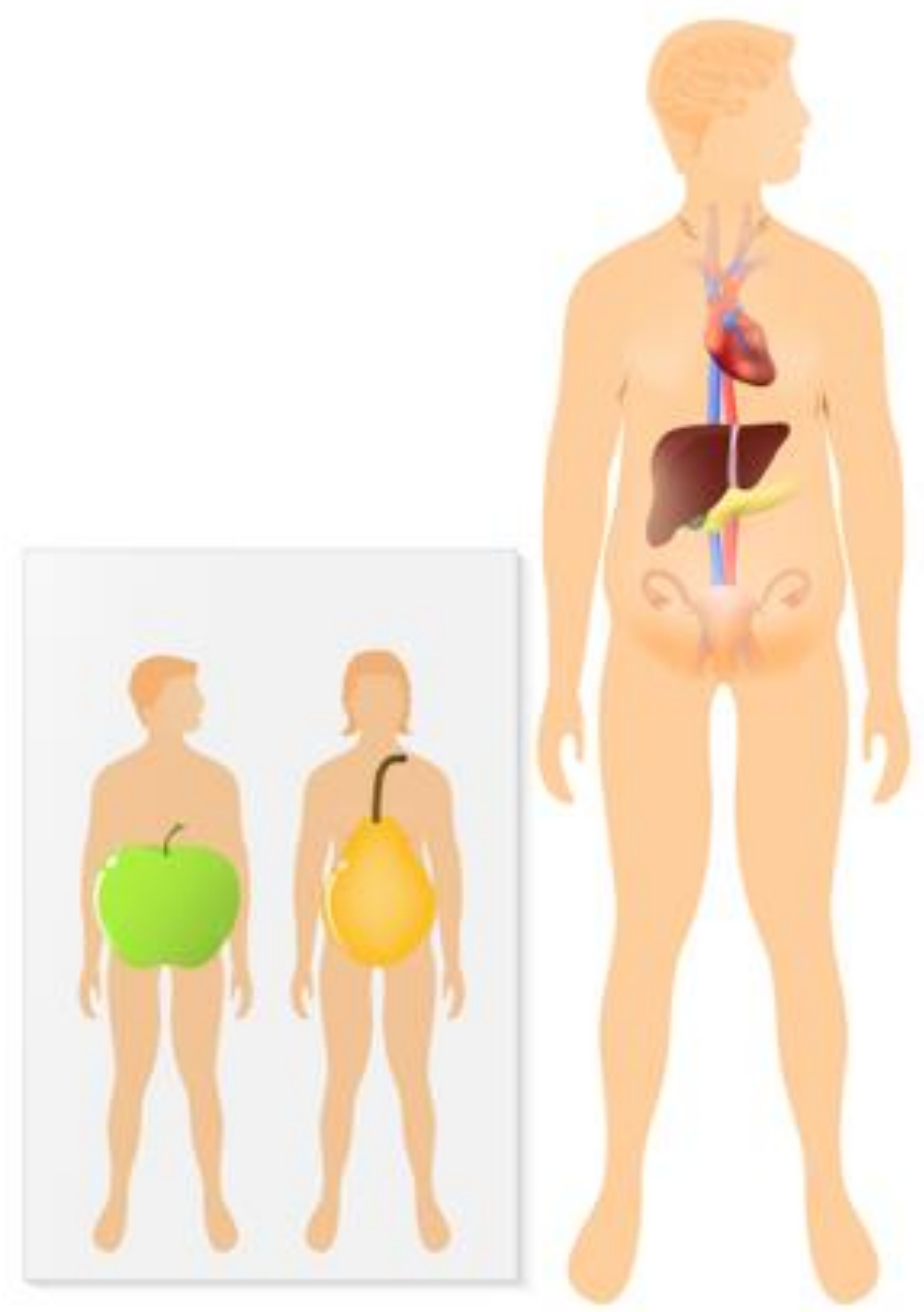
Metabolic Syndrome

Definition:

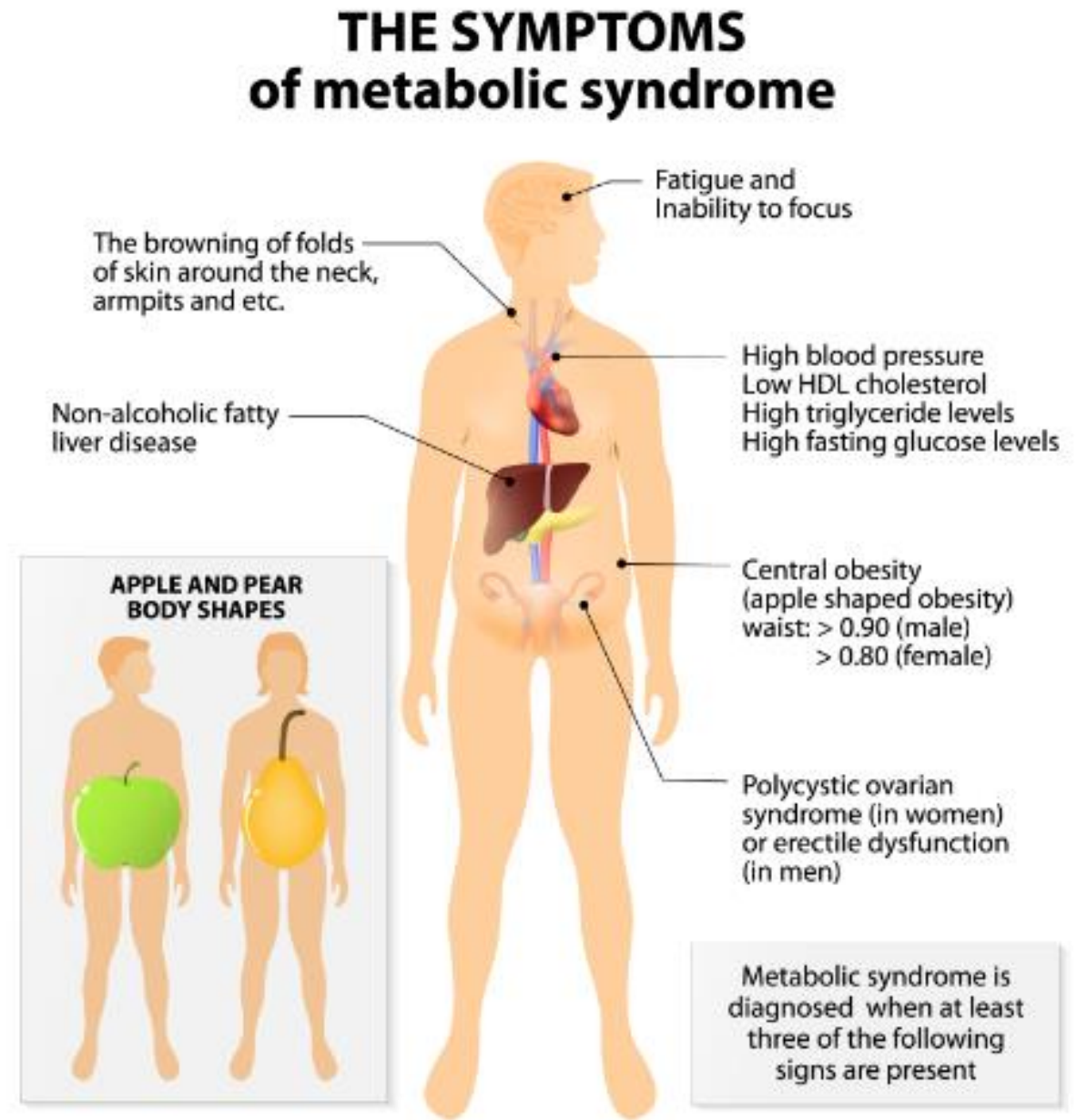
Presence of at least 3 of the 5 defining characteristics:

- Apple vs. pear fat distribution
- High blood fats
- Low HDL (“good”) cholesterol
- High blood pressure or on medications
- High fasting blood sugar or on medications

How does diet effect the development of metabolic syndrome after transplantation?



How does diet effect the development of metabolic syndrome after transplantation?





Studies have shown that both pediatric and adult transplant patients are **more likely** to develop diabetes and high blood pressure than the general population.

What *lifestyle changes* can be made to **reduce** the incidence of developing metabolic syndrome as well as maintain a healthy diet post-transplant?



Practical skills and tools to maintain a healthy diet post-transplant:

American Institute for Cancer Research (AICR) Dietary Guidelines

Lifestyle changes

- Be a healthy weight
- Be physically active
- Eat a diet rich in plant foods
- Limit consumption of “fast foods” and other processed foods high in fat, starches, or sugars
- Limit consumption of red and processed meat
- Limit consumption of sugar-sweetened drinks
- Limit alcohol consumption
- Do not use supplements for cancer prevention

Be a healthy weight

- Keep your weight within the healthy range and avoid weight gain in adult life
- Aim to be at the healthy body mass index (BMI) range:

**BMI = weight in kilograms
height in m²**

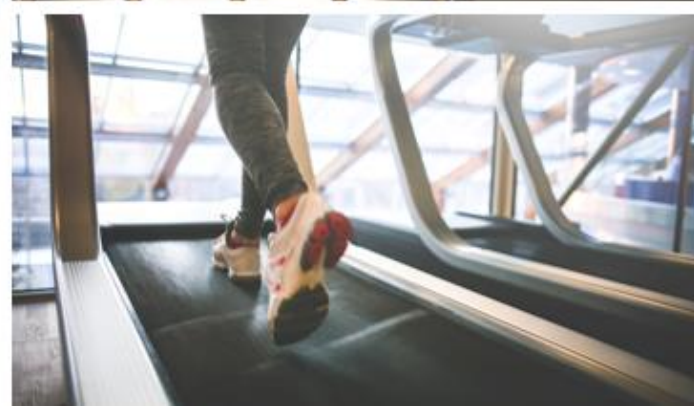
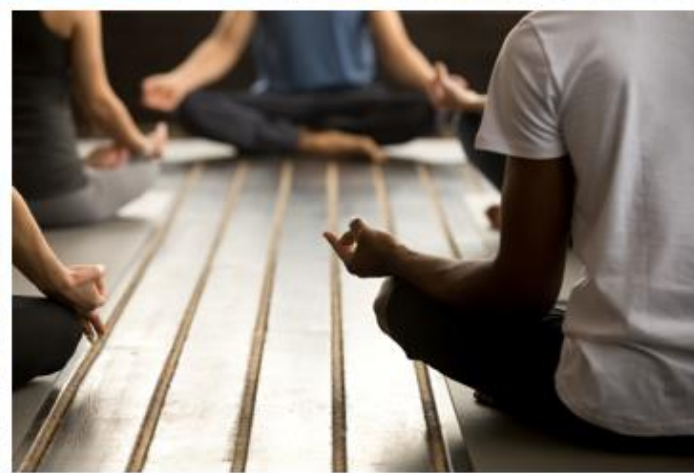
Underweight = <18.5

Normal weight = 18.5-24.9

Overweight = 25-29.9

Obesity = 30 or greater





Be physically active

- Physical activity helps to lower cancer risk by helping to promote weight maintenance and help to achieve physical and cardiovascular fitness
- Strive to build more activity into your daily routine
- Aim for at least 150 minutes of moderate or 75 minutes of vigorous, physical activity per week
- Work toward achieving 45-60 minutes of moderate-intensity daily physical activity

Eat a diet rich in plant foods such as whole grains, vegetables, fruits, and legumes



- Base diet around plant foods which contain fiber and other nutrients to reduce cancer risk
- Consumption of plant foods (lower in calories) also help maintain a healthy weight



- 2/3 of plate should include plant-based foods
- Consume at least 4 cups (raw and cooked) daily

“Rainbow of colors”

- Myriad of phytonutrients
- Green leafy, cabbage family
- Berries, citrus fruits


Legumes:


Garbanzo beans, kidney beans, black beans, dried peas rich in antioxidants, fiber, vitamins, and minerals

Limit consumption of “fast foods”
and other processed foods high
in fat, starches, or sugars:

Choose whole foods

What is a whole food?

- Contains all or most of the original edible parts
 - Whole grain bread *vs. white bread*
 - Brown rice *vs. white rice*
 - It has had very little done to it
 - It has not been fortified, enriched, bleached, refined, injected, hydrogenated, irradiated, or dehydrated
- 

- “Fast foods” and a “Western-type” of diet are causes for:
 - Weight gain
 - Overweight and obesity
 - These conditions linked to the development of at least 12 cancers
 - Limiting these foods helps control calorie intake and maintain a healthy weight
 - Processed and refined foods contain many artificial ingredients
- 



Monitor intake of:

- Cookies
- “Health bars”
- Candy
- Commercial condiments
- Sweetened yogurt

Limit consumption of red and processed meat



**Eat no more than 12-18 ounces of
cooked red meat per week**

- Beef, Lamb, Pork

Eat little, if any processed meats

- Ham, Bacon, Hot dogs, Sausage

Limit consumption of sugar-sweetened drinks

Strong evidence that consuming sugar-sweetened beverages causes:

- Weight gain
- Overweight
- Obesity

Limit consumption of:

- Sodas
- Sweetened teas
- Coffee drinks
- Sweetened vitamin/energy/electrolyte beverages

Drink mostly water and unsweetened fluids

Limit alcohol consumption

For cancer prevention, it is best not to drink alcohol, which is a known carcinogen.

If you do choose to drink alcohol, limit your consumption to:

- **Women:** one drink/day
- **Men:** two drinks/day

Do not use supplements for cancer prevention

Aim to meet nutritional needs through diet alone by consuming a variety of foods each day.



Instead, choose:

- Lean protein sources
- Low fat or non-fat dairy products
- Whole grains
- Fruits
- Vegetables

Additional diet suggestions to supplement AICR recommendations

- Add chopped ground flaxseeds to oatmeal or yogurt
- Add chopped kale or dark greens to soups, salads, or smoothies
- Vary hummus: use white beans, edamame, or lentils
- Snack on roasted pumpkin seeds
- Add chopped walnuts to salad or hot cereal
- Make salad dressing with olive or flaxseed oils
- For meat-eaters, choose grass-fed meats and wild fish
- Load up on herbs and spices that contain cancer fighting compounds
 - Ginger, turmeric, curry, cinnamon, rosemary, basil, garlic



Common Myths Associated with Nutrition and Cancer

Nutritional Myths

1. Does sugar feed cancer?
2. Do I need to follow an Alkaline Diet?
3. Is a Ketogenic Diet safe?



DOES
SUGAR
CAUSE
CANCER?

The relationship between sugar and cancer is about obesity and insulin resistance vs. sugar as fuel for cancer cells.

- Our bodies can make the glucose to “feed” both cancer cells and healthy cells regardless of diet, by breaking down fat and muscle protein
- Cancer risk is more about each individual’s metabolism and response to food, over time
- Eating sugar has no health benefit other than providing a well-absorbed energy source

Summary:

- Too much daily sugar intake can cause weight gain; unhealthy weight gain and a lack of exercise can increase cancer risk.

**Common myths associated with
nutrition and cancer:**

Do I need to follow an Alkaline Diet?

Acid/Alkaline Diet – eating to manage your pH

- **Hypothesis** – tumors cannot grow in an alkaline environment

What are acid/alkaline foods?

- **Acidic:** Meat, poultry, fish, dairy, eggs, grains, beans, alcohol
- **Neutral:** Natural fats, starches, sugars
- **Alkaline:** Fruits, nuts, lentils, vegetables

Your Alkaline Diet Menu

BELOW ARE LISTS OF DIFFERENT FOODS WHICH ARE OUR TOP RECOMMENDATIONS FOR HAVING AN ALKALINE DIET. WHILE FOODS WHICH ARE ACIDIC MUST BE INGESTED FOR A HEALTHY DIET, THEY ARE TOO BE LOWERED BACK TO THE LEVELS WHICH OUR BODIES ORIGINALLY ADAPTED TO.

Alkaline Fruits



Alkaline Vegetables



Acidic Foods





- You can influence your urine pH, but food **CAN NOT** influence your blood pH
- Alkaline water filters cost over \$1,000!
- Diet supports consuming lots of fruits and vegetables, and limits processed foods, however, may over-restrict protein, calcium, and vitamin D

Summary:

Promotion of Alkaline Diet/Alkaline Water for cancer prevention or treatment is not justified.

Is a Ketogenic Diet safe?

Definition: Very low carbohydrate diet.

Hypothesis: Tumors rely on glucose to meet their energy demands and thus starve a tumor and reduce growth.

Based on this hypothesis: *Sugar feeds cancer*


- Premise: evidence-based therapy for epilepsy
- Current clinical trials for brain tumors
- Nutritionally unbalanced diet that promotes very low carbohydrate intake
- Reported side effects include:
 - Constipation, anemia
 - Cardiac abnormalities, dehydration

Summary:

Lack of consistency and efficacy in current literature along with a host of adverse effects make the ketogenic diet not recommended as a therapeutic approach in the cancer setting.

Summary

- Eat real (whole) food; mostly plant-based
 - Regular aerobic exercise
 - Maintain a healthy weight

 - Seek a registered dietitian nutritionist board certified in oncology nutrition
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Internet resources

- American Institute for Cancer Research: www.aicr.org
- The Cancer Fighting Kitchen: www.rebeccakatz.com
- Cook For Your Life: www.cookforyourlife.org
- Oncology Nutrition Dietetic Practice Group: www.oncologynutrition.org
- Seattle Cancer Care Alliance: <https://www.seattlecca.org/emotional-and-spiritual-support/medical-support-services/nutrition>
- The World's Healthiest Foods: www.whfoods.com



Thank you.



If you have any questions please contact me:
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Questions?



Celebrating a Second Chance at Life Survivorship Symposium|

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