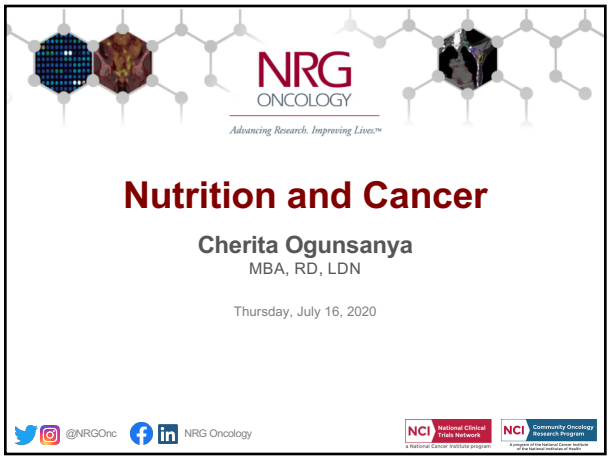
NRG
ONCOLOGY
Advancing Research. Improving Lives.™
Nutrition and Cancer
Cherita Ogunsanya
MBA, RD, LDN
Thursday, July 16, 2020
@NRGOnc
NRG Oncology
NCI National Clinical Trials Network
NCI Community Oncology Research Program

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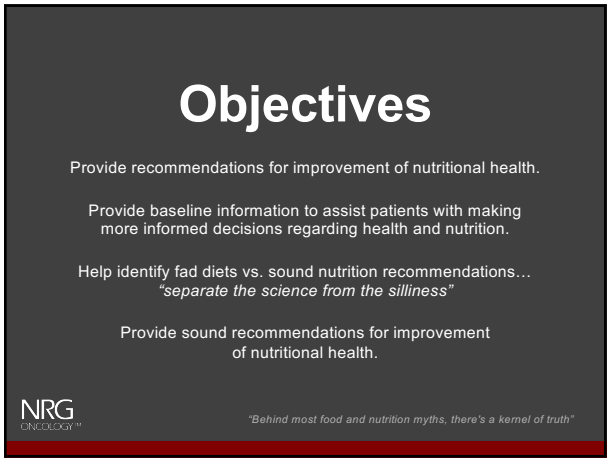
Objectives
Provide recommendations for improvement of nutritional health.
Provide baseline information to assist patients with making more informed decisions regarding health and nutrition.
Help identify fad diets vs. sound nutrition recommendations…
"separate the science from the silliness"
Provide sound recommendations for improvement of nutritional health.
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"Behind most food and nutrition myths, there's a kernel of truth"

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Where did you hear that?
Consumers get nutrition information from:
• Doctors
• Family and Friends
• TV
• Magazines and Newspapers
• Internet
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Where did you hear *that*?

RELIABLE SOURCES

- Healthcare Providers (RD/RDN, MD, RN, etc.)
- AND (Academy of Nutrition and Dietetics)
- Peer-reviewed nutrition journals:
  - Journal of Nutrition
  - Journal of Nutrition and Food Science
  - Journal of Nutrition and Dietetics
- Reputable internet sources:
  - www.nutrition.gov
  - www.publichealth.org
  - www.cancer.gov
  - www.cancerdietitian.com

LESS RELIABLE

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Identifying Less Reliable Sources

If the information

- Centers around testimonials vs. actual research
- Recommends supplements vs. real food
- Requires the purchase of large amounts of "special food" and/or supplements
- Sounds too good to be true

…then it's probably not reliable.

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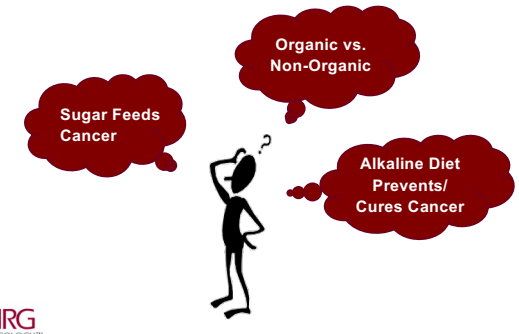
Myth or Truth: Common Theories



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MYTH or TRUTH?

"Sugar feeds cancer cells."

Half Truth

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Sugar Feeds Cancer

POSSIBLE ORIGIN OF THEORY:

- PET scans use a form of glucose as a radioactive tracer.
  - Primary glucose source = carbs (sugar is a type of carb)
- This radioactive tracer is partially absorbed in all tissue, however, cancer cells (which naturally require more energy) absorb more.
- This factor may have falsely led to the conclusion that sugar directly causes cancer cells to grow faster.
  - No sugar/carb diet > increased protein/fat intake > glucose via gluconeogenesis

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Sugar Feeds Cancer

ELEMENT OF TRUTH:

- Excessive sugar intake has been linked to increased cancer risk due, in part, to the association between obesity and diabetes:
  - High sugar > obesity > Type 2 diabetes > increased cancer risk
    - DM II: ↑ insulin levels stimulate Insulin-like growth factor-1 (IGF-1), which promote cell multiplication and inhibit apoptosis (self destruction of abnormal cells)
- Research is still underway to determine if sugar is a direct cause of cancer or a contributing factor only after cancer cells have already developed.

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MYTH or TRUTH?

"Alkaline diet prevents/cures cancer."

Myth

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Alkaline Diets

THE ALKALINE DIET:

- Based on the theory that foods/beverages consumed can alter pH balance, an acidic environment is thought to make the body more prone to illness and disease.
  - **Acidic (pH 0-7):** Meat, poultry, fish, dairy, eggs, grains and alcohol.
  - **Neutral (pH 7):** Natural fats, starches and sugars.
  - **Alkaline (pH 7-14):** Fruits, nuts, legumes and vegetables.

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Alkaline Diets

POSSIBLE ORIGIN OF THEORY:

- German Physician, Otto Warburg, PhD (Nobel Laureate in Medicine), conducted research which asserts that cancers survive in an acidic environment.
  - Warburg theorized that cancer cells thrive more in an anerobic environment (acidic), which supports fermentation.
    - Fuels needed for fermentation: glucose and glutamine
  - Although, in theory, this is correct, the results are limited to the cell growth noted in labs, and not in actual human subjects.
  - True pH alteration is virtually impossible in an individual with healthy kidneys and lungs.
    - Even slight alterations can be fatal

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Alkaline Diets

LIMITATIONS OF THE ALKALINE DIET THEORY:

- Food does not influence blood pH.
- pH can only readily be measured via urine, not blood.
- The body has built-in regulators for when pH levels are unbalanced.
- Cancer cells can grow in an alkaline or acidic environment.
- The acidic environment doesn't create cancer; cancer creates the acidic environment.

Element of Truth:
The Alkaline diet is, overall, a healthy way of eating.

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MYTH or TRUTH?

Organic or non-organic?

Both!

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Organic vs. Non-Organic

ORGANIC FOODS:

- Are free of commercially prepared chemicals and/or pesticides
  - "Eating organics can reduce your risk of ingesting commercially produced pesticides and chemicals…But the evidence that exists to support or refute eating organic foods to prevent cancer is unclear."
  - Although organics may not prevent/cure cancer, they can still be of benefit in the diet
    - Meat/dairy are usually richer in omega 3 and contain less saturated fat.
    - Contains less carcinogen-promoting components.
- Can be more expensive that conventional food sources; EWG details which fruits/veggies may be of benefit to buy organic vs. non-organic

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Organic vs. Non-Organic

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General Dietary Recommendations for Pre/Post Cancer Treatment

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Recommendation

> *Dietary patterns based on regular intake of fruit, vegetables (especially garlic and cruciferous vegetables, as cabbages, broccoli, brussels sprout and wasabi) and by consequence the intake of aliments rich in selenium, folic acid, vitamins (B-12 or D), and antioxidants (e.g., carotenoids and lycopene) play a protective role in cancer onset so to reduce risk of breast cancer, colorectal cancer and prostate cancer of 60–70% and of lung cancer; 40–50%.*

Nutrients, 2019

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Dietary Recommendations (General)

HIGH FIBER, PLANT-BASED DIET:

- At least 5 servings (2.5) cups fruits and vegetables daily
  - 2 fruits, 3 vegetables
- Colorful options
- Be sure to choose cruciferous veggies
  - Broccoli, Brussel sprouts, cabbage, cauliflower, and dark leafy greens
  - Ideally, daily, but at least twice weekly

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Dietary Recommendations (General)

- Limit high fat foods.
  - Especially animal sources (i.e. red meat)
    - Aim for less than 6 oz per week
    - Limit meats that are cooked at high temperatures/burned/charred
  - Limit saturated; avoid trans
  - Include omega 3 rich foods
    - Fatty fish 2-3x/wk (salmon, albacore tuna, sardines)
    - Plant sources daily (flax, chia, walnuts)
- Consume daily probiotic and prebiotic foods.
  - **Prebiotic**: onions, ground flax, artichoke, garlic, leeks, banana, asparagus
  - **Probiotic**: yogurt, sauerkraut, kimchee, kombucha, buttermilk, wine, and bleu cheese

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Dietary Recommendations (General)

- Limit added sugar and/or other processed foods.
  - Less than 10% of daily calorie intake (max)
    - **Women consuming 1200-1800 calories:** 30-45 grams (7-11 tsp) added sugar
    - **Men consuming 1500-2000 calories:** 38-50 grams (9-12 tsp) added sugar
- Limit processed foods.
  - Deli and pre-packaged meats
  - Pre-packaged foods containing preservatives

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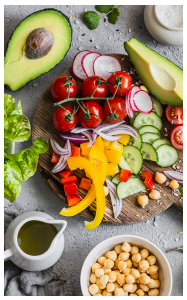
Possible Diets



- Mediterranean
  - Reduced inflammatory response
  - Reduced cell oxidation
- DASH
  - Lowered risk of colorectal and breast cancer
  - Lowered DM risk
  - Improved insulin resistance
- Plant-based
  - Vegetarian/vegan/pescatarian/flexitarian
- MIND (Mediterranean/DASH Intervention for Neurodegenerative Delay)

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Treatment Associated Dietary Recommendations

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Dietary Recommendations

BEFORE/DAY-OF CHEMO

- Light, bland foods:
  - Yogurt
  - Broth based soups
  - Nutritional supplements (Boost, Ensure, Intrust, etc.)
  - Homemade smoothies (Berry-based, if tolerated)

1-2 DAYS AFTER CHEMO

- Light, bland foods
- Small, frequent meals
  - Toast
  - ½ bagel with peanut butter
  - Fruit and cottage cheese
- Limit/avoid strong odors
  - Cold or cool food often work better
- Limit greasy, fatty, spicy foods

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Drink PLENTY of fluids!

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Dietary Recommendations

COMMON POST-PELVIC RADIATION SIDE EFFECTS

Diarrhea:	Bowel Obstruction:	Bladder Issues:
• Low fiber (8-13 grams) i.e. ½ cup cooked beans = 6-10 gm • Low fat • Low lactose Lactaid, Mootopia, Fairlife Plant based: unsweetened almond, soy, coconut, rice • Limit/avoid sugar alcohols ("ol")	• Low fiber • Liquid (depending on severity)	• Drink 2-3 quarts of liquid daily • Avoid caffeine, alcohol, and spicy foods

**Make sure to eat enough to maintain weight; do not try to lose weight during treatment.*

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Herbs and Supplements

No conclusive evidence that herbs/supplements can cure cancer, but there are some nutrients that have been promising for cancer prevention and/or treatment.

- **Vitamin D:** Vitamin D affects over 200 human genes that are involved in regulating cell proliferation, development, and apoptosis (cell death)
- **Green tea:** catechins act as free radical "scavengers" and help to induce apoptosis
- **Selenium and Vitamin E:** reduced chemo toxicity; HOWEVER, can also reduce the efficacy of treatment as it may prevent cancer cell damage
- **Vitamin C**: in high doses has been shown to help lessen chemo related side effects (not good for kidney issues or hemochromatosis)

**All supplements should be approved by an oncologist (even multivitamins).*

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Herbs and Supplements

BEFORE CONSIDERING A PILL OR SUPPLEMENT…

- Is there significant evidence in peer-reviewed journals that supplements are beneficial to your health?
- No multivitamin formulation has been proven to be effective in treating or preventing diseases other than nutrient deficiency diseases.

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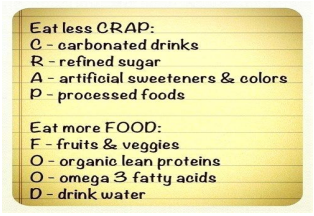
Bottom Line

- There are no magic pills, potions, or foods that cure cancer, however, fueling the body appropriately can help prevent and possibly reduce the severity of various types of cancer.



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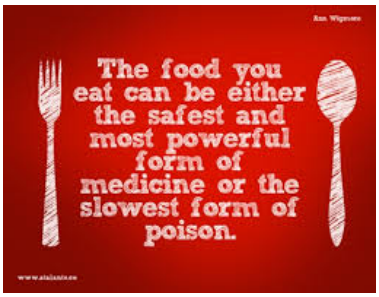
Final "Food" for Thought



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Questions?

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