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Addressing Food Myths, Food Insecurity, and Supplements:

Improving Treatment and Cancer Outcomes with Adequate Nutrition

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It's nice to meet you!

- Julie Shimko, MA, RD, Oncology Registered Dietitian at Stanford Health Care.
- Decade of experience working in nutrition, with previous experience working in the acute setting at an inpatient hospital.
- Created the oncology nutrition program at Providence Queen of the Valley Medical Center in Napa, California.
- Also work as a nutrition writing and research consultant, with a Master's degree in English composition and literature.

Objectives

- Identify the implications of malnutrition and cancer treatment outcomes and mortality.
- Discuss and clarify common nutrition myths.
- Investigate the many cancer “diets” and the research.
- Address food insecurity and provide patient resources.
- Clarify the role of supplements and antioxidants in the oncology setting.
- Summarize the current American Institute for Cancer Research (AICR) guidelines for nutrition and cancer prevention.

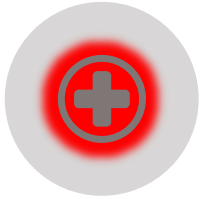
Services Provided by the Oncology Dietitian

Assessment and management of PO/TF/TPN

Provide initial and ongoing individualized guidance to help optimize nutritional status.

Individualized medical nutrition therapy to treat nutrition problems (inadequate intake, altered GI function, malnutrition).

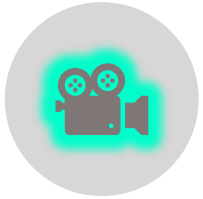
Management of enteral and parenteral nutrition support.



Nutrition interventions with anticipation of treatment-related side effects/knowledge of specific treatment side effects.

Individualized nutrition education to prepare for oncology-related treatment.

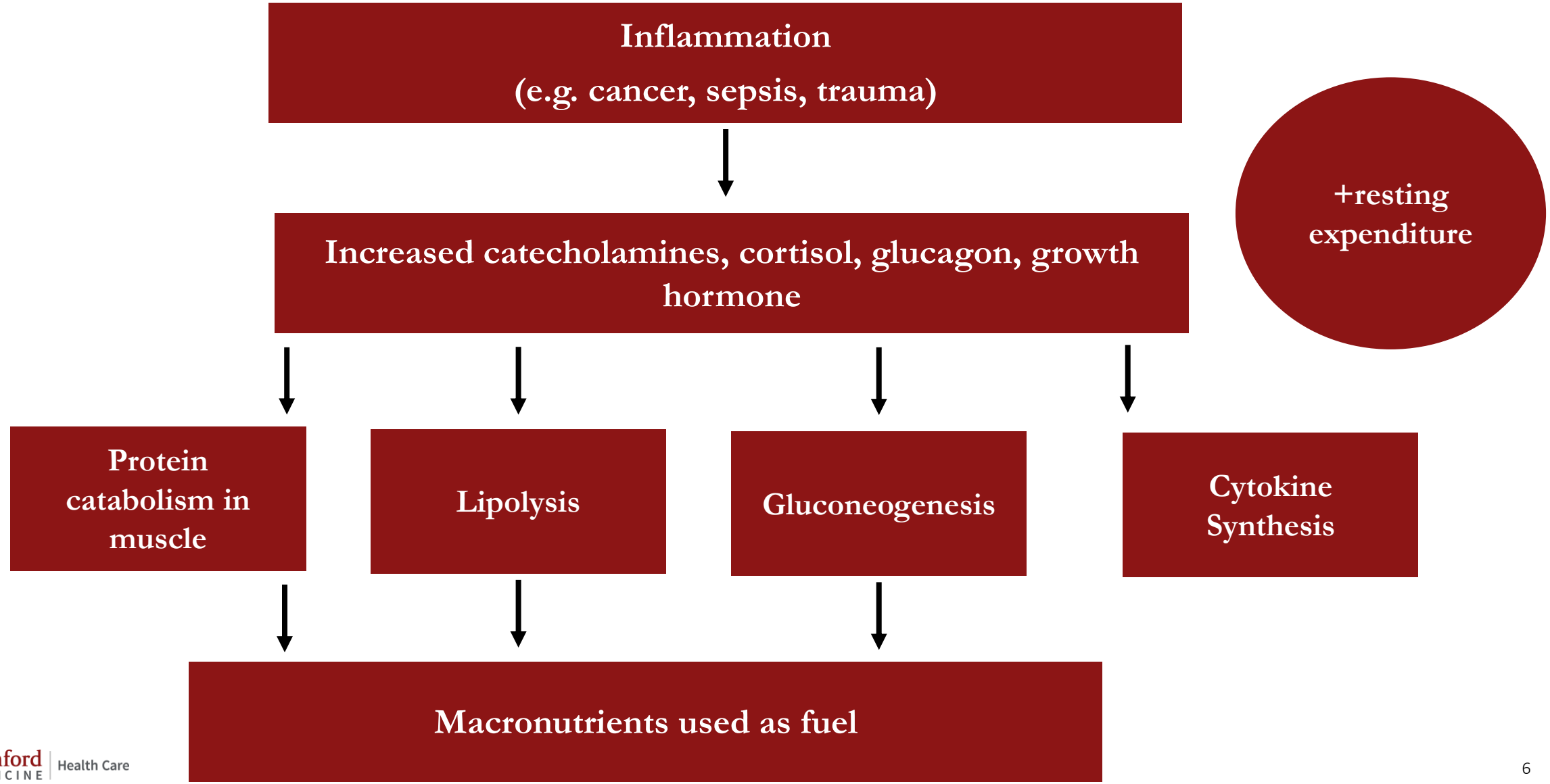
Nutrition recommendations for survivorship.



Most visits are conducted via video visit.

Malnutrition and Cancer Treatment Outcomes

Physiological Impact of Inflammation on Nutrition Status



Weight loss, Malnutrition, and Treatment Outcomes

- Pretreatment cancer-associated weight loss is common, even in early-stage disease, and is independently associated with reduced survival.
- In a 2018 study published in the *Journal of Oncology Practice*, researchers performed a retrospective cohort study of 3,180 treated adult patients with lung or GI cancer. **Cancer-associated weight loss was observed at the time of cancer diagnosis in 34.1% of patients**
- Regardless of the cause, combating malnutrition is extremely important: According to the National Cancer Institute (NCI), **up to 80% of cancer patients are affected by malnutrition, which is responsible for nearly 20 percent of cancer-related deaths.**
- Cancer cachexia is indicated as a factor in the cause of death in 30%-50% of all cancer patients.

Nutrition Priorities During Treatment

- **<u>Maintaining</u> body weight and <u>preserving</u> muscle mass.**

- Make appropriate dietary adjustments to help address disease and treatment-related nutrition impact symptoms (nausea, diarrhea, taste changes, appetite changes, etc.).

- For patients wishing to lose weight: Weight maintenance is recommended during treatment until patient has been able to demonstrate control of nutrition-impact symptoms, then with help of the RD work on a weight-reduction plan to minimize loss of lean body mass.

Addressing Common Nutrition Myths

There is no one particular food that will cause your cancer to grow faster, slow down its growth, or spread.

Food Truly is Medicine

- Food/nourishment/meeting calorie needs are part of treatment protocol.
- Weight loss and malnutrition may change treatment plan.
- Eating is no longer just for pleasure, it is a vital supportive therapy during treatment.
- Encourage AICR guidelines, as the body does function better with healthy fuel sources, and address symptoms as they arise.

Does sugar feed cancer?

- No randomized controlled trials have shown that consuming more sugar makes cancer worse or that consuming less sugar improves cancer outcomes.

- All cells, including cancer cells, use glucose as their primary fuel. Glucose comes from any food that contains carbohydrates including healthful foods like vegetables, fruits, whole grains, and dairy.

- The human body is smart; it will even use protein to make glucose if we need more. We do not get to choose what is converted into glucose and what is not.

- All healthy cells need glucose to function, and it is impossible for our bodies to provide healthy cells with the glucose they need without also providing it to cancer cells.

What IS the Connection Between Sugar & Cancer?

- Research shows it is sugar's relationship to higher insulin levels and related growth factors, such as IGF-1, that may influence cancer cell growth the most, and increase risk of other chronic diseases.

- It's not sugar itself, but what sugar does to our body system. Over-eating sugar may cause excess weight gain, and obesity is associated with many types of cancer.

- Excess sugar consumption has been linked to chronic inflammation in some people, which can damage healthy cells, which may then become cancerous.

Where does sugar fit?

- Important to:
  - Limit **added** sugar.
  - Focus on complex carbohydrates as best sources of carbohydrates.

- American Heart Association recommends no more than 6 tsp of added sugar for women and no more than 9 tsp of added sugar for men.

- Sugar occurs naturally in fruit, vegetables, beans, nuts, whole grains, dairy, and soy foods. These foods also contain vitamins, fiber, minerals, antioxidants and phytochemicals, which are needed for overall health and cancer risk reduction.

Is soy safe to consume?

- The current consensus is cancer survivors can safely eat soy foods (edamame, soy milk, soy yogurt, meat alternatives, miso, tofu, tempeh, etc.).

- Soy contains phytoestrogens, or dietary estrogen, which is **not the same as human estrogen**. Multiple studies have associated phytoestrogen intake with decreased cholesterol levels, improved menopausal symptoms, and a lower risk of osteoporosis and certain types of cancer, including breast cancer.

- Soy foods are a healthy option, while soy dietary supplements need further research. The research on soy and breast health has looked at soy foods, not dietary supplements.

- There isn't any evidence to support the use of soy isoflavones provided by supplements to reduce cancer risk.

Mechanism of Action of Soy Phytoestrogen

- Soy phytoestrogens do not interact with the body the same way human estrogens do.
- There are two different types of estrogen receptors in the body—alpha and beta. Human estrogen binds to and activates alpha, and soy phytoestrogen binds to and activates beta.
- Beta activation has been found to possibly inhibit the growth-promoting effects of human estrogen, possibly reducing risk of breast cancer.

What the Research Says

- The evidence we do have is not quite strong enough for a recommendation to be made about soy consumption for cancer survivors.

- However, there is evidence from six large population studies and two major analyses which consist of multiple studies. They show the following:

    - A possible trend for lower all-cause mortality.
    - No association with breast-cancer specific mortality.
    - Possible lower breast cancer recurrence.
    - No studies show an increase in risk of poor outcomes for ER+ women, including women using tamoxifen.

Can I have dairy?

- The Continuous Update Project Panel concluded that the evidence was generally consistent for dairy products, and showed a decreased risk of colorectal cancer with higher consumption.

- There is some evidence— not as strong as that of colorectal cancer — that dairy products may increase the risk of prostate cancer; however, it may be related to high calcium intake reducing vitamin D levels, which may protect prostate cells.

- The AICR/WCRF breast cancer report found limited evidence that dairy lowered the risk of pre-menopausal breast cancer. This evidence is only suggestive; more research is needed.

What about milk from rBGH-treated cows and IGF-1?

- IGF-1 is a hormone that normally helps some types of cells to grow.
- While there may be a link between IGF-1 and cancer, the exact nature of this link remains unclear. It is not clear that drinking milk produced using rBGH significantly increases IGF-1 levels in humans or adds to the risk of developing cancer.
- The available evidence shows that the use of rBGH can cause adverse health effects in cows. The evidence for potential harm to humans is inconclusive.
- The American Cancer Society has no formal position regarding rBGH.

- There is no conclusive research showing humans absorb hormones from cows (such as estrogen), thus possibly increasing hormone related cancers.
- If consuming dairy, it is recommended to have lower-fat dairy (in the setting of patients not experiencing weight loss and/or malnutrition), to help maintain a healthy weight and lower cholesterol for overall health.
- The AICR does not have a specific recommendation for dairy intake and cancer prevention.


What about cancer
“superfoods?”

- The word “superfood” is a very popular marketing term and is often used to talk about foods that are supposed to improve health and prevent diseases such as cancer.

- This is not backed by science, and there is no **one** “superfood” or nutrient that will cure or prevent cancer.

- If you remove the term “superfood,” what remains are usually plant foods, and foods which have not been proven to prevent cancer on their own, such as broccoli and blueberries.


Do I need to consume organic foods?

- According to the AICR, little scientific evidence indicates that eating organic foods lowers cancer risk, and pesticides used on conventional produce have not been directly linked to cancer.
- There is also not strong evidence that organic foods contain more vitamins, minerals, or antioxidants than their conventional counterparts.
- We do know that farm workers who spend their days exposed to high levels of pesticides have a higher risk of cancer than the rest of the population, however we do not have conclusive research to prove eating non-organic foods is linked to higher risk of cancer.
- **No clear conclusions except one: eating a diet that is mainly from plants – whether they are organic or conventional – reduces the risk of cancer.**
- Encourage patients to rinse produce under running water to clean before consuming, to reduce bacterial exposure.

Diets and How to Address Patient Concerns


Should I go on the ketogenic diet?

- 70-80% fat, 10-20% protein, and 5-10% carbohydrate from total daily calories.
- No major cancer health organizations recommend the ketogenic diet for cancer patients, or for cancer prevention.
- Currently, we only have very small human studies and mainly rodent studies. Clinical trials are ongoing.
- Most promising is utilizing ketogenic diet for glioblastoma patients, a very specific brain cancer. However, this is not a current standard of care.

- The diet's strict limitation on starchy vegetables, whole grains, and fruits can lead to missing out on vitamins, minerals, and other healthy compounds found in plant foods.

- The diet could lead to digestive and other unpleasant side effects, and possibly abnormal liver enzyme levels and serum lipids.

- **This diet is grossly inconsistent with the robust evidence-based dietary guidelines outlined by AICR (mainly plant-based, high fiber, low in fat/saturated fat).**

- Even for people who comply with the diet, the metabolic effects may vary and the effect on cancer treatment is still uncertain.


Should I drink
alkaline water/follow
the alkaline diet?

- **Nothing** we consume changes the acidity or alkalinity of our blood.

- Supporters claim when certain foods are broken down, they produce a metabolic waste or "ash" that can be either alkaline or acidic. Supposedly the acidic ash makes your blood acidic and more vulnerable to diseases, such as cancer.

- The two organs responsible for maintaining that delicate balance between alkalinity and acidity are the kidneys (by retaining or excreting hydrogen and bicarbonate, depending on what our body needs) and the lungs (by getting rid of carbon dioxide).

- An alteration in pH, below 7.35 and above 7.45, can cause serious health conditions and even death. This is why our body has compensatory mechanisms in place to sustain the narrow range, regardless of what we eat or drink.

Should I do a cleanse?

- Claims that herbs, spices, enemas, or drinks including coffee and teas can rid the body of toxins is unfounded by research.

- The body naturally removes waste through the liver and colon.

- Cleanses can result in malnutrition from starvation and dehydration.

- Days or weeks on a strict concoction may also lead to:
  - GI losses or inadequate fluid intake.
  - Dangerous electrolyte imbalances.
  - Certain herbs can cause organ damage.

Take Away: Reduce toxins in your body by eating fresh, whole foods, decrease processed foods and stay hydrated with plain water. Increase fiber intake, which has been shown to help decrease cancer risk and improve GI transit time and liver health.

Should I fast during treatment?

- According to a study in *CA: A Cancer Journal for Clinicians*, fasting may be considered in adults who wish to lose weight for cancer prevention, but whether fasting itself affects cancer-related metabolic and molecular pathways remains unanswered.

- There are several observational studies and a few very small clinical trials that suggest fasting in patients with cancer who receive chemotherapy may be safe and may reduce chemo-related toxicity and tumor growth. *However*, there is minimal data from human clinical trials.

- Risks of fasting during treatment far outweigh the still unknown benefits, including dehydration, malnutrition and unintended weight loss.

- Post-treatment, fasting may have potential benefits for other metabolic conditions common in survivors, such as obesity, diabetes, and cardiovascular disease.

Food Insecurity and Adequate Nutrition

- The U.S. Department of Agriculture defines food insecurity as the **"limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways."**

- In a 2019 article published in the journal *Cancer*, researchers observed food insecurity may lead to higher incidence of cancer, poor cancer treatment outcomes, and may lead to additional emotional distress due to having to choose between cancer care and food.

- We are **ALL** responsible for screening and discussing food availability with our patients. Utilize your social work team and RD for additional support.

- **Continue to encourage <u>calories</u> overall and <u>food safety</u> as most important.**

- Calories and nourishment are part of treatment plan.

- Frozen and canned foods/produce are safe and healthy options. Having canned produce is better than not having it at all.

- Encourage shelf-stable foods: protein bars/granola bars, trail mix, dried fruit (cranberries, dates, figs, apricots, cherries, etc.), nuts, seeds, crackers, cookies, dry cereal, muffins, pretzels, jerky, pudding, popcorn, potato chips, chocolate, apple sauce, roasted chick peas, biscuits, etc.

- Discuss importance of food safety:
  - Does patient have a refrigerator to store perishables?
  - Does patient have a way to cook raw meat/fish?
  - Check expiration dates; important to adhere to during therapy.

- National Hunger Hotline at 1-866-348-6479 (1-866-3-HUNGRY); for Spanish, call 1-877-842-6273. Or visit www.networks.whyhunger.org.

- Financial Resources | Cancer.Net

- **Resources for Oral Nutrition Supplements:**
  - **Abbott Pathways**: Staff helps patients navigate if they qualify for free or insurance covered oral nutrition supplements. Form needs to be signed and submitted by a physician.
  - **Kate Farms:** Free sample program for oral nutrition supplements. Information on website.
  - **Oley Foundation:** Non-profit home nutrition therapy community and advocacy group. Offers free oral nutrition supplements, tube feeding/tube feeding supplies.

- Some insurance companies do offer oral nutrition supplement coverage (except Medicare) if nutritionally warranted (for example, patient has severe malnutrition).

Should I be taking any supplements?

Supplements include:
Vitamins/Minerals/Herbals/Botanicals

- **Currently, there are no supplements which treat or prevent cancer.**
- Supplements are not recommended, as they may interfere with treatment mechanism of action, notably for radiation and chemotherapy.
- May interfere with liver enzyme functions needed to properly metabolize chemotherapy.
- Certain vitamins in large concentrated doses can interfere with lab results, such as Biotin.
- The safety and efficacy claims for supplements do not have to be proven to be marketed to the public, and products may even contain different dosage than on packaging.

Should I be taking antioxidants during treatment?

- It is possible antioxidants may protect tumor cells, in addition to healthy cells, from the oxidative damage intentionally caused by conventional treatments. This, in turn, may reduce the effectiveness of the treatments.

- We need more research to definitively settle the question of whether taking antioxidants in supplement form during cancer treatment is harmful or helpful.

- There is strong research that taking too much beta carotene might be linked to *higher* risk of lung cancer and mortality for previous and current smokers.

- **There is no evidence to support that antioxidant-rich, whole foods or drinks should be avoided during cancer therapy.**

- According to the NIH, to date nine randomized controlled trials of dietary antioxidant supplements for cancer prevention have been conducted worldwide. **Overall, the clinical trials did not provide evidence that dietary antioxidant supplements are beneficial in primary cancer prevention.**

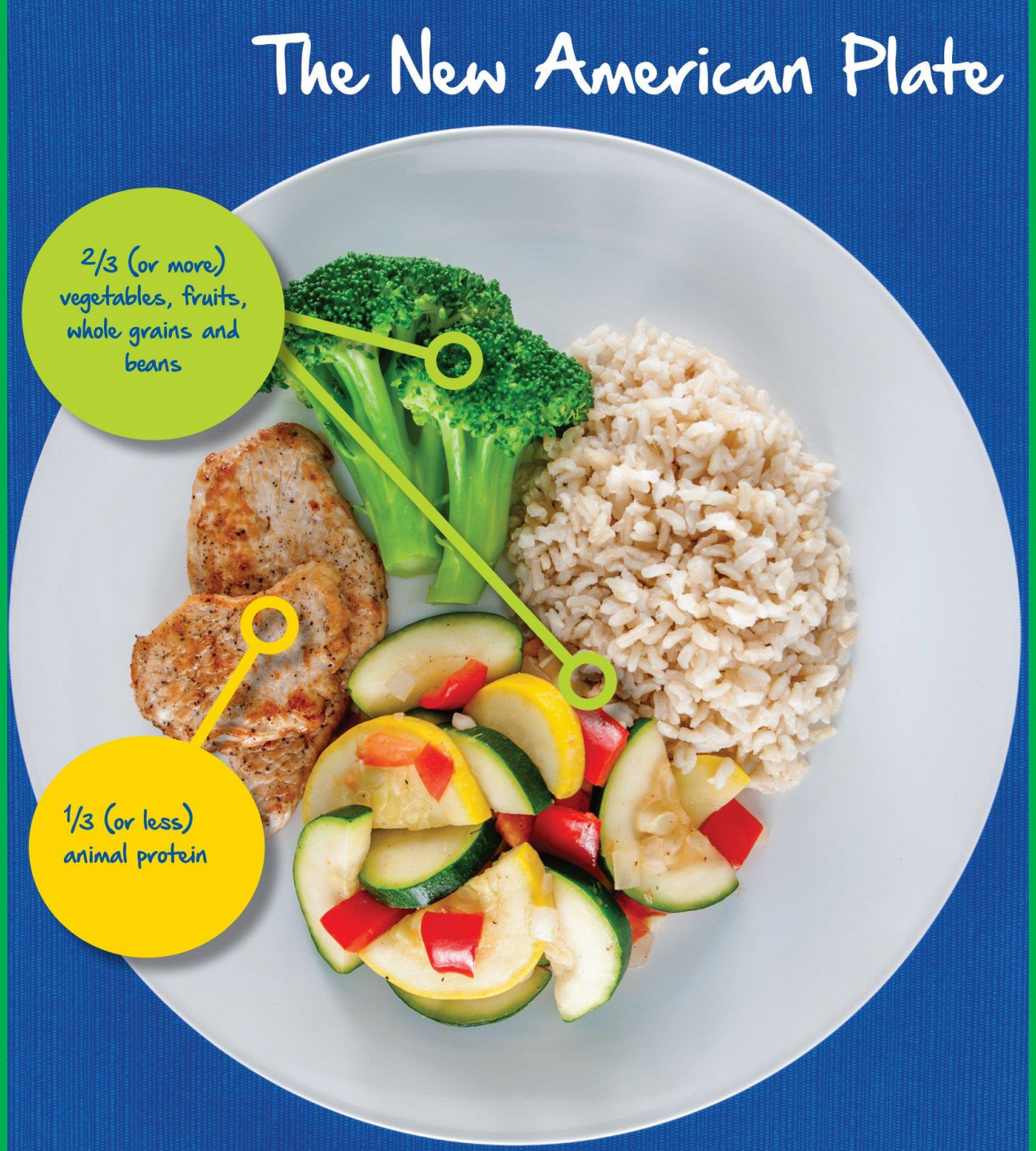
- Antioxidants tend to work best in combination with other nutrients, plant chemicals, and even other antioxidants.

- For example, a cup of fresh strawberries contains about 80 mg of vitamin C and 3 g of fiber. A supplement containing 500 mg of vitamin C does not contain fiber or the polyphenols naturally found in strawberries, which also possess antioxidant activity and may team up with vitamin C to fight disease.

Current AICR Recommendations

1. Be a healthy weight with less adipose tissue and more muscle mass.
2. Be physically active-150 minutes weekly, or 30 minutes, 5 days a week.
3. Eat a diet rich in whole grains, vegetables, fruits and beans. Goal is 30 grams of fiber daily.
4. Limit consumption of "fast foods" and other processed foods high in fat, starches or sugars.
5. Limit consumption of red meat to 12-18 ounces cooked weight weekly, and limit intake of processed meat.
6. It is best to not drink alcohol at all. Strong evidence that alcohol is linked to six cancers, and even one small glass can increase risk.
7. Limit consumption of sugar-sweetened beverages; preferably do not drink any.
8. Do not use supplements for cancer prevention.
9. For mothers, breast feed if possible.
10. After a cancer diagnosis, follow recommendations if you can.

The New American Plate



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Recommended Resources and Handouts Provided

- PDF of Good and Cheap Cookbook.
- Handout on Food security from the Association of Community Cancer Centers.
- Handout on summary of food myths and malnutrition from the Academy of Nutrition and Dietetics.

Links

- Cancer Prevention Reviews - Karen Collins, MS, RDN, CDN, FAND (karencollinsnutrition.com)
- Foods That Fight Cancer - American Institute for Cancer Research (aicr.org)
- Creating Plant-Based Meals with AICR's New American Plate - AICR

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THANK YOU.

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References

Aapro, M., et al. "Early recognition of malnutrition and cachexia in the cancer patient: A position paper of a European School of Oncology Task Force." *Annals of Oncology*, vol. 25, no. 8, Aug. 2014, pp. 1492–1499, https://doi.org/10.1093/annonc/mdu085.

Adewumi Akanji, Musbau, et al. "The two sides of dietary antioxidants in cancer therapy." *Antioxidants - Benefits, Sources, Mechanisms of Action*, 2021, https://doi.org/10.5772/intechopen.94988.

"Antioxidant Supplements: What You Need to Know." *National Center for Complementary and Integrative Health*, U.S. Department of Health and Human Services, July 2023, www.nccih.nih.gov/health/antioxidant-supplements-what-you-need-to-know.

"Autophagy: Definition, Process, Fasting & Signs." *Cleveland Clinic*, my.clevelandclinic.org/health/articles/24058-autophagy#:~:text=Autophagy%20allows%20your%20body%20to,potentially%20preventing%20and%20fighting%20disease. Accessed 6 Sept. 2023.

Baudry, Julia, et al. "Association of frequency of organic food consumption with cancer risk." *JAMA Internal Medicine*, vol. 178, no. 12, 1 Oct. 2018, p. 1597, https://doi.org/10.1001/jamainternmed.2018.4357.

Bossi, Paolo, et al. "The spectrum of malnutrition/cachexia/sarcopenia in oncology according to different cancer types and settings: A narrative review." *Nutrients*, vol. 13, no. 6, 2021, p. 1980, https://doi.org/10.3390/nu13061980.

Bowers, Laura W., et al. "The role of the insulin/IGF system in cancer: Lessons learned from clinical trials and the energy balance-cancer link." *Frontiers in Endocrinology*, vol. 6, 15 May 2015, https://doi.org/10.3389/fendo.2015.00077.

References

Bozzetti, Federico. *Review of: "Intermittent Fasting in the Prevention and Treatment of Cancer,"* 26 Aug. 2021, https://doi.org/10.32388/wfx260.

"Breast Cancer." *American Institute for Cancer Research*, 4 June 2020, www.aicr.org/research/the-continuous-update-project/breast-cancer/.

Champ, Colin E., et al. "Targeting metabolism with a ketogenic diet during the treatment of glioblastoma multiforme." *Journal of Neuro-Oncology*, vol. 117, no. 1, 19 Jan. 2014, pp. 125–131, https://doi.org/10.1007/s11060-014-1362-0.

Chlebowski, Rowan T. "Influence of diet on prognosis following treatment for breast cancer: The women's healthy eating and living (WHEL) randomized trial." *Breast Diseases: A Year Book Quarterly*, vol. 19, no. 1, 28 June 2002, pp. 31–32, https://doi.org/10.1016/s1043-321x(08)80008-2.

Clark, Cynthia. "Is It Safe to Take Antioxidant Supplements during Chemotherapy and Radiation Therapy?" *Oncology Nutrition DPG*, Apr. 2013, www.oncologynutrition.org/erfc/eating-well-when-unwell/antioxidant-supplements-safe-during-therapy.

Collins, Karen. "Enhancing Cancer Therapy: Updates from the AICR Research Conference." *American Institute for Cancer Research*, 3 Feb. 2023, www.aicr.org/resources/blog/enhancing-cancer-therapy-updates-from-the-aicr-research-conference/.

Collins, Karen. "Soy and Breast Cancer: Headlines in Context of Research." *Karen Collins, MS, RDN, CDN, FAND*, 7 Aug. 2023, karencollinsnutrition.com/soy-and-breast-cancer-where-are-we-now/.

References

Collins, Karen. "Soy and Cancer: Myths and Misconceptions." *American Institute for Cancer Research*, 25 Jan. 2022, www.aicr.org/resources/blog/soy-and-cancer-myths-and-misconceptions/?gad=1&gclid=Cj0KCQjwiIOmBhDjARIsAP6YhSUcPDWT2eA0VBiDeAP9jPbK1fiohUp2S2jcveeK-_j789kFnPC3q4MaArqXEALw_wcB.

Dal Bello, Simone, et al. "Ketogenic diet in the treatment of gliomas and Glioblastomas." *Nutrients*, vol. 14, no. 18, 17 Sept. 2022, p. 3851, https://doi.org/10.3390/nu14183851.

Debras, C, et al. "Total and added sugar intakes, sugar types and cancer risk: Results from the NutriNet-Santé cohort." *European Journal of Public Health*, vol. 30, no. Supplement_5, 11 Nov. 2020, https://doi.org/10.1093/eurpub/ckaa165.572.

Friedrich, Nele, et al. "The association between IGF-I and insulin resistance." *Diabetes Care*, vol. 35, no. 4, 13 Mar. 2012, pp. 768–773, https://doi.org/10.2337/dc11-1833.

Gannavarapu, Bhavani S., et al. "Prevalence and Survival Impact of Pretreatment Cancer-Associated Weight Loss: A Tool for Guiding Early Palliative Care." *Journal of Oncology Practice*, vol. 14, no. 4, 14 Apr. 2018, https://doi.org/10.1200/jop.2017.025221.

Greger, Michael. "The Difference between Alpha and Beta Receptors Explain Soy's Benefits." *NutritionFacts.Org*, 24 Mar. 2020, nutritionfacts.org/blog/the-difference-between-alpha-and-beta-receptors-explain-soys-benefits/.

Ko, Kwang-Pil, et al. "Dietary intake and breast cancer among carriers and noncarriers of BRCA mutations in the Korean Hereditary Breast Cancer Study." *The American Journal of Clinical Nutrition*, vol. 98, no. 6, Oct. 2013, pp. 1493–1501, https://doi.org/10.3945/ajcn.112.057760.

References

Ma, Xiao, et al. "Excessive intake of sugar: An accomplice of inflammation." *Frontiers in Immunology*, vol. 13, 31 Aug. 2022, https://doi.org/10.3389/fimmu.2022.988481.

Matthew TontonozThursday, December 1. "No Sugar, No Cancer? A Look at the Evidence." *Memorial Sloan Kettering Cancer Center*, 1 Dec. 2016, www.mskcc.org/news/no-sugar-no-cancer-look-evidence.

McEvoy, Miles. "Organic 101: What the USDA Organic Label Means." *USDA*, 22 Mar. 2012, www.usda.gov/media/blog/2012/03/22/organic-101-what-usda-organic-label-means.

"Meat, Fish, Dairy and Cancer Risk." *WCRF International*, 4 May 2023, www.wcrf.org/diet-activity-and-cancer/risk-factors/meat-fish-dairy-and-cancer-risk/.

Messina, Mark. "Impact of soy foods on the development of breast cancer and the prognosis of breast cancer patients." *Complementary Medicine Research*, vol. 23, no. 2, 2016, pp. 75–80, https://doi.org/10.1159/000444735.

Middha, Pooja, et al. "B-carotene supplementation and lung cancer incidence in the alpha-tocopherol, beta-carotene cancer prevention study: The role of tar and Nicotine." *Nicotine & Tobacco Research*, vol. 21, no. 8, 8 June 2018, pp. 1045–1050, https://doi.org/10.1093/ntr/nty115.

Nelson, Mya. "Ketogenic Diet and Cancer Treatment." *American Institute for Cancer Research*, 27 Jan. 2023, www.aicr.org/resources/blog/the-ketogenic-diet-and-cancer-treatment-what-patients-should-know/.

"Nutrition in Cancer Care (PDQ®)." *National Cancer Institute*, www.cancer.gov/about-cancer/treatment/side-effects/appetite-loss/nutrition-hp-pdq. Accessed 25 Aug. 2023.

References

"Overview." *USDA ERS - Food Security in the U.S.*, www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/. Accessed 6 Sept. 2023.

Paruthiyil, Sreenivasan, et al. "Estrogen receptor β inhibits human breast cancer cell proliferation and tumor formation by causing a G2 cell cycle arrest." *Cancer Research*, vol. 64, no. 1, 1 Jan. 2004, pp. 423–428, https://doi.org/10.1158/0008-5472.can-03-2446.

Patel, Kanishka G., et al. "Food insecurity screening: A missing piece in cancer management." *Cancer*, vol. 125, no. 20, 9 July 2019, pp. 3494–3501, https://doi.org/10.1002/cncr.32291.

"Recombinant Bovine Growth Hormone." *American Cancer Society*, www.cancer.org/cancer/risk-prevention/chemicals/recombinant-bovine-growth-hormone.html. Accessed 6 Sept. 2023.

Shu, Xiao Ou. "Soy food intake and breast cancer survival." *JAMA*, vol. 302, no. 22, 9 Dec. 2009, p. 2437, https://doi.org/10.1001/jama.2009.1783.

Simon, Stacy. "Soy and Cancer Risk: Our Expert's Advice." *American Cancer Society*, 29 Apr. 2019, www.cancer.org/cancer/latest-news/soy-and-cancer-risk-our-experts-advice.html.

"Soy Isoflavones." *Linus Pauling Institute*, 3 Jan. 2023, lpi.oregonstate.edu/mic/dietary-factors/phytochemicals/soy-isoflavones.

"Soy: Intake Does Not Increase Risk for Breast Cancer Survivors." *American Institute for Cancer Research*, 3 Aug. 2021, www.aicr.org/cancer-prevention/food-facts/soy/.

References

Tan-Shalaby, Jocelyn. "Ketogenic Diets and Cancer: Emerging Evidence." *Federal Practitioner : For the Health Care Professionals of the VA, DoD, and PHS*, U.S. National Library of Medicine, Feb. 2017, www.ncbi.nlm.nih.gov/pmc/articles/PMC6375425/.

Teresa, Teresa. "Organic Foods and Cancer Risk: Separating Myth from Fact." *American Institute for Cancer Research*, 26 Jan. 2023, www.aicr.org/resources/blog/organic-foods-and-cancer-risk-separating-myth-from-fact/?gad=1&gclid=Cj0KCQjw0bunBhD9ARIsAAZl0E3amtmkq89F9AqCwiISR7ybu6bcO42DH0HMj8rL79jk_NbKEbydkKsaAm4BEALw_wcB.

Van Tap, Nguyen, et al. "Malnutrition in hospitalized cancer patients: A single-center, cross-sectional study in southern Vietnam." *SAGE Open Medicine*, vol. 11, 3 May 2023, p. 205031212311714, https://doi.org/10.1177/20503121231171491.

Weisberg, Tracey. *Improving Cancer Care by Addressing Food Insecurity*, www.accc-cancer.org/docs/documents/oncology-issues/articles/2020/ja20/ja20-improving-cancer-care-by-addressing-food-insecurity.pdf. Accessed 6 Sept. 2023.