Reducing Cancer Recurrence with Plant-Based Nutrition

Webinar Questions Answered by Alison Tierney, MS, RD, CD, CSO

- What is the protein recommendation to minimize lean muscle loss?

  Providing dietary protein recommendations need to be individually assessed. However, to give some direction the following are the current recommendations, per *Oncology Nutrition for Clinical Practice, Second Edition*:

Condition	Protein Requirement (g/kg/d)
Dietary Reference Intake	0.8
Healthy older adult	At least 1.0-1.2
Acutely or chronically ill older adult	1.2-1.5
Adult with cancer	1.0-1.5
Adult with cancer cachexia	1.2-2.5
Adult undergoing hematopoietic stem cell transplant	1.5

- What recommendations do you have for those who are super tasters and will NOT eat crucifers, no matter how prepared?

  If patient refuse to consume cruciferous vegetables, as their dietitian, I would encourage a wide variety of vegetables, especially dark-leafy greens.

- What percentage of diet should be plant vs animal-based foods?

  Currently, there is no specific recommendation. However, many studies find the more calories from whole, unprocessed plant-foods the greater the disease risk reduction. As a dietitian, I encourage practitioners to assess where their patient current is, what their ultimately goals are, and go from there. Optimally, I would encourage my patients to adopt a plant-forward approach with at least 80% of calories from whole plant-foods.

- When you do discuss keeping a healthy weight to patients with obesity, how do you start that conversation? What are tips you can share about making such a sensitive topic easier to explore with patients?

  Professionally, I ensure my conversation with a patient does not start with weight at all. However, when we do approach the topic of weight, I inform patients weight is one data point within the whole picture. I also find it important to be able to listen to the patient, understand their health history, and pick up on non-verbal cues to see how I will continue to discuss the topic. However, I find it much more important and effective to focus on small but impactful dietary changes they may lead to a healthier weight.

- What about venison, elk, bison, etc? Where does that fall as a carcinogen since they are leaner meats?

The WCRF & AICR identify a red meat as: "All types of muscle meat from a mammal, including beef, veal, pork, lamb, mutton, horse and goat." See Limit Red Meat & Processed Meat for further information.

- I'm curious how breastfeeding reduces baby's risk of cancer. Is this because it reduces risk of obesity which then would reduce cancer risk?

  There is strong evidence that breastfeeding protects against breast cancer in the mother and promotes healthy growth in the infant. See "For mothers: breastfeed your baby, if you can".

- What are your thoughts on the influence of artificial sweeteners on cancer development?

  Per the WCRF & AICR: "There is no strong evidence in humans to suggest that artificially sweetened drinks with minimal energy content, such as diet sodas, are a cause of cancer. The evidence that artificially sweetened drinks help prevent weight gain, overweight and obesity is not consistent. The available evidence is insufficient to make a recommendation regarding artificially sweetened drinks."

- Has there been any research supporting the benefits of grass-fed beef; especially since grass-fed beef has been shown to have a higher amount of antioxidants?

  According to my research, and to my knowledge, there is no research supporting grass-fed beef over conventionally raised beef as it relates to cancer risk. The WCRF & AICR report red meat increases the risk of colorectal cancer and should therefore be limited, grass-fed or not grass fed.

- Isn't dairy or yogurt related to reducing colon cancer risk?

  There is some research that consuming dairy products reduces the risk of colorectal cancer, as well as calcium supplementation. Further research is needed to discern whether it is the calcium or dairy products themselves that reduces the risk of colorectal cancer.

- Specific to triple-negative breast cancer, what does the literature say about nutrition recommendations, plant-forward diets, etc. in the post-treatment period?

  Although there is less research available regarding TNBC, a plant-forward approach is recommended based on the research available.

- What are your thoughts about protein needs? Methionine? Whey and MTOR?

  Providing dietary protein recommendations need to be individually assessed. However, to give some direction the following are the current recommendations, per *Oncology Nutrition for Clinical Practice, Second Edition*:

Condition	Protein Requirement (g/kg/d)
Dietary Reference Intake	0.8
Healthy older adult	At least 1.0-1.2
Acutely or chronically ill older adult	1.2-1.5

Adult with cancer	1.0-1.5
Adult with cancer cachexia	1.2-2.5
Adult undergoing hematopoietic stem cell transplant	1.5

- Can we still follow dietary guidelines for dairy, 3 servings per day, or should we recommend dairy alternatives with respect to CA prevention?

  Research in dairy varies based on different cancer sites. Patients should be counseled to meet their calcium needs through diet, as able. Non-dairy options can help meet those calcium needs as dairy products are not necessary to human health.

- Many of my ER/PR+ breast cancer patients ask which foods to avoid to not increase estrogen levels. Besides limiting alcohol and choosing whole plant-based foods, anything else you recommend?

  Per the WCRF & AICR, as it relates to breast cancer, there is strong evidence that:

  - Undertaking vigorous physical activity DECREASES the risk of premenopausal breast cancer
  - Breastfeed DECREASES the risk of breast cancer (unspecified) in the mother
  - Consuming alcoholic drinks INCREASES the risk of premenopausal breast cancer

  Per the WCRF & AICR, as it relates to breast cancer, there is There is some evidence that:

  - Consuming non-starchy vegetables might decrease the risk of oestrogen-receptor-negative (ER–) breast cancer (unspecified)
  - Consuming foods containing carotenoids might decrease the risk of breast cancer (unspecified)
  - Diets high in calcium might decrease the risk of premenopausal breast cancer
  - Being physically active might decrease the risk of premenopausal breast cancer

- I work in HIV and many of my patients do not have the privilege to follow all these recommendations due to access/cost - what would you say is the most impactful step to take?

  Access and cost, of course, is an important consideration. It is often believed that following a plant-forward diet is more expensive. However, many plant-based options are inexpensive in comparison to their dairy and meat counterparts. Recommendations should include dry (or canned) beans, lentils, rice, etc. Frozen and/or canned fruits and vegetables.

  But of all considerations, as it relates to dietary choices, the inclusion of more fruits and vegetables (no matter fresh, frozen, or canned) the better.

- How do we feel about the cancer Society, the Academy of Nutrition and Dietetics and others being sponsored by corporations and organizations like the Beef Council, The Dairy Council, The Egg Council…etc?

  I would always encourage individuals to have awareness of potential conflicts of interest. The recommendations highlighted in this webinar are presented by the WCRF & AICR, a not-for-profit organization that leads and unifies a network of cancer prevention charities with a global reach.

- Where can we find that AICR nutrition chart?

  You can find it here.

- What would you tell an Oncologist who discourages antioxidant intake during treatment related to a concern for food/drug interaction?

  I would ask to have a conversation with the oncologist to discuss the recommendation. To the discussion, I would acknowledge their concern but also emphasize the difference between food intake verses supplement intake as it relates to antioxidants.

- Do you have a phytonutrient handout that you recommend?

  I like the "Eating the Rainbow" handout from PCRM.

- What do you know about consuming more highly processed forms of soy (in the form of soy protein isolates) typically found in vegan protein powders or faux vegan foods, and its ability to increase IGF-1?

  In my personal research, I have not seen research suggesting soy protein increasing IGF-1. However, animal proteins have been found to increase IGF-1 levels. Research has shown when plant-protein replaces animal protein, risk for mortality and morbidity decreases.

- Do you recommend organic fruits and vegetables for phytonutrients or to avoid chemicals and toxins?

  It is important to consider cost and access in terms of this recommendation. More whole, plant-foods are always recommended, regardless of organic status. Although, research has identified organic foods tend to have more phytochemicals, which may in turn reduce cancer risk further. As for chemicals and toxins, this is also an important consideration as environment can play a role in cancer development.

- Do the cruciferous vegetables have to be cooked to access the sulforaphanes?

  No! In fact, there is more access to sulforaphanes when raw. To optimize these benefits in cooked cruciferous vegetables, the veggie should be chopped raw, then exposed to the air (oxygen) for 40 minutes before cooking to allow the enzymatic reaction to occur.

- With curcumin--several studies related to its anti-inflammatory effects use higher doses of curcumin (typically 1g) however the amount in turmeric powder is much lower. In this instance would you recommend supplementing for its benefits?

  When it comes to supplements, I love to encourage clients/individuals to aim to make turmeric regular consumption, such as adding to soups, avocado toast, smoothies, etc. It is also important to consider bioavailability, which is enhanced with black pepper (pipeline) and a fat source in the food. But pertaining more to your question, I professionally believe supplementing curcumin may be of benefit. However, depending on the individual, we need to be mindful of possible or unknown interactions with high-dose supplementation (e.g. a patient undergoing chemotherapy).

As dietitians, I think it is important to emphasize the opportunities we have to introduce it to our diets but also make our patients aware of potential risk of high dose supplementation.

- Can you clarify if it is more protective to eat the immature green soybeans (edamame) or mature, whole white soybeans? Is there a difference regarding the maturity of the soybean and greater cancer protection?

  I don't believe research distinguishes between the two. In fact, a lot of research on soy consumption is looked at when using soy milk.

- Does cooking destroy phytonutrients?

  Not necessarily! It is dependent on the food, how it is cooked, and how long it is cooked. Dr. Greger has a video reviewing some of these, with the research cited below the video.

- What are your thoughts on eating more plant-based diet only vs plant-based diet plus supplements like adding on supplements of foods which typically help prevent cancer?

  Per the WCRF & AICR: There is strong evidence from randomized controlled trials that high-dose beta-carotene supplements may increase the risk of lung cancer in some people. There is no strong evidence that dietary supplements, apart from calcium for colorectal cancer, can reduce cancer risk.

- What about the dirty dozen of fruits and vegetables? Does that reduce the phytonutrient impact?

  It is important to consider cost and access in terms of recommending organic foods. More whole, plant-foods are always recommended, regardless of organic status. Although, research has identified organic foods tend to have more phytochemicals, which may in turn reduce cancer risk further. As for chemicals and toxins, this is also an important consideration as environment can play a role in cancer development.

- I'm not familiar with Genistein. Where can I learn more about this nutrient?

  Genistein is an isoflavones – along with daidzein and glycitein. You can learn more about soy and its benefit against cancer here and here.

- What are your thoughts on intermittent fasting to help trigger autophagy which can have a role in tumor suppression?

  I think the data is very promising! You can find some research and data here.

- A PCP stated that Genistein has estrogenic effects & may play a role in breast cancer development so should be avoided as a supplement such as Fosteum Plus which contains Genistein to control osteoporosis. Does the research show Genistein is a concern for the development of breast cancer?

  You can learn more about soy and its benefit against cancer here and here.

- What calculations do you use for protein needs during treatment?

  Providing dietary protein recommendations need to be individually assessed. However, to give some direction the following are the current recommendations, per *Oncology Nutrition for Clinical Practice, Second Edition*:

Condition	Protein Requirement (g/kg/d)
Dietary Reference Intake	0.8
Healthy older adult	At least 1.0-1.2
Acutely or chronically ill older adult	1.2-1.5
Adult with cancer	1.0-1.5
Adult with cancer cachexia	1.2-2.5
Adult undergoing hematopoietic stem cell transplant	1.5

- Any specific recommendations for Omega-3 supplements?

  I professionally recommend an algae-based omega-3 supplement with EPA/DHA, when appropriate for my patients.

- Are algae-based calcium supplements as absorbable as other forms?

  According to my research, algae-based calcium supplements are equivalent as it relates to absorbability.

- Do you recommend an app or another nutrition program to patients to monitor intake of the different nutrients of concern?

  Professionally, I typically do my own nutrient analysis. I use USDA Food Central to help.

- Any concerns about soy protein products & breast cancer?

  You can learn more about soy and its benefit against cancer here and here.

- Is there a plant-based cookbook or oncology cookbook you recommend?

  There are so many awesome plant-based cookbooks! I wrote a blog post on some here.

- What do you recommend to your cancer survivors regarding dairy intake, assuming they aren't vegan?

  I make recommendations based on the patient's personal preferences and access/financial resources. I work with them on a variety of ways where dairy may be reduced or swapped in their diet.

- Have read quite a bit about using Ketogenic diets and fasting in cancer patients - any comments on this?

  Professionally, I do not recommend a ketogenic diet in cancer, unless within glioblastomas – where there is positive research. If I have the option, I will refer a patient to a RD who is more knowledgeable in a therapeutic ketogenic diet.

  As for fasting, you can find some research and data here.

- Do you have an estimated macronutrient distribution percentage that you recommend patients to follow if they choose to track macros?

  It is *very uncommon* for me to have patients track macros. However, the platform I use for my practice, Practice Better, has an option for food logging with nutrient analysis.

- How about patients and clients with history of eating disorders - would a plant-based diet still be recommended to them, considering there is a risk of triggering ED behaviors?

  This is another important reason patients require an individual approach – to assess health history, current health, cancer history, etc. Plant-based diets may still be appropriate, depending on the patient's history. Again, plant-based diets don't necessarily mean 100% plant-based or vegan – it can simply be a plant-forward approach. Plant-based diets can, and should be done, using an intuitive approach. Contrary to some popular belief, plant-forward approaches utilize an intuitive approach.

- What kind of smoothies do you recommend?

  I like to customize smoothies to a patient's likes/preferences! Typically, my recommendations will include a mix of frozen berries, unsweetened soy milk, dates added for sweetness, and often a nut butter. However, my recommendations will vary depending on patient needs.

- Can you review vegan sources of calcium for best absorption? Low oxalate vegetable that are high calcium. Does coffee and tea interfere with absorption?

  There are many non-dairy sources of calcium! And it is not as difficult to achieve the RDA of calcium in a plant-based diet as many might think. Yes, the bioavailability of calcium varies from food to food – such as foods higher in oxalates. However, in many cases, the percentage of absorbable calcium in plants is as good as dairy sources, if not better. For example – 30% of calcium in milk has been found to be absorbable, which is the same for fortified plant-based milks and calcium-set tofu. Whereas around 60% of calcium in broccoli is absorbable. Sources: 1, 2, 3

  However, it is also important we counsel our patients that calcium intake is not the only important factor in bone health. Other factors include, but are not limited to: vitamin D status, regular weight-bearing exercise, adequate protein intake, sodium intake, etc.

  Here are some of the top plant-based sources of calcium:

  Calcium-set tofu, firm – 326 mg (1/2 cup)

Plant based milk, calcium fortified – 300 mg (1 cup)
Tahini – 128 mg (2 tbsp)
White beans, cooked – 96 mg (1/2 cup)
Almonds – 66 mg (20 nuts)
Kale, raw – 53 mg (1 cup)

- What recommendations do you have for patients, who have medications during treatment, which may cause weight gain i.e. steroids etc.

  My recommendations are very individualized for patients undergoing cancer treatment. Their actual course of treatment, side effects, medications, etc. are all important considerations. I recommend the book Oncology Nutrition for Clinical Practice, 2nd Edition for a much closer look at clinical practice nutrition during treatment.

- Do you know of resources for plant based renal diets?

  I would recommend the Vegetarian Nutrition DPG.

- What nondairy sources of calcium do you recommend that are practical?

  There are many non-dairy sources of calcium! And it is not as difficult to achieve the RDA of calcium in a plant-based diet as many might think. Yes, the bioavailability of calcium varies from food to food – such as foods higher in oxalates. However, in many cases, the percentage of absorbable calcium in plants is as good as dairy sources, if not better. For example – 30% of calcium in milk has been found to be absorbable, which is the same for fortified plant-based milks and calcium-set tofu. Whereas around 60% of calcium in broccoli is absorbable. Sources: 1, 2, 3

  However, it is also important we counsel our patients that calcium intake is not the only important factor in bone health. Other factors include, but are not limited to: vitamin D status, regular weight-bearing exercise, adequate protein intake, sodium intake, etc.

  Here are some of the top plant-based sources of calcium:

  Calcium-set tofu, firm – 326 mg (1/2 cup)
  Plant based milk, calcium fortified – 300 mg (1 cup)
  Tahini – 128 mg (2 tbsp)
  White beans, cooked – 96 mg (1/2 cup)
  Almonds – 66 mg (20 nuts)
  Kale, raw – 53 mg (1 cup)

- How long can you take indole 3 carbinol supplements?

  I wouldn't necessarily recommend indole 3 carbinol supplements. In fact, I don't think I ever have. It is always best to get this phytonutrient from food.

However, supplemental form has been deemed "possibly safe when used orally and appropriately in medicinal amounts. Doses up to 400 mg daily have been used safely for 3-76 months. There is also some evidence that 400 mg twice daily can be used safely for 4 weeks", per the Natural Medicines Library.

- How do you steer patients away from supplements and get them to eat whole foods? A big one I find is curcumin.

  I think it is important to share with patients the potential risks of supplements – such as in curcumin supplement and potential for heavy metal contamination.

- Can you clarify if fiber amount is to be based on wt. - 10g /100 lbs or should 30g be minimum for all weights?

  The recommended amount of dietary fiber is 14 grams for every 1,000 calories per day, or, about 25 grams for women and 38 grams for men each day. Exact needs may vary depending on your energy needs.

- If a person had pelvis radiation, and their digestion has changed, i.e., floating stools, undigested foods in stools, and they even had IBS prior to radiation, what GI test would you recommend and what do you rec for food intakes?

  Radiation to the pelvis commonly results in loose stools/diarrhea. I would be sure to take a closer look at this patient's health history and ask for a food log included with bowel movements and symptoms. There may be food intolerances here and I would make recommendations based on these food logs and patient symptoms.

- How do you encourage and educate on plant-based/nutrient dense diets when patients are having significant nutrition related side effects (n/v, no appetite, taste changes) and do not want to eat anything in general?

  My professional recommendations are always individualized. And during treatment, the primarily goal is weight maintenance. I consider the patients treatment protocol, side effects, etc. Depending on the patient's desires (some patients I work with do want to remain plant-based), I make recommendations accordingly.

- Is it Cook for Life or Cook for your Life as the resource?

  Here is the resource I referred to, Cook for Your Life.

- It was mentioned that milk causes an increase in IGF-1. Do you recommend not drinking milk?

  I typically recommend a reduction in milk consumption.

- To increase calories for a person on chemo would adding MCT oil be advisable, rather than olive or avocado oil?

  MCT may be advisable if there is difficultly with absorption.

- We advise against high-antioxidant supplements during chemoradiation therapy but encourage patients to continue an antioxidant-rich diet as able. I often get questions around curcumin supplements. Is there a large difference in the turmeric powder used for cooking vs the content of a USP-evaluated supplement? It seems that the amounts they would be taking in would be comparable.

  My concern regarding supplements are related to risk of heavy metal contamination. Therefore, I encourage the use of turmeric in spice form, if possible.

- Is microwaving meat = too high temp

  Anything that would increase the heat to 350 degrees Fahrenheit is considered high cooking temperature as it relates the HCA and other carcinogen development in animal protein cooking.

- Information about dairy. Is fat level important in effects or not?

  In the most recent studies, risks were similar for both full-fat and low-fat. Further research is needed.

- How to you cook the meat at those low levels and still get the nice texture on the surface that folks are looking at-rather than a boiled look like you get in a slow cooker. that is likely the reason folks haven't switched over.

  This would probably be a better question for a chef. ☺

- What is your take on the nitrates and nitrites in vegetables compared to meat?

  Nitrates in vegetables show a protective benefit! The difference is the amines & amides found within animal protein (that isn't present in plants). Nitrates + amines / amides = nitrosamine & nitroamides – which is the actual carcinogen.

- Do you know of any good resources for patients that don't eat a Eurocentric diet at home?

  The Physicians Committee for Responsible Medicine is doing a great job moving past the Eurocentric nutrition focus – for example their "Healthy India" program that recently launched. In fact, focusing on a wide variety of ethnic cuisines is incredibly beneficial since many cultures and ethnicities historically have a plant-forward approach.

- If you do that with the broccoli, are you losing the vitamin C if it is sitting out for 40 min finely chopped?

  No, more of the vitamin C is lost during cooking, rather than chopping raw broccoli and exposing it to the air.

- Should carrots be cooked to release the phytonutrient?

  Carrots are one vegetable that is optimized during cooking as it relates to its phytonutrient content. Source.