

# Vitamins & Supplements



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Proper nutrition is crucial to good health, but many Americans have difficulties accessing the vitamins and supplements prescribed by their doctors.

***Vitamins & Supplements*** is a recently published series of articles that explores the role of vitamins and supplements in maintaining proper nutrition.

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## Contents

Cancer Patients Can Benefit from Improved Nutrition Options.....	3
<i>Reason Health</i>	
Registered Dietitians Help Patients Improve Their Relationship Between Diet and Health .....	5
<i>Academy of Nutrition and Dietetics</i>	
The Role of Dietary Supplements during Cancer Treatment.....	8
<i>American Cancer Society</i>	

## Cancer Patients Can Benefit from Improved Nutrition Options

In 2018, Dr. Dhagash Joshi, MD, came to a career-changing realization in his role as a hospitalist physician at Marian Regional Medical Center in Santa Maria, California. His hospital, located near several large and growing cancer centers, was seeing an influx of oncology patients with complex needs. In caring for these patients, he discovered that as much as they needed medical care to thrive, they also needed proper nutrition.

His interest in nutrition was further piqued after attending a 2018 Academy of Nutrition and Dietetics Conference, where at one session, he was the lone physician in a room full of dietitians and nutritionists. He was especially intrigued by a conference presenter whose study showed that a weight loss of only 2.5 percent in body mass index (BMI) after a cancer diagnosis cuts the median length of survival nearly in half. Losing more weight reduces the median length of survival even more.

“As physicians, we do everything we can to care for patients, improve their quality of life, and extend their life through treatments such as surgery, chemotherapy and radiation,” he said. “But we’re missing a big piece of the puzzle—nutrition—which we often delegate to nutritionists and dietitians.”

The real “aha” moment for Dr. Joshi came when he was caring for a patient with aggressive biliary cancer. The patient had lost a tremendous amount of weight, and Dr. Joshi encouraged him to increase his calorie consumption, suggesting he regularly drink one of the nutritional supplement shakes available in grocery stores. The problem? The patient couldn’t bear the taste.

“After trying a couple of these supplement shakes, I had to agree with him,” Dr. Joshi said.

### Why Can’t Cancer Patients Get Proper Nutrition?

According to Dr. Joshi, cancer patients face several challenges maintaining adequate caloric intake. Often, cancer treatments such as chemotherapy and radiation cause nausea, vomiting, indigestion, and trouble swallowing, leading patients to avoid foods that can trigger these gastrointestinal distresses. In addition, cancer treatments place the entire body under constant stress, which serves to dampen appetite and reduce the desire or craving for food.

“Over half of Americans with cancer are malnourished,” Dr. Joshi said. “That number is even higher in certain cancers like pancreatic cancer.”

Dr. Joshi noted that patients who are malnourished will have a more difficult time tolerating aggressive treatment and will be weaker, more dehydrated and less able to fight off the infections that are possible with the lower blood cell counts common with chemotherapy.



*Dhagash Joshi*

“Over time, even a 200-calorie daily deficit can add up,” he said. “The goal should be 2,000 calories a day. If you have an off day, try to make up for it the next day.”

Dr. Joshi encourages patients with cancer to weigh themselves immediately upon diagnosis and every day thereafter, and to keep a log of their weight. His philosophy is that cancer patients should get their calories wherever and however they can – within reason. For example, he doesn’t recommend 2,000 calories a day in nutrition-empty food like soda and chips. He does recommend starting meals with the most calorie-dense foods possible. That may mean starting the meal with a steak instead of a salad, for example.

“Nutritional supplements are a good way to remind yourself to catch up on extra, nutrition-dense calories,” he said.

### **Nutritional Supplements and the Bliss Point**

After discovering – through interviews with patients and multiple rounds of taste-testing – that many of the nutritional shakes and supplements on the market were unpalatable to cancer patients, Dr. Joshi decided to take on the challenge of improving the options. His initial goal was to create a supplement that was not only wholesome, but also provided a taste experience like one would get with a box of luxury chocolates.

At the same time, he wanted to avoid the overly sweet taste that can cause a burning sensation or dryness in the mouth of cancer patients, whose taste receptors are compromised by chemotherapy or radiation.

“Taste and mouthfeel are extremely important to cancer patients,” he said. “If it doesn’t taste good and feel good, patients won’t drink it.”

Dr. Joshi and his team of nutritionists, physicians and food scientists spent three years tweaking his supplement formula to achieve the “bliss point” – the perfect combination of saltiness, sweetness and richness (fat) that rewards the brain and makes one want to consume the product again. The final formula in his line of Reason supplements contains a combination of European milk protein, coconut-derived MCT oil and natural flavors in a high-calorie (1.4/mL, or up to 450 calories per serving), low-glycemic-index supplement that is easy to swallow and digest and works for tube feeding.

Dr. Joshi concludes, “Whether patients get their nutrition from these new supplements, any other calorie-dense supplement, or any healthy, whole food diet they can tolerate, the important thing is to get the proper amount of carbohydrates, proteins, fats, vitamins, and minerals your body needs to maintain weight and energy and function at its best.”

## Registered Dietitians Help Patients Improve Their Relationship Between Diet and Health

In our last edition, we introduced you to one of the unsung heroes of a cancer patient's care team: the oncology pharmacist. In this edition of *Real World Health Care*, we're shining the spotlight on another member of a patient's professional care team: the Registered Dietitian Nutritionist (RDN).

RDNs are food and nutrition experts with a degree from an accredited dietetics program who have completed a supervised practice requirement, passed a national exam, and continue professional development throughout their careers. They work in a variety of settings, including hospitals and other health care facilities, where they educate patients about nutrition and administer medical nutrition therapy as part of the health care team.

While dietitians don't necessarily cook in a kitchen, they focus on the nutritional aspects of food prepared in the kitchen.

"RDNs are experts in the use of food and nutrition to promote health and manage disease," said Kimberly Snodgrass, a national spokesperson for the Academy of Nutrition and Dietetics, who practices in a kidney disease clinic in Detroit. "We know how food can be used to help mitigate chronic illnesses, and we can teach people how to use foods to lead healthier lives and thrive."

### Tailored Nutrition Plans for Complex Diseases

Proper nutrition is not a "one size fits all" approach. That is why RDNs develop tailored plans to meet each patient's needs.

"Even for healthy people, nutrition requirements are highly individualized based on the person's environment, genetics, behavior, and lifestyle," said Monique Richard, an Academy spokesperson who owns a private practice in Johnson City, Tenn. "When you add a complex disease state like cancer, liver disease, cardiovascular disease, or diabetes on top, it increases the complexity and uniqueness of the nutritional intervention or the treatment required."

Richard pointed to cancer as a prime example of this complexity and noted that the type of cancer, type of treatment, state of the patient's immune system, and the patient's overall resilience can all impact their nutritional requirements.

Added Snodgrass, "Good nutrition is vital if you have cancer because both the illness and its treatment can change the way you eat. They can also affect the way your body tolerates certain foods and uses nutrients."

During cancer treatments, patients may need to change their diet to help build up their strength and withstand the effects of the cancer and its treatment. This is where RDNs can play a significant role in helping to identify nutrition goals and develop plans to help meet them, according to Snodgrass.



*Kimberly Snodgrass*

Richard cautioned that without proper nutrition, a patient's disease could progress, affecting both their quality of life and their health.

"The body's systems – respiratory, cardiovascular, skeletal, muscular, neurological – can all start to be affected when nutritional needs are not being met," she said.

### **Bolstering Nutrition with Vitamins and Supplements**

In addition to designing and helping patients follow a healthy, whole-foods diet, RDNs can help them decide which, if any, vitamins and supplements are recommended to fill in the gaps.

"Our environment has changed drastically over the years," Richard said. "The soil has become depleted of micronutrients, thus decreasing the nutrient density of the foods grown and harvested. Foods also are exposed to many more chemicals and pesticides. So, even if you 'eat healthy,' you may not be getting all the nutrients you need from a whole foods diet."

RDNs, she said, can evaluate every single micronutrient a patient consumes, by monitoring food logs over time and using blood tests and functional lab tests to identify and track deficiencies. She cautioned patients against thinking that any one supplement can offer a "quick fix," noting that adding one vitamin or supplement to correct one deficiency can affect or deplete something else.

"Answers to complex questions about nutritional supplements should come from evidence-based research, not the latest fads on social media or anecdotal stories," Richard said. "RDNs have that big-picture view."

### **Tackling Food Insecurity**

Because RDNs can devote significant one-on-one time with patients, they are in an excellent position to get to know the patient and learn about their relationship with food and nutrition. In some cases, this involves identifying whether the patient is food insecure, meaning they do not have access to, and/or cannot afford healthy food.

"Social determinants of health, including disparities in food, housing, and transportation, can affect a patient's ability to manage chronic diseases like cancer," Snodgrass said. "Eating the healthiest food possible will help their bodies fight and recover while battling disease processes, but healthy food is expensive."

She added that food insecure patients may choose less expensive, calorie-dense foods that don't deliver all the nutrients they need. This may lead to unintended weight gain, or in some cases, symptoms of food addiction.

"There is poor nutritional content in these highly processed, addictive foods," she said.

RDNs can help patients facing food insecurity by connecting them with social workers and programs such as food banks, school breakfast and lunch programs, low- and no-cost food delivery programs, and government assistance programs.



*Monique Richard*

The Academy's [web site](#) contains resources as well, including articles focused on stretching a dollar and how to eat well on a budget.

### **Nutrition Expertise That Is Practical, Accessible and Applicable**

Richard encouraged patients to make full use of the RDN on their care team, noting that the Academy's vision is for every patient's care team to include an RDN.

"While RDNs can share great recipes, ideas and food inspiration, our expertise extends far beyond telling you what to eat," she said. "It's about creating a relationship with each client or patient and making our advice practical, accessible and applicable to each specific condition."

For those without an RDN on their care team, Richard recommends finding one through the Academy's [Find a Nutrition Expert](#) service, which is searchable by zip code.

## The Role of Dietary Supplements during Cancer Treatment

According to the American Cancer Society (ACS), there is growing evidence that diet, physical activity, and related factors can help some cancer survivors live longer, lower their risk of the cancer returning (or a new cancer developing), and limit some side effects of treatment. It can also lower their risk of developing some other serious diseases and improve their overall health and wellness.

The ACS has been studying the impact of these lifestyle factors for decades and last year published a detailed update of its Nutrition and Physical Activity Guideline for Cancer Survivors. The Guideline, reviewed and updated every five to seven years as new evidence accumulates, offers tips for diet and nutrition during and after treatment, including for those who aren't having problems with malnutrition or nutrition-related side effects.

One of the guideline's authors is Marjorie (Marji) McCullough, ScD, RD, senior scientific director within the Epidemiology Research Group at ACS. Dr. McCullough has also served as co-principal investigator of the ACS's Cancer Prevention Study-II (CPS-II) cohort and the CPS-II Nutrition Survey cohort, giving her unique insight into the role of diet and nutrition on cancer incidence and mortality.

"The American Cancer Society conducts some of the largest population-based prospective cohort studies to help us identify risk factors for cancer development and identify ways to both prevent cancer and improve outcomes after a cancer diagnosis," she said. "The evidence from these and other studies clearly shows that poor dietary patterns are associated with higher risk of mortality after a diagnosis of some types of cancer.



*Marjorie McCullough*

### Evaluating Nutritional Deficiencies

The ACS recommends that nutrition screening, assessment, and counseling begin as soon as possible after cancer is diagnosed.

"The goal of such an assessment is to prevent or resolve nutrient deficiencies, help patients maintain an ideal body weight, and preserve muscle mass, all of which may help to improve treatment tolerance," Dr. McCullough said. "The assessment should also screen for food insecurity and other social health barriers that can lead to poor adherence with nutrition guidance."

While Dr. McCullough noted that there is no single "magic bullet" diet for cancer patients, she pointed to several healthy eating patterns that can help patients maintain adequate nutritional intake, including the ACS Guideline, the Mediterranean diet, a vegetarian or mostly plant-based diet, the Dietary Approaches to Stop Hypertension (DASH) plan, the Alternate Healthy Eating Index, and the US Dietary Guidelines for Americans. At the core of each is eating a variety of vegetables, fiber-rich legumes, whole fruits, and whole grains



while avoiding or limiting red and processed meats, sugar-sweetened beverages, and highly processed foods.

### **When Nutritional Needs Can't Be Met by Diet Alone**

Ideally, said Dr. McCullough, a patient should get all their nutrients from whole foods, but for those at risk of or showing deficiencies, nutritional or dietary supplements may be needed.

The term "dietary supplement" refers to a wide range of products, including vitamins and minerals, herbs and other botanicals, amino acids, enzymes, and more. They come in a variety of forms including pills, gummies, powders, liquids, teas, and bars.

Unlike medicines (drugs), dietary supplements are not intended to treat, diagnose, prevent, or cure diseases, and they do not have the same strict safety and effectiveness requirements as FDA-regulated drugs. Taking supplements can have risks, especially for people who are getting cancer treatment, according to the ACS, which cautions:

- Some dietary supplements can cause skin sensitivity and severe reactions when taken during radiation treatment.
- For people who need surgery, some supplements may react with medicines used during and after surgery or might increase the risk of certain side effects such as bleeding and infection. Others might affect the way the heart and brain work, leading to complications during and after surgery.
- People getting chemotherapy may be at higher risk for side effects if they take some dietary supplements. Some supplements can interfere with how the body breaks down chemotherapy, which can make it less effective or increase side effects.

According to Dr. McCullough, in studies of people without cancer, high-dose individual supplements were found to increase the risk of certain cancers. For example, beta-carotene has been linked to an increased risk of lung cancer among high-risk populations.

"For these reasons and more, it is imperative for health care providers to screen their patients for all medications and supplements currently used and for patients to be honest with their care team about the supplements they are taking or considering," Dr. McCullough said.

The ACS encourages people to look beyond anecdotal evidence, vague testimonials, and product packaging claims for supplements and instead search out peer-reviewed research through organizations such as the ACS, National Cancer Institute, National Institutes of Health, and the US Food and Drug Administration. Talk with your oncology care team, including a registered dietitian/nutritionist (RDN), before taking a new supplement. Additional tips from the ACS for choosing and using dietary supplements safely can be found [here](#).

Dr. McCullough regularly conducts peer-reviewed research and has a special interest in studying the role of vitamin D on cancer risk and mortality. For example, she and colleagues found that vitamin D deficiency is associated with a higher risk of colorectal cancer. In another study she conducted, vitamin D was not related to subsequent incidence of invasive breast cancer.

“Inconclusive or seemingly discordant study results about vitamin D can be hard for the general public to decipher,” Dr. McCullough concluded. “Fortunately, this essential nutrient can be found in fatty fish, certain mushrooms, and eggs, as well as in fortified foods like dairy products, cereals, orange juice, and yogurt. Patients who are deficient in vitamin D can talk to their health care provider about correcting the deficiency with a supplement.”

Have questions about nutrition and physical activity during and after cancer treatment? Get answers to common questions [here](#).