

# Nutrition Care: Managing Symptoms From Cancer

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## ABSTRACT

More than 20% of cancer diagnoses can be linked to an unhealthy diet and weight. Cancer patients are at risk for sustained malnutrition beyond treatment completion. This article describes how nurse practitioners can anticipate and screen for nutritional issues their patients may face over their cancer trajectory. In addition, specific evidence-based strategies to manage nutritional issues that patients may experience across their cancer trajectory are discussed.

**Keywords:** cancer, malnutrition, nutrition, prevention screening

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## INTRODUCTION

There were an estimated 1.7 million cases of cancer newly diagnosed in 2017.<sup>1</sup> Although this is a daunting number, technological advances in cancer screening, early detection, and treatment have substantially reduced the annual number of cancer deaths to only 600,920 in 2017. Thus, the diagnosis of cancer has become one that reflects a diagnosis of chronicity for many survivors.<sup>1,2</sup> To address survivorship issues, there has been an increasing focus for research to address acute and long-term symptoms experienced through the cancer trajectory.<sup>3</sup> The focus of this article is to guide nurse practitioners to anticipate specific nutritional problems that their patients with cancer may experience, promote routine nutritional assessments across the cancer trajectory using validated evidence-based screening tools and identify at-risk patients to implement appropriate standard-of-care strategies.

## HEALTHY NUTRITIONAL GUIDELINES

A *healthy diet* is essential to good health throughout our life trajectory. The exact makeup of a diversified, balanced, and healthy diet vary depending on individual needs (eg, gender, lifestyle, physical activity) and availability of local foods.<sup>4</sup> Unhealthy diets have been associated with predisposing chronic illnesses, including cancer.<sup>5</sup> More than 20% of all cancer diagnoses can be linked to an unhealthy diet, limited physical activity, excessive alcohol ingestion and an

unhealthy weight (body mass index [BMI]  $\geq 25$  kg/m<sup>2</sup>). Individuals who maintain an unhealthy weight are at greater risk for developing specific cancers, such as endometrial, esophageal, colorectal, postmenopausal breast, and prostate cancer.<sup>3,5</sup> A recent meta-analysis with > 40,000 individuals who were followed over a 10- to 18-year time frame illustrated that BMIs  $\geq 25$  kg/m<sup>2</sup> had increased risk for developing any obesity-related cancer (hazard ratio 1.11; 95% confidence interval 1.00–1.32).<sup>6</sup> While examining the role nutrition may play to prevent or reduce risk of prostate cancer, Lin and colleagues<sup>7,8</sup> found that maintaining a healthy body weight and a diet rich in antioxidant fruits and vegetables, and low in animal fats and refined carbohydrates, warrant recommendation to patients. **Box 1** summarizes the American Cancer Society Guidelines for nutrition to prevent cancer and integrate general guidelines for a healthy diet, as well as evidence-based nutritional recommendations to prevent cancer and chronic illnesses.<sup>9</sup>

## CANCER AND NUTRITION

The goal of cancer treatment is individualized to cure, control, or palliate, whereas the role of nutritional care throughout the cancer trajectory is individualized to their needs and treatment goals.<sup>1,2,9</sup> All cancer patients are at risk for developing malnutrition since time of diagnosis.<sup>10,11</sup> Malnutrition is present in 15%–20% of all cancer patients at time of diagnosis,

**Box 1. American Cancer Society Cancer Prevention Recommendations<sup>9</sup>**

1. Achieve and maintain a healthy weight throughout life.

Normal weight: 18.45–24.9 kg/m<sup>2</sup>

Overweight: 25–29.9 kg/m<sup>2</sup>

Obese: >30 kg/m<sup>2</sup>

2. Adopt a physically active lifestyle.

Adults should participate in at least 150 minutes of moderate exercise, preferably throughout the week, eg, 30 minutes 5 days a week.

3. Consume a healthy diet with emphasis on plant-based foods.

Consume at least 2½ cups colorful vegetables and fruits daily.

Select whole grain foods.

Limit processed and red meats (beef, pork, lamb) consumed per week.

4. Limit alcohol consumption.

No more than 1 drink for women or 2 per day for men.

One drink equivalent: 1.5 oz. 80 proof distilled spirits, 5 oz. wine, or 12 oz. beer

80% of patients with advanced cancer, and 85%–90% of patients in terminal stages.<sup>12,13</sup> Malnutrition in cancer patients is associated with a negative impact on quality of life, reduced response to chemotherapy, and high mortality.<sup>14,15</sup> Malnutrition and cancer cachexia have been associated with 20%–30% of all cancer deaths.<sup>12,13</sup> Weight loss of 5% before diagnosis/initiation of treatment has been predictive of early death regardless of cancer stage.<sup>15</sup>

**Malnutrition**

In 2012, the Academy of Nutrition of Dietetics and American Society of Parenteral and Enteral Nutrition defined malnutrition as meeting  $\geq 2$  of the following 6 characteristics: decreased energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, localized/generalized fluid accumulation, and decreased functional status by hand-grip strength (measured by a dynamometer).<sup>2</sup> Several factors contribute to the risk for malnutrition and can be summarized as cancer, patient, and treatment factors.<sup>12,13</sup>

**Cancer.** Cancer induces hypermetabolic changes from release of catabolic hormones and inflammatory cytokines that hinder protein synthesis and prevent increasing lean body mass (eg, acute-phase proteins, interleukin-6, and ubiquitin-proteasome complex).<sup>12,13,16,17</sup> Depending on the type of cancer,

functional and mechanical issues may affect the ability to eat or absorb nutrients (eg, head and neck or gastrointestinal cancers).<sup>13,18</sup>

**Patient.** These factors include eating habits, appetite, cultural perspectives on food, and perceptions of taste.<sup>19</sup> In addition, patients' baseline nutritional health before diagnosis contributes significantly because they may require additional macronutrients (carbohydrates, protein, and fats) and micronutrients (iron, zinc, selenium, and vitamins A, B and C) before and during treatment. For example, higher baseline intake of soy protein, omega-3 fatty acids, green tea, tomatoes, and Zyflamend (New Chapter Inc, Brattleboro, VT) herbal blend have been associated with reducing cancer risk, whereas higher animal fat and beta-carotene intake increases risk.<sup>8</sup>

**Treatment.** Treatment modalities may include surgery, chemotherapy, radiation, hormone therapy, immunotherapy, biological therapy, target therapy, transplantation, or any combination thereof. In general, treatment-specific effects may affect appetite, taste, absorption, and loss of nutrients. Risk of developing malnutrition is exacerbated by treatment side effects, such as mucositis, nausea/vomiting, and diarrhea or constipation. To illustrate, Kerby and colleagues<sup>20</sup> found that pediatric patients who

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