

# Nutrition, Physical Activity, Body Weight, and Cancer Survivorship

**2022**

A 6-Part Informational Series for Healthcare Teams



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## WELCOME

A **cancer survivor** is anyone who has been diagnosed with cancer regardless of where they are in the course of their disease.<sup>1</sup> The length of the survivorship journey can be many years long, and 67% of survivors diagnosed during 2010 through 2016 (all cancers combined) had journeys longer than five years.<sup>2</sup>

Cancer is the second leading cause of death in the United States (U.S.), disproportionately affecting racial, ethnic, socioeconomic, and geographic subgroups. Over the past 30 years, there has been a decline in the overall cancer death rate of approximately 31%, and cancer survivorship has increased over this same period, with 16.9 million survivors in the U.S. as of January 2019.<sup>3</sup>

Research suggests that lifestyle factors, such as body weight, physical activity, diet, and alcohol intake, may affect risk for recurrence and overall survival following diagnosis.

Many cancer survivors want to make lifestyle changes in their diet and exercise patterns to improve their response to treatment, reduce the risk of cancer recurrence, and improve their overall quality of life. This series of six briefs on nutrition, physical activity, body weight, and cancer survivorship can enable healthcare teams to help cancer patients reach their overall health and lifestyle goals during their cancer journeys.



## ABOUT THIS SERIES

This informational series is appropriate for any healthcare provider working with cancer survivors, either during treatment, immediately after treatment, or into long-term survivorship. This includes oncology care teams as well as primary care teams. The purpose of the series is to provide healthcare teams with information and education about nutrition, physical activity, and body weight for cancer survivors, as well as to provide resources that can be used with their patients who are cancer survivors.

This program may meet portions of Survivorship Program Standard 4.8 from Commission on Cancer (CoC), American College of Surgeons requirements. As part of CoC standard 4.8, the survivorship program team determines a list of services and programs that address the needs of cancer survivors, which may include seminars for survivors. A presentation on Nutrition, Physical Activity and Body Weight for cancer survivors will be supplemental to this toolkit.

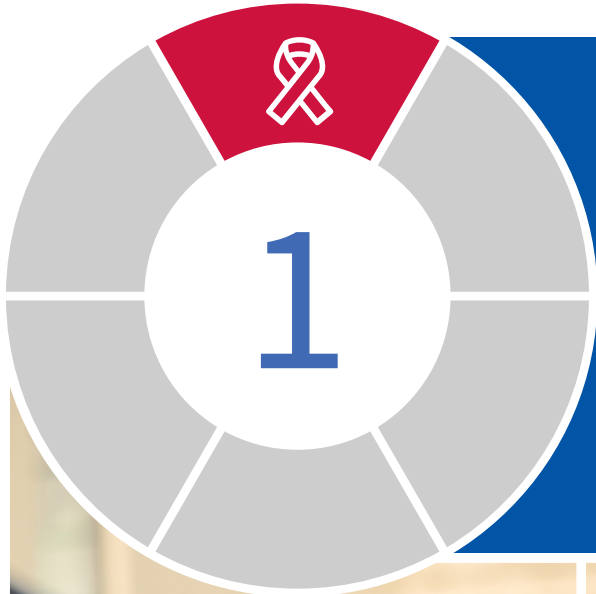
Interviews were conducted with a breast oncologist, an oncology fellow, oncology nurse navigators, dietitians, and public health professionals to assess the type of information that would be useful to healthcare teams working with survivors, as well as the types of patient-facing resources that are needed

The *Nutrition, Physical Activity, Body Weight, and Cancer Survivorship* series of informational briefs for healthcare teams includes:

1. The Influence of Diet, Activity, and Body Weight on Cancer Survivorship
2. Nutrition for Cancer Survivors
3. Physical Activity for Cancer Survivors
4. Body Weight and Lifestyle Changes
5. Food Insecurity Among Cancer Survivors
6. Topics of Interest to Cancer Survivors

Providers should be aware of individual medical situations when using information from this guide.





# The Influence of Diet, Physical Activity, and Body Weight on Cancer Survivorship



# INFLUENCE OF DIET, ACTIVITY, AND BODY WEIGHT ON CANCER PREVENTION AND SURVIVORSHIP

This is brief 1 of 6 in the *Nutrition, Physical Activity, Body Weight, and Cancer Survivorship* series for healthcare teams that work with cancer survivors.

An estimated 18% of cancer cases (almost 1 in 5) and 16% of cancer deaths are attributable to the combined effects of excess body weight, alcohol consumption, physical inactivity, and an unhealthy diet.<sup>4</sup> Aside from avoiding tobacco, mitigating these lifestyle factors are among the most effective strategies for reducing the risk of cancer.<sup>5</sup>

For cancer survivors, the evidence, although more limited than that for the development of cancer, suggests that lifestyle factors, such as body weight, physical activity, diet, and alcohol intake, may affect risk for recurrence and overall survival following diagnosis.

Nutrition and physical activity **recommendations** established recently by the American Cancer Society for the primary prevention of cancer<sup>6</sup> are broadly relevant to survivors undergoing treatment or post-treatment.

**Table 1: ACS Nutrition and Physical Activity Recommendations**

For most cancer survivors, especially those who are post-treatment, disease-free, or living with stable disease, it is reasonable for them to follow existing cancer prevention recommendations. [The American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention](#), published in 2020, recommends the following:



Achieve and maintain a healthy weight throughout life.

Keep your weight within the healthy range and avoid weight gain in adult life.



Follow a healthy eating pattern at all ages.



A healthy eating pattern **includes:**

- Foods that are high in nutrients in amounts that help you get to and stay at a healthy body weight
- A variety of vegetables – dark green, red, and orange, fiber-rich legumes (beans and peas), and others
- Fruits, especially whole fruits in a variety of colors
- Whole grains

A healthy eating pattern **limits or does not include:**

- Red and processed meats
- Sugar-sweetened beverages
- Highly processed foods and refined grain products

Table 1: ACS Nutrition and Physical Activity Recommendations

	Be physically active.	<ul style="list-style-type: none"> <li>• <b>Adults:</b> Get 150-300 minutes of moderate-intensity or 75-150 minutes of vigorous-intensity activity each week (or a combination of these). Getting to or exceeding the upper limit of 300 minutes is ideal.</li> <li>• <b>Children and teens:</b> Get at least 1 hour of moderate or vigorous-intensity activity each day.</li> <li>• <b>Inactivity.</b> Limit sedentary behavior such as sitting, lying down, watching TV, and other forms of screen-based entertainment.</li> </ul>
	It is best not to drink alcohol.	<ul style="list-style-type: none"> <li>• People who do choose to drink alcohol should have no more than one drink per day for women or two drinks per day for men.</li> </ul>

## Healthy Dietary Patterns

Dietary factors are responsible for about 4% of all cancer cases.<sup>4</sup> Diet patterns that emphasize red and processed meats, starchy foods, refined carbohydrates, and sugary drinks are associated with an increased risk of developing cancer,<sup>7</sup> whereas diets based on a variety of fruits and vegetables, whole grains, legumes, fish or poultry, and fewer red and processed meats are associated with lower risk.<sup>8</sup>

The Diet Patterns Methods Project<sup>9</sup> is a multicenter study of dietary patterns and cause-specific mortality. It reported lower risks of cancer mortality among women (8%-17%) and men (17%-24%) whose diets were most concordant with four healthy dietary pattern scores. The four patterns included the Mediterranean Diet, the Dietary Approaches to Stop Hypertension (**DASH**) diet, the United States Department of Agriculture (**USDA**) Healthy Eating Index, and the Harvard Alternate Healthy Eating Index (**Harvard**). These healthy dietary patterns have also been associated with a lower risk of colorectal cancer<sup>7,10</sup> and total cancer incidence.<sup>8</sup>

Cancer survivors who follow a healthy diet pattern have a 10-12% lower risk of dying from cancer or any cause.<sup>8</sup>

## Physical Activity

Physical activity decreases the risk of cancers of the colon (but not rectum), female breast, endometrium, kidney, bladder, esophagus (adenocarcinoma), and stomach (cardia).<sup>11</sup>

Cancer patients who are physically active are less likely to have adverse effects and to die from their cancer than those who are inactive. Extended leisure-time sitting has also been associated with an increased risk of cancer death<sup>12</sup>, whereas replacing sedentary time with even short durations of moderate to vigorous physical activity appears to reduce cancer mortality.<sup>13,14</sup>

In 2019, the American College of Sports Medicine (ACSM) Roundtable Report on Physical Activity, Sedentary Behavior, and Cancer Prevention and Control reported that post-diagnosis physical activity was significantly inversely associated with cancer-specific and all-cause mortality among breast, colorectal, and prostate cancer survivors. The availability of data was limited for other cancers, with single studies suggesting the benefits of physical activity on mortality outcomes for survivors of kidney, lung, and esophageal cancers, non-Hodgkin lymphoma, childhood cancer, and malignant glioma.<sup>15</sup>

The ACSM also published detailed physical activity guidelines for cancer survivors, based on evidence for multiple cancer-related health outcomes, including anxiety, depression, fatigue, health-related quality of life, lymphedema, physical function, bone health, and sleep.<sup>16</sup> See Brief #3 Physical Activity for more information about physical activity recommendations for cancer survivors.

Aerobic and resistance training consistently show a benefit for cardiopulmonary fitness, muscle strength, body composition, and balance among cancer survivors.<sup>17</sup> For example, in a randomized controlled trial of breast cancer survivors, women assigned to moderate-intensity resistance and impact training experienced improvements in bone mass and lean muscle mass.<sup>18</sup>

Additionally, a meta-analysis of 78 exercise intervention trials showed that exercise interventions resulted in clinically meaningful improvements in quality of life that persisted after the completion of the intervention.<sup>19</sup>

## Excess Body Weight

Excess body weight increases the risk of at least 13 different types of cancer and potentially negatively impacts breast cancer survival. An estimated 5% of cancers in men and 11% in women are attributed specifically to excess body weight.<sup>4</sup>

During cancer treatment, maintaining a healthy body weight might help to improve tolerance to treatments. And after treatment, evidence shows that a healthy lifestyle and body weight may increase survival and reduce the risks of new primary cancers.<sup>20,21</sup> There is data that shows that excess body weight is associated with an increased risk of breast cancer recurrence.<sup>22,23</sup> and similar evidence is accumulating for excess weight and other cancers.<sup>24</sup>

Consuming a nutrient-rich diet, having a physically active lifestyle, and maintaining a healthy body weight are all important factors for long-term health and reduced risk for cancer.<sup>20</sup>

## Alcohol

Although there is insufficient evidence to support a specific recommendation about alcohol for cancer survivors, alcohol intake is an established cause of several types of cancer. Thus, avoiding alcohol is among the recommendations for cancer prevention and is relevant to reducing new cancer risk in cancer survivors.

An estimated 6% of cancer cases are attributed to alcohol consumption. Alcohol consumption increases the risk for cancers of the mouth, pharynx, larynx, esophagus (squamous cell carcinoma), liver, colorectum, female breast, and stomach.<sup>5</sup> In survivors, alcohol intake can also increase the risk of new primary cancer at these sites<sup>25</sup>. Additionally, studies of patients with head and neck cancer show that alcohol consumption is associated with higher all-cause mortality.<sup>26</sup>

It may be best for patients to avoid or limit alcohol if they are starting treatment that will put them at risk for mouth sores, such as head and neck radiation or many types of chemotherapy.<sup>21</sup> If alcohol is used during treatment, it should be minimized to prevent interactions with chemotherapeutic drugs and avoid the aggravation of treatment areas during radiation therapy.<sup>20</sup> For example, inflammation of the liver from alcohol during the time of treatment may affect the clearance of chemotherapeutic drugs and worsen toxicities.





## Resources – For Providers

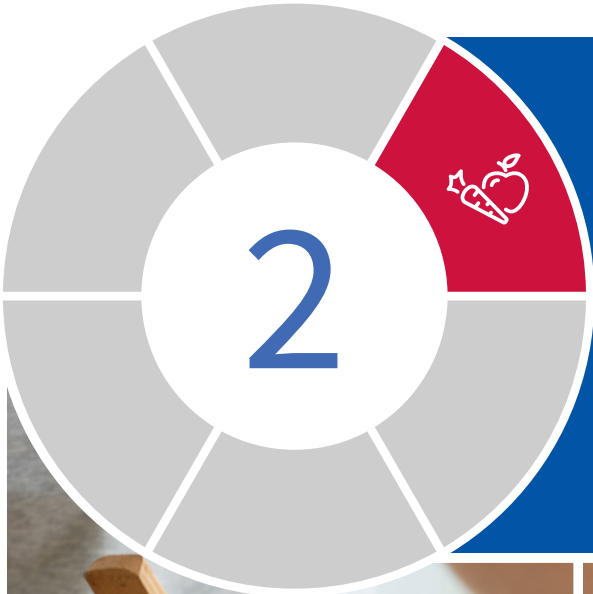
Source	Resources	Link
American Cancer Society	Survivorship Care Guidelines: Tools for Health Care Professionals	<a href="https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-health-care-professionals.html">https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-health-care-professionals.html</a>
CA: A Cancer Journal for Clinicians	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention journal article	<a href="https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591">https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591</a>
American College of Sports Medicine: Moving Through Cancer	Evidence-based Physical Activity resources	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/</a>
American Cancer Society	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html</a>

## Resources – For Patients

Source	Resources	Link
American Cancer Society	Survivorship: During and After Treatment webpage	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment.html</a>
American Cancer Society	Life After Treatment Guide	<a href="https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-cancer-survivors-and-caregivers.html">https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-cancer-survivors-and-caregivers.html</a>
National Association of Chronic Disease Directors (NACDD)	Talk to Someone: Physical Activity and Nutrition Tool	<a href="https://simulations.kognito.com/ncsw/nutrition/">https://simulations.kognito.com/ncsw/nutrition/</a>
National Association of Chronic Disease Directors (NACDD)	Talk to Someone: Alcohol Use Tool	<a href="https://simulations.kognito.com/ncsw/alcohol/">https://simulations.kognito.com/ncsw/alcohol/</a>

## Resources – For Patients

Source	Resources	Link
American Cancer Society	Diet and Activity Guidelines to Reduce Cancer Risk infographic	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html</a>
American Cancer Society	Survivorship Care Plans	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment/survivorship-care-plans.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment/survivorship-care-plans.html</a>
American Cancer Society	Caregiver Support video series	<a href="https://www.cancer.org/treatment/caregivers/caregiver-support-videos.html">https://www.cancer.org/treatment/caregivers/caregiver-support-videos.html</a>
American Institute for Cancer Research (AICR)	Healthy Living Tips for Cancer Survivors infographic	<a href="https://www.aicr.org/wp-content/uploads/2020/07/Healthy-Living-After-Cancer-Infographic.pdf">https://www.aicr.org/wp-content/uploads/2020/07/Healthy-Living-After-Cancer-Infographic.pdf</a>
American Cancer Society	Diet and Physical Activity Fact Sheet	<a href="https://www.acs4ccc.org/nutrition-and-physical-activity-resources/">https://www.acs4ccc.org/nutrition-and-physical-activity-resources/</a>
American Institute for Cancer Research (AICR)	Cancer Survival: Take control of your health website	<a href="https://www.aicr.org/cancer-survival/">https://www.aicr.org/cancer-survival/</a>
National Comprehensive Cancer Network (NCCN)	NCCN Guidelines for Patients: Survivorship Care for Healthy Living	<a href="https://www.nccn.org/patientresources/patient-resources/guidelines-for-patients/guidelines-for-patients-details?patientGuidelineId=52">https://www.nccn.org/patientresources/patient-resources/guidelines-for-patients/guidelines-for-patients-details?patientGuidelineId=52</a>



# Nutrition for Cancer Survivors



## NUTRITION FOR CANCER SURVIVORS

This is brief 2 of 6 in the *Nutrition, Physical Activity, Body Weight, and Cancer Survivorship* series for healthcare teams that work with cancer survivors.

Eating nutritious foods can help cancer survivors to manage their energy levels, feel better, and stay stronger.<sup>27</sup> The nutritional needs of cancer patients depend on their type of cancer, treatment, and side effects.

Cancer or its treatment might create eating challenges such as poor appetite, difficulty chewing, swallowing, digesting, and fatigue. The inability to maintain adequate nutritional status due to cancer symptoms and treatment side effects is common and can negatively impact overall clinical outcomes.<sup>28</sup> A recent study of cancer patients with locally advanced or metastatic disease reported that 73% experienced involuntary weight loss and that BMI and percentage weight loss predicted survival independent of cancer site or stage.<sup>29</sup>

Because patients undergoing cancer treatment often have effects from the treatment or cancer that can impact their nutritional status and their ability to maintain healthy body weight, it is recommended that nutrition screening, assessment, and counseling begin as soon as possible after a diagnosis.

### Nutrition Screening and Assessment

Cancer survivors can benefit from a nutrition assessment from the time of diagnosis forward because it can help them to achieve and maintain healthy body weight and prevent or resolve nutritional deficiencies. During treatment, a healthy body weight and nutritional status might help to improve their tolerance to cancer treatments. After treatment, a healthy lifestyle and body weight may increase survival and reduce the risks of new primary cancers.<sup>20, 21</sup>

Patients undergoing treatment or care should be screened for risk of malnutrition and monitored on an ongoing basis. Because the nutritional needs, eating habits, and food absorption capabilities of patients can be altered by cancer treatments, it is essential to consider multiple factors such as their current nutritional status, future treatments, and anticipated symptoms and side effects.<sup>30, 31</sup>

Monitoring a patient's nutritional status should continue for some time after treatment because many factors can influence their nutrient intake. Ongoing screening and assessment may be needed to prevent or resolve nutritional deficiencies, help survivors to maintain healthy body weight, and manage any ongoing side effects of treatments that may interfere with good nutrition.<sup>32</sup>

The **Malnutrition Screening Tool (MST)** is a simple screening tool that has been validated for use with cancer patients and is recommended by the Academy of Nutrition and Dietetics for use with adults.<sup>33</sup> A member of the healthcare team should be identified as the key person responsible for malnutrition screening, nutrition care, assessment, intervention, and surveillance.<sup>34, 35</sup>





## Nutrition Counseling

Studies have shown that nutrition counseling during treatment can improve dietary intake, reduce treatment-related symptoms, and improve the quality of life for patients.<sup>36,37</sup>

Patients who are at risk of malnutrition, as determined through screening, should be referred to a Registered Dietitian Nutritionist (RDN) or Registered Dietitian (RD) and begin individualized nutritional counseling sessions with regular monitoring as part of their care plan. Preferably, patients should see a certified oncology nutrition specialist. If an oncology dietitian is not available, an appointment with a dietitian associated with the care clinic may be arranged. [The Academy of Nutrition and Dietetics](#) has an [online tool](#) to find registered dietitians by ZIP code.



## A Healthy Eating Pattern

Adequate nutrition can help patients to maintain their body weight, maintain their ability to stay on treatment regimens with fewer changes, and improve their surgical outcomes and quality of life.<sup>38</sup>

A healthy diet is based on a dietary pattern that is more than just individual foods, nutrients, or supplements. Instead, a healthy dietary pattern refers to the entire pattern of a person's overall diet over time – their customary habits around diet and eating. A healthy dietary pattern contains nutrient-dense foods and beverages in amounts that achieve recommended calorie limits. For more information and examples of healthy dietary patterns, see the [Diet Guidelines for Americans 2020-2025 report](#).<sup>39</sup>

During treatment, a healthy dietary pattern is one that provides patients with sufficient nutrition to build and maintain their strength during treatment. Patients may need to adjust their diet to consume higher-calorie foods to maintain healthy body weight.<sup>40</sup>

After treatment, or for patients who are not experiencing malnutrition or nutrition-related side effects, cancer survivors should also follow healthy dietary patterns as outlined in the [ACS Guideline for Diet and Physical Activity for Cancer Prevention](#). Specific dietary recommendations in the ACS prevention guideline emphasize a dietary pattern rich in a variety of plant foods, such as vegetables, whole fruits, whole grains, and beans/legumes, but limited in or not including red and processed meats, sugar-sweetened beverages, highly processed foods, and refined grain products.

## Resources – For Providers

Source	Resources	Link
Alliance to Advance Patient Nutrition	Malnutrition Screening Tool (MST)	<a href="https://www.mass.gov/doc/malnutrition-screening-tool/download">https://www.mass.gov/doc/malnutrition-screening-tool/download</a>
Academy of Nutrition and Dietetics	Find a Nutrition Expert	<a href="https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae">https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae</a>
CA: A Cancer Journal for Clinicians	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention journal article	<a href="https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591">https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591</a>
American Cancer Society	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html</a>
Department of Health and Human Services	Dietary Guidelines for Americans	<a href="https://www.dietaryguidelines.gov/">https://www.dietaryguidelines.gov/</a>

## Resources – For Patients

Source	Resources	Link
Academy of Nutrition and Dietetics	Find a Nutrition Expert	<a href="https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae">https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae</a>
American Cancer Society	Eat Healthy webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/eat-healthy.html">https://www.cancer.org/healthy/eat-healthy-get-active/eat-healthy.html</a>
American Cancer Society	Tips for Healthy Eating handout	<a href="https://www.acs4ccc.org/wp-content/uploads/2021/05/Tips-For-Healthy-Eating.pdf">https://www.acs4ccc.org/wp-content/uploads/2021/05/Tips-For-Healthy-Eating.pdf</a>
American Cancer Society	Nutrition for People with Cancer webpage	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment/staying-active/nutrition.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment/staying-active/nutrition.html</a>

## Resources – For Patients

Source	Resources	Link
Fred Hutchinson Cancer Research Center	Cook For Your Life webpage	<a href="https://www.cookforyourlife.org/">https://www.cookforyourlife.org/</a>
Academy of Nutrition and Dietetics	Nutrition During and After Cancer Treatment webpage	<a href="https://www.eatright.org/health/diseases-and-conditions/cancer">https://www.eatright.org/health/diseases-and-conditions/cancer</a>
Cancer.net (ASCO)	Nutrition Recommendations During and After Treatment webpage	<a href="https://www.cancer.net/survivorship/healthy-living/nutrition-recommendations-during-and-after-treatment">https://www.cancer.net/survivorship/healthy-living/nutrition-recommendations-during-and-after-treatment</a>
American Cancer Society	Diet and Activity Guidelines to Reduce Cancer Risk infographic	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html</a>
American Institute for Cancer Research (AICR)	Treatment Tips: Planning and Preparing	<a href="https://www.aicr.org/cancer-survival/treatment-tips/after-treatment/">https://www.aicr.org/cancer-survival/treatment-tips/after-treatment/</a>



## Physical Activity for Cancer Survivors





## PHYSICAL ACTIVITY FOR CANCER SURVIVORS

This is brief 3 of 6 in the *Nutrition, Physical Activity, Body Weight, and Cancer Survivorship* series for healthcare teams that work with cancer survivors.

Multiple studies have investigated the benefits of exercise during cancer treatment.<sup>41, 17</sup> Research strongly suggests that exercise during treatment is safe, feasible, fatigue-reducing, and can improve multiple aspects of quality of life.<sup>42</sup> Studies have shown that exercise during treatment improves multiple post-treatment effects on bone health, muscle strength, and other quality of life measures.<sup>18, 43</sup>

Moderate exercise has also been shown to help patients reduce anxiety, reduce fatigue, and improve their mental health.<sup>20</sup> Exercise can also help with heart and vascular fitness, muscle strength, and body composition.<sup>21</sup> Some studies have also suggested that physical activity may increase the completion rate of chemotherapy.<sup>44</sup>

### The Benefits of Physical Activity

Due to the benefits of physical activity for cancer patients and survivors, it is recommended that they:



**Engage in regular physical activity according to their health status.** Physical activity should be done with consideration of the type of cancer, patient health, and treatment modalities, symptoms, and side effects.



**Avoid inactivity and return to normal daily activities as soon as possible.** Resume normal activities as soon as possible after diagnosis because physical activity may help to manage some symptoms related to cancer and treatment.



**Work toward the recommended weekly amounts of physical activity.** The aim is to achieve the current physical activity recommendations for health (150-300 min/week of moderate-intensity or 75-150 min/week of vigorous-intensity physical activity (or a combination of the two), and muscle-strengthening activities on two or more days a week).



## American College of Sports Medicine Recommendations

Research shows that exercise can help to improve the following cancer-related symptoms:

- Cancer-related fatigue
- Limited physical function
- Anxiety, depression, and poor sleep
- Lymphedema and bone health
- Health-related quality of life

The **American College of Sports Medicine (ACSM)** has published detailed guidelines on specific doses of aerobic and resistance training that can improve these common cancer-related health outcomes (see the chart below).

### Effects of Exercise on Health-Related Outcomes in Those with Cancer<sup>†</sup>

#### What can exercise do?

- **Prevention of 7 common cancers\***

Dose: 2018 Physical Activity Guidelines for Americans: 150-300 min/week moderate or 75-150 min/week vigorous aerobic exercise









- **Survival of 3 common cancers\*\***

Dose: Exact dose of physical activity needed to reduce cancer-specific or all-cause mortality is not yet known; Overall more activity appears to lead to better risk reduction

\*bladder, breast, colon, endometrial, esophageal, kidney and stomach cancers

\*\*breast, colon and prostate cancers

Overall, avoid inactivity, and to improve general health, aim to achieve the current physical activity guidelines for health (150 min/week aerobic exercise and 2x/week strength training).

Outcome	Aerobic Only	Resistance Only	Combination (Aerobic + Resistance)
Strong Evidence	Dose	Dose	Dose
 <b>Cancer-related fatigue</b>	3x/week for 30 min per session of moderate intensity	2x/week of 2 sets of 12-15 reps for major muscle groups at moderate intensity	3x/week for 30 min per session of moderate aerobic exercise, plus 2x/week of resistance training 2 sets of 12-15 reps for major muscle groups at moderate intensity
 <b>Health-related quality of life</b>	2-3x/week for 30-60 min per session of moderate to vigorous	2x/week of 2 sets of 8-15 reps for major muscle groups at moderate to vigorous intensity	2-3x/week for 20-30 min per session of moderate aerobic exercise plus 2x/week of resistance training 2 sets of 8-15 reps for major muscle groups at moderate to vigorous intensity
 <b>Physical function</b>	3x/week for 30-60 min per session of moderate to vigorous	2-3x/week of 2 sets of 8-12 reps for major muscle groups at moderate to vigorous intensity	3x/week for 20-40 min per session of moderate to vigorous aerobic exercise, plus 2-3x/week of resistance training 2 sets of 8-12 reps for major muscle group at moderate to vigorous intensity
 <b>Anxiety</b>	3x/week for 30-60 min per session of moderate to vigorous	Insufficient evidence	2-3x/week for 20-40 min of moderate to vigorous aerobic exercise plus 2x/week of resistance training of 2 sets, 8-12 reps for major muscle groups at moderate to vigorous intensity
 <b>Depression</b>	3x/week for 30-60 min per session of moderate to vigorous	Insufficient evidence	2-3x/week for 20-40 min of moderate to vigorous aerobic exercise plus 2x/week of resistance training of 2 sets, 8-12 reps for major muscle groups at moderate to vigorous intensity
 <b>Lymphedema</b>	Insufficient evidence	2-3x/week of progressive, supervised, program for major muscle groups does not exacerbate lymphedema	Insufficient evidence
<b>Moderate Evidence</b>			
 <b>Bone health</b>	Insufficient evidence	2-3x/week of moderate to vigorous resistance training plus high impact training (sufficient to generate ground reaction force of 3-4 times body weight) for at least 12 months	Insufficient evidence
 <b>Sleep</b>	3-4x/week for 30-40 min per session of moderate intensity	Insufficient evidence	Insufficient evidence

Citation: [bit.ly/cancer\\_exercise\\_guidelines](https://bit.ly/cancer_exercise_guidelines)

Moderate intensity (40%-59% heart rate reserve or  $VO_2R$ ) to vigorous intensity (60%-89% heart rate reserve or  $VO_2R$ ) is recommended.

Exercise is Medicine | AMERICAN COLLEGE of SPORTS MEDICINE

Cancer survivors can also benefit from professional help after getting medical clearance for physical activity and exercise. Professional exercise trainers can help cancer survivors to create tailored exercise plans that meet their individual needs without exceeding their current physical capabilities. A directory of existing cancer exercise programs, as well as additional information for patients and healthcare providers, can be found on the ACSM [Moving Through Cancer](#) website.

## Assess, Advise, Refer

The Exercise Is Medicine initiative from the American College of Sports Medicine recognizes that exercise assessment, advice, and referral by health care providers should be part of patient care for the prevention and treatment of chronic disease. As the evidence for the benefits of physical activity and exercise to cancer patients and survivors has grown, it's clear that this should apply to oncology care providers, as well. A recent “call to action” for engaging oncology care providers in incorporating physical activity in standard care for cancer patients and survivors recommends the following steps: <sup>45</sup>



It is recommended that these three steps – assess, advise, and refer – be repeated at regular intervals to reinforce the patient’s efforts and to identify and respond to changes in activity or functional status that may result from the effects of treatment change. The figure below illustrates the process of assessment, advisement, and referral.

## Oncology Clinician's Guide to Referring Patients to Exercise

### STEP 1: ASSESS

**Question #1:** How many days during the past week have you performed physical activity where your heart beats faster and your breathing is harder than normal for 30 minutes or more?

**Question #2:** How many days during the past week have you performed physical activity to increase muscle strength, such as lifting weights?

**Question #3:** Would this patient be safe exercising without medical supervision (e.g.: walking, hiking, cycling, weight lifting)?

**Question #3 answer is Yes.**  
(Patient is ambulatory, ECOG score 0-2)

**Question #3 answer is No**  
OR  
**I'm not sure and I don't have the capacity to evaluate.**  
(ECOG score 3+ or other complications present)

### STEP 2: ADVISE

EIM ExRx for Oncology, based on current report of activity to increase to:

- Moderate intensity aerobic exercise (talk but not sing) for up to 30 min, 3x/week
- Resistance exercise 2x/week, 20-30 min

### STEP 2: ADVISE

Advise patient to follow-up with outpatient rehabilitation health care professional for further evaluation

### STEP 3: REFER

Refer to best available community program

### STEP 3: REFER

Outpatient rehabilitation health care professional will recommend best available program

**REPEAT AT REGULAR INTERVALS AT CLINICAL ENCOUNTERS DURING AND AFTER ACTIVE TREATMENT**

CA: A Cancer Journal for Clinicians, Volume: 69, Issue: 6, Pages: 468-484, First published: 16 October 2019, DOI: (10.3322/caac.21579)

## Exercise Prescriptions

An **exercise prescription** is a specific plan of exercise-related activities created for a patient by a health care professional such as a physician or physiotherapist.

Exercise prescriptions are tailored for individual patients in the context of their exercise needs, level of physical fitness, impacts of ongoing treatment, and patient interests. An example exercise prescription is shown in the accompanying table, and an exercise prescription template can be found [on the ACSM website](#).

### Example Exercise Prescription – American College of Sports Medicine



Exercise	Walk 30 minutes per day
Intensity	Moderate intensity
Frequency	Five days per week
Precautions	Increase effort slowly to avoid injury
Refills	Forever



## Safety Considerations for Patients

It is important for cancer patients and survivors to seek medical evaluation and clearance from their health care team while planning their individual exercise programs.<sup>46, 16</sup> The goal of medical clearance and risk stratification is to help identify individuals for whom exercise might be counterproductive or dangerous.

For example, the following are contraindications to exercise:<sup>20</sup>

- Those with weak immune systems should avoid public gyms and other public places until their white blood cell counts return to safe levels.
- People with severe anemia should delay activity until the anemia is better.
- People getting radiation should avoid swimming pools because chlorine may irritate the skin at the treatment area.

A patient's ability to exercise will be determined by their cancer type, stage, and previous fitness level.<sup>47</sup> If patients were sedentary before diagnosis, low-intensity activities such as stretching and brief, slow walks should be adopted and slowly increased. People who were already on an exercise program before treatment may still need to reduce their physical activity to a lower intensity level while receiving radiation or chemotherapy and slowly build up after treatment.<sup>20</sup>

Careful attention should be given to balance and safety considerations to reduce the risk of falls and injuries for individuals with bone disease, peripheral neuropathy, or arthritis. If the disease or treatment necessitates periods of bed rest, physical therapy during bed rest is advisable to maintain strength and range of motion and can help to counteract fatigue and depression.<sup>20</sup>

## Resources – For Providers

Source	Resources	Link
American College of Sports Medicine	Moving Through Cancer	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/</a>
American College of Sports Medicine	Health Care Providers Action Guide	<a href="https://www.exerciseismedicine.org/eim-in-action/health-care/health-care-providers/provider-action-guide/">https://www.exerciseismedicine.org/eim-in-action/health-care/health-care-providers/provider-action-guide/</a>
American College of Sports Medicine	Medical Clearance Form	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-sample-medical-clearance-form.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-sample-medical-clearance-form.pdf</a>
American College of Sports Medicine	Exercise Prescriptions	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-moving-through-cancer-form-web.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-moving-through-cancer-form-web.pdf</a>
American College of Sports Medicine	Exercise Program Directory	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/</a>

## Resources – For Patients

Source	Resources	Link
American College of Sports Medicine	Exercise Program Directory	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/</a>
American Cancer Society	Get Active webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/get-active.html">https://www.cancer.org/healthy/eat-healthy-get-active/get-active.html</a>
Cancer.net (ASCO)	Exercise During Cancer Treatment webpage	<a href="https://www.cancer.net/survivorship/healthy-living/exercise-during-cancer-treatment">https://www.cancer.net/survivorship/healthy-living/exercise-during-cancer-treatment</a>
CDC	Guides to Healthy Living: Physical Activity webpage	<a href="https://www.cdc.gov/cancer/survivors/healthy-living-guides/physical-health/physical-activity.htm">https://www.cdc.gov/cancer/survivors/healthy-living-guides/physical-health/physical-activity.htm</a>
ACSM Moving Through Cancer	Being Active When You Have Cancer: Patient Handout	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Cancer.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Cancer.pdf</a>
ACSM Moving Through Cancer	Sit Less, Move More	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Sit-Less-Move-More.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Sit-Less-Move-More.pdf</a>
ACSM Moving Through Cancer	Moving Through Cancer: Exercise for People Living With and Beyond Cancer	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/Consolidated-Infographic-for-the-ACSM-Roundtable-on-Cancer-and-Exercise.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/Consolidated-Infographic-for-the-ACSM-Roundtable-on-Cancer-and-Exercise.pdf</a>
ACSM Moving Through Cancer	Effects of Exercise on Health-Related Outcomes in Those with Cancer	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/exercise-guidelines-cancer-infographic.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/exercise-guidelines-cancer-infographic.pdf</a>
ACSM Moving Through Cancer	Exercise for Cancer Prevention and Treatment	<a href="https://www.acsm.org/docs/default-source/files-for-resource-library/exercise-for-cancer-prevention-and-treatment-infographic.pdf?sfvrsn=ad47b1e1_2">https://www.acsm.org/docs/default-source/files-for-resource-library/exercise-for-cancer-prevention-and-treatment-infographic.pdf?sfvrsn=ad47b1e1_2</a>
American Cancer Society	Diet and Activity Guidelines to Reduce Cancer Risk	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html</a>



# Body Weight & Lifestyle Changes



## BODY WEIGHT AND LIFESTYLE CHANGES

This is brief 4 of 6 in the *Nutrition, Physical Activity, Body Weight, and Cancer Survivorship* series for healthcare teams that work with cancer survivors.

Side effects of cancer treatment that produce changes in taste and smell, early satiety, and digestive disturbances can all play a role in causing weight loss and poor nutritional status. Patients who receive anti-cancer treatments that affect the gastrointestinal tract are particularly at risk for weight loss.<sup>20</sup> Consuming enough calories to prevent malnutrition and maintain healthy body weight and strength while decreasing infection risk and managing side effects can improve the cancer recovery journey.<sup>40, 48</sup>

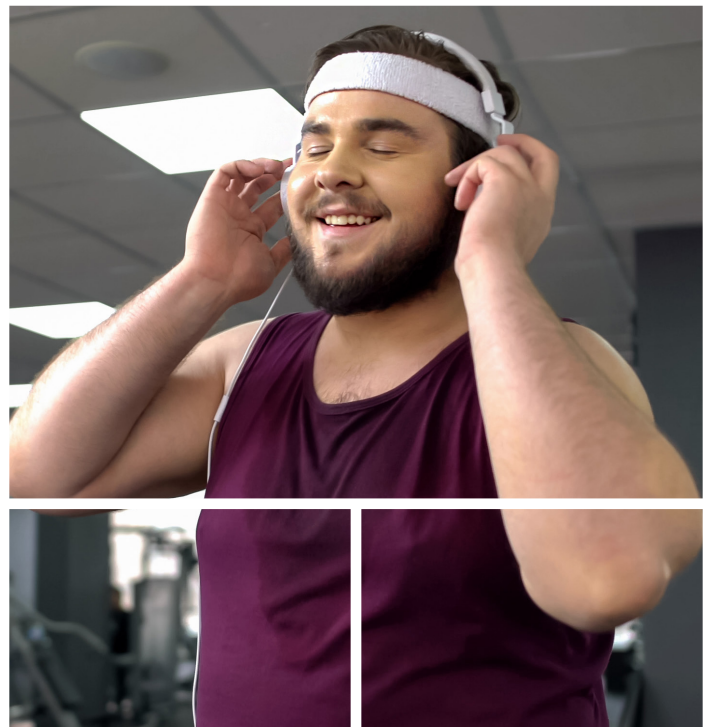
After treatment, it is important to encourage survivors who have excess weight to make behavioral changes. Using a positive approach such as adding healthy foods instead of subtracting unhealthy foods can help to increase their motivation. Healthcare providers should treat excess weight as a complex chronic disease, validate patient experiences, focus on root causes, and go beyond simplified solutions such as eating less and exercising more.<sup>49</sup>

The [Stop Obesity Alliance](#)<sup>50</sup> has a variety of valuable resources about excess weight, including a Fast Facts section about the science of excess weight and resources to support providers with prevention and management in their patients. The Canadian guidelines for body weight classification in adults also provide clinical practice information on screening patients for overweight and obesity and assessing their disease risk.<sup>51</sup>

It can be helpful for providers to take training courses on weight stigma, weight bias, and weight discrimination to learn how to make recommendations in a stigma-free manner.<sup>52</sup> For more information about weight stigma and bias and how to encourage behavioral changes in patients, see the section on **Weight Bias and Stigma** below.

### Weight Management Recommendations

During treatment, cancer patients should focus on adequate nutrition and physical activity to preserve muscle mass to improve their tolerance and response to treatments. To identify and manage malnutrition in patients, the **Academy of Nutrition and Dietetics** recommends screening (and rescreening at regular intervals) to identify patients at risk for malnutrition, referrals to a registered dietitian nutritionist (RDN) for additional assessment for those at risk of malnutrition, and appropriate nutrition therapy to meet the needs of the patient. Additionally, monitoring nutrition needs that are specific to the patient's history can help to improve clinical outcomes.<sup>53</sup> See Brief #2, [Nutrition For Cancer Survivors](#), for more information about nutrition screening, assessment, and counseling.





After cancer treatment, healthy body weight should be primarily managed with a combination of dietary, physical activity, and behavioral strategies. Safe weight loss should be achieved with a nutritious, calorie-restricted diet and increased physical activity that is tailored to each patient.<sup>54</sup> A healthy body weight, along with a healthy lifestyle, may increase survival and reduce the risks of new primary cancers.<sup>20, 21</sup>

The **United States Preventive Services Task Force (USPSTF)** recommends that patients with a BMI of 30 or greater be provided or referred to intensive, multicomponent behavioral counseling. Interventions considered by USPSTF typically lasted 1-2 years and had 12 or more counseling sessions in the first year. Most behavioral interventions encouraged self-monitoring of weight and provided tools to support weight loss or weight loss maintenance (e.g., pedometers, food scales, or exercise videos).<sup>55</sup> These recommendations are not specific to cancer survivors but are appropriate for survivors who have completed treatment and are disease-free or living with long-term, stable disease.

Calorie restriction combined with physical activity has been shown to lead to a 5-7% reduction of body weight, which can decrease the risk of chronic diseases such as diabetes and cardiovascular disease.<sup>56</sup> Combining calorie restriction and exercise has a greater effect and can support more substantial decreases in body weight, as well as help maintain weight loss, although physical activity alone doesn't result in significant weight loss. While there are many different diet patterns (low-calorie, low-fat, low-carbohydrate, high-protein, Mediterranean, etc.), there are currently insufficient data to support one type of diet over another.<sup>56</sup> However, a predominantly whole foods, plant-based diet is still recommended for a healthy eating pattern.

Persons with a body mass index of 30 kg/m<sup>2</sup> or greater, or 27 kg/m<sup>2</sup> or greater with comorbidities, who do not lose weight with diet and activity modifications, may consider medication to assist with weight loss. Bariatric or other surgeries may also be considered for people with a body mass index of 40 kg/m<sup>2</sup> or greater.<sup>57</sup>

## Helping Your Patients Make Lifestyle Changes

Before behavioral changes can be initiated, patients must be emotionally open to having conversations about the sensitive topic of body weight. Such conversations work best in a stigma-free environment where the patient is empowered to take control of their lifestyle.

### Let's Talk: Nutrition, Physical Activity, and Cancer Survivorship

**LET'S TALK**  
Nutrition, Physical Activity  
and Cancer Survivorship



LEARN THE BEST  
WAY TO TALK TO  
CANCER PATIENTS  
ABOUT BODY WEIGHT,  
DIET, AND EXERCISE.



The ACS free training course, **Let's Talk: Nutrition, Physical Activity, and Cancer Survivorship**, is a tool to support providers in engaging in conversations around behavior change. The culturally competent videos show patient-centered approaches for communication and how to recognize a patient's readiness for change.

## Motivational Interviewing

Motivational interviewing is a style of counseling that can help patients to resolve feelings of ambivalence that prevent them from making lifestyle changes.<sup>58</sup>

Patients sometimes feel defensive and resist a physician's sound advice about body weight, nutrition, and physical activity. Motivational interviewing reframes the patient interaction without necessarily adding time to the patient visit.

This counseling style promotes behavior change using a partnership model in which patients and providers discuss and agree on treatment goals and work together to develop strategies to meet those goals. Patients are active partners in treatment planning.

The main principles of motivational interviewing are to:

- Express empathy through reflective listening.
- Avoid argument and direct confrontation.
- Adjust to client resistance rather than opposing it.
- Develop discrepancy between a client's goals and values and their current behavior.
- Support self-efficacy and optimism in the patient.
- Promote self-motivation in the patient.

Effective motivational interviewing may help to give patients a sense of hope that they can change their lifestyle by consistently taking small steps toward their goals.<sup>59</sup>

### MOTIVATIONAL INTERVIEWING

The aim of motivational interviewing is to engage patients in productive, non-judgmental dialogues about their situations and their reasons for change. It's not about talking them into change.

If a patient's ambivalence is not adequately understood and managed, there's a higher likelihood that the patient won't comply with a plan, and treatment will fail.

Ideally, providers and patients collaborate to identify realistic goals, milestones, and sources of information and support.



## Weight Bias and Stigma

It is important to understand that weight bias, weight stigma, and discrimination are public health and human rights problems. Ideally, clinical settings should promote policies and programs that prevent weight bias, stigma, and discrimination activities (intentional or not).

- **Weight bias** refers to the negative attitudes that people have towards people with obesity.
- **Weight stigma** refers to the practice of assigning stereotypes and labels to people who have obesity.
- **Weight discrimination** refers to actions or situations that can socially exclude or create disparities for people with obesity.

Unfortunately, weight bias is prevalent in the healthcare setting. The results of a recent survey of medical students showed: <sup>60</sup>

40%

reported that their instructors made negative jokes or comments about patients with obesity.

50%

reported that their peers held negative attitudes about patients with obesity.

65%

reported hearing derogatory comments or jokes about patients with obesity from other healthcare providers.

Clinical situations that can create weight discrimination experiences for people with excess weight include the size of waiting room chairs, magazines or brochures that promote unhealthy or discriminatory body images, and weight scales or clinical equipment of limited range.



It is helpful to use language that puts people first, so it is better to use phrasing such as “a person with excess weight” instead of “obese person.” <sup>61</sup> Communication and respect can be improved by asking patients about terms they prefer to use. It may also be helpful to post an infographic about weight bias and stigma in waiting or clinical rooms. <sup>62</sup>

Although weight bias is widespread, there are things clinicians can do to reduce it. Strategies include: <sup>63</sup>

- Using people-first language. Patients who have been diagnosed with obesity should be considered “patients with obesity,” not “obese patients.” The term “obese” should never be used to describe patients.
- Adopting a zero-tolerance policy regarding derogatory jokes or comments about patients
- Ensuring that waiting areas, bathrooms, and exam rooms are usable and accommodating for patients of all sizes and abilities
- Emphasizing the complex etiology of obesity, rather than focusing on a “calories in, calories out” approach
- Encouraging providers to examine and challenge their existing biases and stereotypes regarding weight

The [UConn Rudd Center for Food Policy and Obesity](#) has a number of resources for clinicians on reducing weight bias and stigma in the clinic, including training modules, informational handouts, and measures to assess weight bias.

## Resources – For Providers

Source	Resources	Link
American Cancer Society	Let's Talk: Nutrition, Physical Activity, and Cancer Survivorship CME/ CEU Training Course	<a href="https://acssurvivors.kognito.com/">https://acssurvivors.kognito.com/</a>
Centers for Disease Control and Prevention	Caring for Cancer Survivors: Obesity and Wellness	<a href="https://www.cdc.gov/cancer/survivors/health-care-providers/obesity-wellness.htm">https://www.cdc.gov/cancer/survivors/health-care-providers/obesity-wellness.htm</a>
Obesity Canada	Weight Bias	<a href="https://obesitycanada.ca/weight-bias">https://obesitycanada.ca/weight-bias</a>
Stop Obesity Alliance	Weight Can't Wait: Guide for the Management of Obesity in the Primary Care Setting	<a href="https://stop.publichealth.gwu.edu/ProviderResources">https://stop.publichealth.gwu.edu/ProviderResources</a>
Stop Obesity Alliance	Fast Facts: Weight Bias and Stigma	<a href="https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Weight%20Bias%20and%20Stigma.pdf">https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Weight%20Bias%20and%20Stigma.pdf</a>
Stop Obesity Alliance	Fast Facts: Healthcare Providers and Obesity Care	<a href="https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Health%20Care%20Providers%20and%20Obesity%20Care.pdf">https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Health%20Care%20Providers%20and%20Obesity%20Care.pdf</a>
UCONN Rudd Center for Food Policy and Obesity	Weight Bias in Healthcare	<a href="https://uconnruddcenter.org/research/weight-bias-stigma/healthcare-providers/">https://uconnruddcenter.org/research/weight-bias-stigma/healthcare-providers/</a>
American Society of Clinical Oncology (ASCO)	Obesity and Cancer: A Guide for Oncology Providers	<a href="https://www.asco.org/sites/new-www.asco.org/files/content-files/blog-release/documents/2014-Obesity-Cancer-Guide-Oncology-Providers.pdf">https://www.asco.org/sites/new-www.asco.org/files/content-files/blog-release/documents/2014-Obesity-Cancer-Guide-Oncology-Providers.pdf</a>



## Resources – For Patients

Source	Resources	Link
American Cancer Society	Take Control of Your Weight	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/take-control-your-weight.html">https://www.cancer.org/healthy/eat-healthy-get-active/take-control-your-weight.html</a>
American Cancer Society	Diet and Activity Guidelines to Reduce Cancer Risk	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html</a>
National Association of Chronic Disease Directors (NACDD)	Talk to Someone: Physical Activity and Nutrition Tool	<a href="https://simulations.kognito.com/ncsw/nutrition/">https://simulations.kognito.com/ncsw/nutrition/</a>



# Food Insecurity Among Cancer Survivors



## FOOD INSECURITY AMONG CANCER SURVIVORS

This is brief 5 of 6 in the *Nutrition, Physical Activity, Body Weight, and Cancer Survivorship* series for healthcare teams that work page header open with cancer survivors.

The Social Determinants of Health (SDOH) are factors that affect the overall health of people, whether they are cancer survivors or not. The core SDOH factors are economic stability, food security, neighborhood and built environment, social and community context, educational level, and access to health care. Food insecurity is an SDOH factor that can be particularly important to cancer survivors.

### Food Insecurity Among Cancer Survivors

The USDA defines food insecurity as the lack of consistent access to enough food for an active, healthy life. Food insecurity is known to be associated with poorer diet quality<sup>64</sup> and increased risk of adverse health outcomes, such as diabetes, hypertension, hyperlipidemia, and depression.

The association between food insecurity and cancer outcomes is poorly understood.<sup>65,66</sup> However, recent studies suggest a high prevalence of food insecurity among cancer survivors. Estimates of food insecurity among survivors vary from 17% to 56%, depending on what populations were studied. One study found a 17.4% prevalence of food insecurity among primarily non-Hispanic white cancer patients at an academic cancer center.<sup>67</sup> In a study of low-income, multiethnic patients receiving care in a major city, 56% of the patients had food insecurity.<sup>68</sup> In a study using the Behavioral Risk Factor Surveillance System (**BRFSS**) data, having a diagnosis of cancer was associated with a 39% increase likelihood of food insecurity.<sup>69</sup> In a recent study from the **American Cancer Society** among cancer survivors, 27% aged 18-39, 14.8% aged 40-64, and 6.3% aged 65+ reported severe/moderate food insecurity.<sup>70</sup>



It is well-documented that a cancer diagnosis results in financial hardship for many cancer patients. This hardship can force patients to make trade-offs between food and other resources such as medical care. For example, the **Hunger in America 2014** survey found that approximately 66% of households receiving food resources from the Feeding America network of food banks had to choose between paying for food and medicine or medical care.<sup>71</sup> In a recent study of cancer survivors, those who were experiencing food insecurity were significantly more likely than their food-secure counterparts to report foregoing, delaying, or making changes to their prescription medications or other treatments, specialists visits, follow-up care, and mental health services.<sup>72</sup>





## Addressing Food Insecurity in the Healthcare Setting

As the intersection of food insecurity and adverse health outcomes becomes clear, hospitals and health systems are increasingly implementing interventions and strategies to try to address this need with their patients. These interventions vary by community needs and capacity of the health system but generally follow the “screen and intervene” model.<sup>73</sup>

 <b>Screen</b>	 <b>Intervene</b>
<p>While there is no formal recommendation for food insecurity screening in the oncology clinical setting, emerging evidence of high prevalence among cancer survivors, coupled with the well-documented importance of adequate nourishment during and after cancer treatment, suggests that health systems and healthcare teams should consider implementing routine food insecurity screening of cancer patients.</p> <p>The 2-question <b>Hunger Vital Sign (HVS)</b> screening tool has been validated in both adult and pediatric patients and incorporated into many electronic health record systems and allows clinicians to quickly assess the food needs of a patient.<sup>74</sup> Patients screen positive for food insecurity using the HVS if they respond “often true” or “sometimes true” to either or both of the following statements: “Within the past 12 months we worried whether our food would run out before we got money to buy more,” and “Within the past 12 months the food we bought just didn't last, and we didn't have money to get more.”<sup>66, 75</sup></p>	<p>When patients are identified through screening as experiencing food insecurity, health systems can intervene in the following ways:</p> <ul style="list-style-type: none"> <li>• Refer patients to existing community resources to meet immediate food needs, such as food banks/pantries and other emergency food programs.</li> <li>• Connect patients with federal nutrition programs to meet their longer-term nutrition needs, such as SNAP, WIC, or other programs. There may be additional programs available in communities, such as incentive programs or fruit and vegetable voucher programs.</li> <li>• Host new food distributions programs in the health care system, such as on-site food pantries, mobile food markets, food boxes, or medically-tailored meals delivery programs.</li> </ul> <p>The <b>Food Insecurity and Health Resource Toolkit</b>, developed through a partnership between Humana and Feeding America, gives detailed guidance for health professionals on incorporating screening for food insecurity and referral to existing resources.</p>



In addition, **Food Insecurity and the Role of Hospitals** from the **American Hospital Association** outlines steps that hospitals and health systems can take to address food insecurity among their patients. It includes case studies of hospitals that have built successful partnerships to address food insecurity.



## Resources – For Providers

Source	Resources	Link
Children’s Health Watch	Hunger Vital Sign Food Insecurity Screener	<a href="https://childrenshealthwatch.org/public-policy/hunger-vital-sign/">https://childrenshealthwatch.org/public-policy/hunger-vital-sign/</a>
Feeding America/Humana	Food Insecurity and Health Resource Toolkit	<a href="https://hungerandhealth.feedingamerica.org/resource/food-insecurity-screening-toolkit">https://hungerandhealth.feedingamerica.org/resource/food-insecurity-screening-toolkit</a>
American Hospital Association	Food Insecurity and the Role of Hospitals	<a href="https://www.aha.org/system/files/hpoe/Reports-HPOE/2017/determinants-health-food-insecurity-role-of-hospitals.pdf">https://www.aha.org/system/files/hpoe/Reports-HPOE/2017/determinants-health-food-insecurity-role-of-hospitals.pdf</a>
American Cancer Society	What’s the Connection? Food Insecurity, Obesity, and Cancer	<a href="https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_WhatsTheConnection_updated2021.pdf">https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_WhatsTheConnection_updated2021.pdf</a>
American Cancer Society	Food Insecurity: Root Causes and Impact on Cancer Survivors and Caregivers	<a href="https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_Cancer-Survivors-and-Caregivers_Updated-2021.pdf">https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_Cancer-Survivors-and-Caregivers_Updated-2021.pdf</a>

## Resources – For Patients

Source	Resources	Link
American Cancer Society	Food Insecurity Resources and Tips for Cancer Survivors and Caregivers	<a href="https://www.acs4ccc.org/wp-content/uploads/2022/01/Caregiver-FI-Services-and-Tips-8.20.20.pdf">https://www.acs4ccc.org/wp-content/uploads/2022/01/Caregiver-FI-Services-and-Tips-8.20.20.pdf</a>



## Topics of Interest to Cancer Survivors



## TOPICS OF INTEREST TO CANCER SURVIVORS

This is brief 6 of 6 in the *Nutrition, Physical Activity, Body Weight, and Cancer Survivorship* series for healthcare teams that work with cancer survivors.

### Supplements

The use of vitamins, minerals, and other dietary supplements remains controversial.<sup>20</sup> There is compelling evidence against the use of select supplements in certain oncology populations,<sup>76</sup> and many cancer experts advise against taking supplements after treatment or limiting supplements to those needed to treat a deficiency.

There are several ways that supplements can cause problems for people during cancer treatment. For example, some dietary supplements can cause skin sensitivity and severe reactions when taken during radiation treatment. People who are getting radiation treatments should talk to their doctors before taking any supplement.

People getting chemotherapy may be at higher risk for drug interactions if they take dietary supplements. There is also concern that antioxidants might interfere with cancer cell-killing treatments. Cancer experts often recommend that patients avoid dietary supplements altogether until their cancer treatment is over.<sup>77</sup>

It is important to approach supplements with caution because poorly-regulated supplements can cause harm.<sup>78</sup> Patients should be assessed for nutritional deficiencies before supplements are recommended. Also, consider reserving the use of supplements for chronic conditions such as osteoporosis and macular degeneration that are supported by evidence for the likelihood of benefits and low risk of harm.<sup>20</sup>





## Special Diets

While undergoing treatment for cancer, good nutrition is vital.<sup>79</sup> The scientific support for some special diets is described below.

### Vegetarian or Vegan Diet

Vegetarian diets tend to be lower in saturated fat, high in fiber and vitamins, and do not include red or processed meat, and therefore may be helpful for cancer risk reduction. Many studies of vegetarians indicate a lower risk of cancer overall compared to people who also eat meat. But it is less clear whether vegetarian diets provide special health benefits over diets that include smaller amounts of animal products than are typically consumed in Western diets.

There is very little evidence on the helpfulness of vegan or vegetarian diets while undergoing cancer therapy. The available evidence supports the recommendation of a dietary pattern containing mostly foods from plant sources, with limited if any intake of red and processed meats, to reduce new cancers.

### Macrobiotic Diet

A macrobiotic diet is a high-carbohydrate, low-fat, plant-based diet consisting of 35-to 50% (by weight) whole grains, 25-35% vegetables, 5-10% cooked vegetables, and sea vegetables, 5-10% fish, and 5-10% soup. There are anecdotal reports of the effectiveness of such a diet, but no peer-reviewed studies of the diet have been published in scientific journals. Concerns about the diet include potential delays in conventional treatment for cancer and risks associated with nutrition deficiencies.<sup>80</sup>



### Ketogenic Diet

A ketogenic diet is a low-carbohydrate diet that encourages the body to get its energy from fats and protein. In theory, following a ketogenic diet during cancer treatment will reduce the availability of glucose for use by tumors and may reduce tumor activity.

Some preliminary studies in mice, and small studies in humans, suggest a benefit for certain types of cancer. However, more research is needed before any recommendations can be made as to the effectiveness of a ketogenic diet for symptom and disease management. In addition, some studies indicate that a ketogenic diet may be contraindicated for some cancer patients depending on cancer type and treatment, so patients should consult with a registered dietitian before adopting this diet.

### Intermittent Fasting

Intermittent fasting is a dietary pattern where people interleave periods of fasting and regular eating. There are many interleaving patterns variations, which are often expressed in hours (16 fasting / 8 eating) or days (alternate-day fasting). In some variations, a portion of the normal daily caloric intake (such as 25%) may be consumed on fasting days.

Recent reviews of the evidence on intermittent fasting during cancer treatment suggest that there may be some benefit for slowing tumor progression, reducing toxicity, and increasing the effectiveness of chemotherapy.<sup>81</sup> However, most of the studies to date are preclinical (animal and in vitro) and not generalizable to humans. More clinical studies are needed to establish clinical efficacy and safety before recommendations for intermittent fasting can be made for cancer patients.<sup>82</sup>



## Sleep

Many cancer survivors have difficulty sleeping, even years after they are diagnosed. Almost 40% of cancer survivors have trouble sleeping up to five years later. Sleep issues can be due to cancer-related physical or emotional distress, fears about cancer recurrence, or financial worries. Sleep problems can affect all aspects of daily life.<sup>83</sup>

Because most sleep problems are self-reported by patients, it is vital to give them the tools they need to identify and manage their sleep problems. Some signs of sleep problems are trouble falling asleep or staying asleep, waking up too early, waking up in the middle of the night, and feeling tired during the day. A more comprehensive list of questions to ask patients about their sleep habits can be found on the ACS [Managing Sleep Problems](#) web page. Many patients find it helpful to keep a sleep diary.

Patients can also develop a sleep hygiene plan that includes sleep testing, lifestyle or medication changes, or sleep therapies. Cognitive-behavioral interventions can be implemented to help with relaxation, and exercise can help to promote better sleep.

## Emotional and Mental Health

Cancer has many psychosocial effects on both patients and their loved ones. These effects include difficulty coping, feelings of isolation, struggles with decision making, financial stress, difficulty sharing emotions, grief, and fear of death and dying, among other things. Cancer can also generate feelings of anxiety, depression, and distress.<sup>84</sup>

There are many resources to help cancer patients and survivors deal with mental health and the psychosocial effects of cancer. Common mental health supports include counseling, education, and support groups. Physical activity has also been shown to improve symptoms of depression and anxiety in cancer survivors (see Brief #3 [Physical Activity for ACSM Physical Activity Guidelines](#)). Patients should be encouraged to consider their options and find the support that is right for them.

Most insurance plans cover some counseling. However, providers should also stay informed about free services in their hospital or clinic so they can refer patients who cannot pay for counseling services.<sup>84</sup>



## Marijuana/Cannabis

The use of marijuana, also called cannabis, is currently legal for medical reasons in 36 states and the District of Columbia. A number of small studies of smoked marijuana found that it can be helpful in treating nausea and vomiting from **cancer chemotherapy**, and a few studies have found that inhaled (smoked or vaporized) marijuana can be a helpful treatment of **neuropathic pain** (pain caused by damaged nerves). There are no studies in people of the effects of marijuana oil or hemp oil.<sup>85</sup>

There are currently two drugs based on marijuana compounds that have been approved by the US Food and Drug Administration (FDA) for medical use – **Dronabinol (Marinol®)** contains THC and is approved to treat nausea and vomiting caused by cancer chemotherapy; and **Nabilone (Cesamet®)** is a synthetic cannabinoid that acts much like THC and can be used to treat nausea and vomiting caused by cancer chemotherapy when other drugs have not worked.

While there have been some early clinical trials of cannabinoids in treating cancer in humans, there is not currently sufficient evidence to indicate they can help to control or cure the disease. Thus avoiding or delaying conventional medical care for cancer and relying on marijuana alone as treatment may have serious health consequences.

Marijuana effects are not always beneficial. For example, it can cause disorientation, reduce control over body movements, and can cause unpleasant feelings of anxiety or paranoia. Moreover, smoked marijuana delivers harmful substances such as those found in tobacco smoke to the user and people close by. Finally, some chronic users can develop a dependence on marijuana.

The patient and the healthcare provider should use a shared decision-making process when considering marijuana, balancing the evidence of benefit and harm to the patient, the patient's preferences and values, and any laws and regulations that may apply.



## Stress

Cancer affects many dimensions of a survivor's life and can create high levels of stress and a poor quality of life that can hinder progress toward recovery. Acknowledging that anxiety and distress are normal symptoms in cancer survivors is a good first step in helping them to manage their stress levels.

Many interventions can help to manage stress, including simple strategies such as spending time outside, eating well, sleeping well, relaxing, journaling, and engaging in new hobbies. Deep breathing, visualization, meditation, and yoga can also help survivors to relax and manage their stress.<sup>86</sup> Other methods include acceptance and commitment therapy, cognitive-behavioral therapy, storytelling, exercising together, and telehealth consultations for those who live in rural areas.<sup>87</sup>

Combined medical and psychological interventions (MPI) that include psychoeducation, relaxation technique-guided imagery, and cognitive therapy can have positive impacts on the stress and quality of life of cancer patients.<sup>88</sup>

## Resources – For Patients

Source	Resources	Link
American Cancer Society	What you need to Know First about Dietary Supplements webpage	<a href="https://www.cancer.org/treatment/treatments-and-side-effects/complementary-and-alternative-medicine/dietary-supplements/intro.html">https://www.cancer.org/treatment/treatments-and-side-effects/complementary-and-alternative-medicine/dietary-supplements/intro.html</a>
American Cancer Society	What are Sleep Problems webpage	<a href="https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/sleep-problems/what-are-sleep-problems.html">https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/sleep-problems/what-are-sleep-problems.html</a>
American Cancer Society	Coping with Cancer webpage	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment/coping.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment/coping.html</a>
American Cancer Society	Six Tips for Managing Stress webpage	<a href="https://www.cancer.org/latest-news/6tipsformanagingstress.html">https://www.cancer.org/latest-news/6tipsformanagingstress.html</a>
National Association of Chronic Disease Directors	Talk to Someone: Anxiety and Distress simulated conversation for cancer survivors	<a href="https://simulations.kognito.com/ncsw/anxiety/">https://simulations.kognito.com/ncsw/anxiety/</a>
American Cancer Society	Marijuana and Cancer	<a href="https://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/complementary-and-integrative-medicine/marijuana-and-cancer.html#references">https://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/complementary-and-integrative-medicine/marijuana-and-cancer.html#references</a>
American Cancer Society	Social Support - Cancer Survivors' Network Webpage	<a href="https://csn.cancer.org">https://csn.cancer.org</a>



# Resources and References





## ALL RESOURCES FOR PROVIDERS

### Influence of Diet, Activity, and Body Weight on Cancer Prevention and Survivorship

Source	Resources	Link
American Cancer Society	Survivorship Care Guidelines: Tools for Health Care Professionals	<a href="https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-health-care-professionals.html">https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-health-care-professionals.html</a>
CA: A Cancer Journal for Clinicians	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention journal article	<a href="https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591">https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591</a>
American College of Sports Medicine: Moving Through Cancer	Evidence-based Physical Activity resources	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/</a>
American Cancer Society	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html</a>

### Nutrition for Cancer Survivors

Source	Resources	Link
Alliance to Advance Patient Nutrition	Malnutrition Screening Tool (MST)	<a href="https://www.mass.gov/doc/malnutrition-screening-tool/download">https://www.mass.gov/doc/malnutrition-screening-tool/download</a>
Academy of Nutrition and Dietetics	Find a Nutrition Expert	<a href="https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae">https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae</a>
CA: A Cancer Journal for Clinicians	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention journal article	<a href="https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591">https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591</a>

Source	Resources	Link
American Cancer Society	American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html</a>
Department of Health and Human Services	Dietary Guidelines for Americans	<a href="https://www.dietaryguidelines.gov/">https://www.dietaryguidelines.gov/</a>

### Physical Activity for Cancer Survivors

Source	Resources	Link
American College of Sports Medicine	Moving Through Cancer	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/</a>
American College of Sports Medicine	Health Care Providers Action Guide	<a href="https://www.exerciseismedicine.org/eim-in-action/health-care/health-care-providers/provider-action-guide/">https://www.exerciseismedicine.org/eim-in-action/health-care/health-care-providers/provider-action-guide/</a>
American College of Sports Medicine	Medical Clearance Form	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-sample-medical-clearance-form.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-sample-medical-clearance-form.pdf</a>
American College of Sports Medicine	Exercise Prescriptions	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-moving-through-cancer-form-web.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM-moving-through-cancer-form-web.pdf</a>
American College of Sports Medicine	Exercise Program Directory	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/</a>

## Body Weight and Lifestyle Changes

Source	Resources	Link
American Cancer Society	Let's Talk: Nutrition, Physical Activity, and Cancer Survivorship CME/CEU Training Course	<a href="https://acssurvivors.kognito.com/">https://acssurvivors.kognito.com/</a>
Centers for Disease Control and Prevention	Caring for Cancer Survivors: Obesity and Wellness	<a href="https://www.cdc.gov/cancer/survivors/health-care-providers/obesity-wellness.htm">https://www.cdc.gov/cancer/survivors/health-care-providers/obesity-wellness.htm</a>
Obesity Canada	Weight Bias	<a href="https://obesitycanada.ca/weight-bias">https://obesitycanada.ca/weight-bias</a>
Stop Obesity Alliance	Weight Can't Wait: Guide for the Management of Obesity in the Primary Care Setting	<a href="https://stop.publichealth.gwu.edu/ProviderResources">https://stop.publichealth.gwu.edu/ProviderResources</a>
Stop Obesity Alliance	Fast Facts: Weight Bias and Stigma	<a href="https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Weight%20Bias%20and%20Stigma.pdf">https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Weight%20Bias%20and%20Stigma.pdf</a>
Stop Obesity Alliance	Fast Facts: Healthcare Providers and Obesity Care	<a href="https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Health%20Care%20Providers%20and%20Obesity%20Care.pdf">https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/Health%20Care%20Providers%20and%20Obesity%20Care.pdf</a>
UCONN Rudd Center for Food Policy and Obesity	Weight Bias in Healthcare	<a href="https://uconnruddcenter.org/research/weight-bias-stigma/healthcare-providers/">https://uconnruddcenter.org/research/weight-bias-stigma/healthcare-providers/</a>
American Society of Clinical Oncology (ASCO)	Obesity and Cancer: A Guide for Oncology Providers	<a href="https://www.asco.org/sites/new-www.asco.org/files/content-files/blog-release/documents/2014-Obesity-Cancer-Guide-Oncology-Providers.pdf">https://www.asco.org/sites/new-www.asco.org/files/content-files/blog-release/documents/2014-Obesity-Cancer-Guide-Oncology-Providers.pdf</a>

## Food Insecurity Among Cancer Survivors

Source	Resources	Link
Children’s Health Watch	Hunger Vital Sign Food Insecurity Screener	<a href="https://childrenshealthwatch.org/public-policy/hunger-vital-sign/">https://childrenshealthwatch.org/public-policy/hunger-vital-sign/</a>
Feeding America/Humana	Food Insecurity and Health Resource Toolkit	<a href="https://hungerandhealth.feedingamerica.org/resource/food-insecurity-screening-toolkit">https://hungerandhealth.feedingamerica.org/resource/food-insecurity-screening-toolkit</a>
American Hospital Association	Food Insecurity and the Role of Hospitals	<a href="https://www.aha.org/system/files/hpoe/Reports-HPOE/2017/determinants-health-food-insecurity-role-of-hospitals.pdf">https://www.aha.org/system/files/hpoe/Reports-HPOE/2017/determinants-health-food-insecurity-role-of-hospitals.pdf</a>
American Cancer Society	What’s the Connection? Food Insecurity, Obesity, and Cancer	<a href="https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_WhatsTheConnection_updated2021.pdf">https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_WhatsTheConnection_updated2021.pdf</a>
American Cancer Society	Food Insecurity: Root Causes and Impact on Cancer Survivors and Caregivers	<a href="https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_Cancer-Survivors-and-Caregivers_Updated-2021.pdf">https://www.acs4ccc.org/wp-content/uploads/2022/01/FI_Cancer-Survivors-and-Caregivers_Updated-2021.pdf</a>

## ALL RESOURCES FOR PATIENTS

### Influence of Diet, Activity, and Body Weight on Cancer Prevention and Survivorship

Source	Resources	Link
American Cancer Society	Survivorship: During and After Treatment webpage	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment.html</a>
American Cancer Society	Life After Treatment Guide	<a href="https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-cancer-survivors-and-caregivers.html">https://www.cancer.org/health-care-professionals/national-cancer-survivorship-resource-center/tools-for-cancer-survivors-and-caregivers.html</a>
National Association of Chronic Disease Directors (NACDD)	Talk to Someone: Physical Activity and Nutrition Tool	<a href="https://simulations.kognito.com/ncsw/nutrition/">https://simulations.kognito.com/ncsw/nutrition/</a>



Source	Resources	Link
National Association of Chronic Disease Directors (NACDD)	Talk to Someone: Alcohol Use Tool	<a href="https://simulations.kognito.com/ncsw/alcohol/">https://simulations.kognito.com/ncsw/alcohol/</a>
American Cancer Society	Diet and Activity Guidelines to Reduce Cancer Risk infographic	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html</a>
American Cancer Society	Survivorship Care Plans	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment/survivorship-care-plans.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment/survivorship-care-plans.html</a>
American Cancer Society	Caregiver Support video series	<a href="https://www.cancer.org/treatment/caregivers/caregiver-support-videos.html">https://www.cancer.org/treatment/caregivers/caregiver-support-videos.html</a>
American Institute for Cancer Research (AICR)	Healthy Living Tips for Cancer Survivors infographic	<a href="https://www.aicr.org/wp-content/uploads/2020/07/Healthy-Living-After-Cancer-Infographic.pdf">https://www.aicr.org/wp-content/uploads/2020/07/Healthy-Living-After-Cancer-Infographic.pdf</a>
American Cancer Society	Diet and Physical Activity Fact Sheet	<a href="https://www.acs4ccc.org/nutrition-and-physical-activity-resources/">https://www.acs4ccc.org/nutrition-and-physical-activity-resources/</a>
American Institute for Cancer Research (AICR)	Cancer Survival: Take control of your health website	<a href="https://www.aicr.org/cancer-survival/">https://www.aicr.org/cancer-survival/</a>
National Comprehensive Cancer Network (NCCN)	NCCN Guidelines for Patients: Survivorship Care for Healthy Living	<a href="https://www.nccn.org/patientresources/patient-resources/guidelines-for-patients/guidelines-for-patients-details?patientGuidelineId=52">https://www.nccn.org/patientresources/patient-resources/guidelines-for-patients/guidelines-for-patients-details?patientGuidelineId=52</a>

## Nutrition for Cancer Survivors

Source	Resources	Link
Academy of Nutrition and Dietetics	Find a Nutrition Expert	<a href="https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae">https://www.eatright.org/find-a-nutrition-expert?rdType=url_edit&amp;rdProj=fane_update&amp;rdInfo=fae</a>
American Cancer Society	Eat Healthy webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/eat-healthy.html">https://www.cancer.org/healthy/eat-healthy-get-active/eat-healthy.html</a>
American Cancer Society	Tips for Healthy Eating handout	<a href="https://www.acs4ccc.org/wp-content/uploads/2021/05/Tips-For-Healthy-Eating.pdf">https://www.acs4ccc.org/wp-content/uploads/2021/05/Tips-For-Healthy-Eating.pdf</a>

Source	Resources	Link
American Cancer Society	Nutrition for People with Cancer webpage	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment/staying-active/nutrition.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment/staying-active/nutrition.html</a>
Fred Hutchinson Cancer Research Center	Cook For Your Life webpage	<a href="https://www.cookforyourlife.org/">https://www.cookforyourlife.org/</a>
Academy of Nutrition and Dietetics	Nutrition During and After Cancer Treatment webpage	<a href="https://www.eatright.org/health/diseases-and-conditions/cancer">https://www.eatright.org/health/diseases-and-conditions/cancer</a>
Cancer.net (ASCO)	Nutrition Recommendations During and After Treatment webpage	<a href="https://www.cancer.net/survivorship/healthy-living/nutrition-recommendations-during-and-after-treatment">https://www.cancer.net/survivorship/healthy-living/nutrition-recommendations-during-and-after-treatment</a>
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American Institute for Cancer Research (AICR)	Treatment Tips: Planning and Preparing	<a href="https://www.aicr.org/cancer-survival/treatment-tips/after-treatment/">https://www.aicr.org/cancer-survival/treatment-tips/after-treatment/</a>

## Physical Activity for Cancer Survivors

Source	Resources	Link
American College of Sports Medicine	Exercise Program Directory	<a href="https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/">https://www.exerciseismedicine.org/eim-in-action/moving-through-cancer/exercise-program-registry/</a>
American Cancer Society	Get Active webpage	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/get-active.html">https://www.cancer.org/healthy/eat-healthy-get-active/get-active.html</a>
Cancer.net (ASCO)	Exercise During Cancer Treatment webpage	<a href="https://www.cancer.net/survivorship/healthy-living/exercise-during-cancer-treatment">https://www.cancer.net/survivorship/healthy-living/exercise-during-cancer-treatment</a>
CDC	Guides to Healthy Living: Physical Activity webpage	<a href="https://www.cdc.gov/cancer/survivors/healthy-living-guides/physical-health/physical-activity.htm">https://www.cdc.gov/cancer/survivors/healthy-living-guides/physical-health/physical-activity.htm</a>

Source	Resources	Link
ACSM Moving Through Cancer	Being Active When You Have Cancer: Patient Handout	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Cancer.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Cancer.pdf</a>
ACSM Moving Through Cancer	Sit Less, Move More	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Sit-Less-Move-More.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/EIM_Rx-for-Health_Sit-Less-Move-More.pdf</a>
ACSM Moving Through Cancer	Moving Through Cancer: Exercise for People Living With and Beyond Cancer	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/Consolidated-Infographic-for-the-ACSM-Roundtable-on-Cancer-and-Exercise.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/Consolidated-Infographic-for-the-ACSM-Roundtable-on-Cancer-and-Exercise.pdf</a>
ACSM Moving Through Cancer	Effects of Exercise on Health-Related Outcomes in Those with Cancer	<a href="https://www.exerciseismedicine.org/wp-content/uploads/2021/04/exercise-guidelines-cancer-infographic.pdf">https://www.exerciseismedicine.org/wp-content/uploads/2021/04/exercise-guidelines-cancer-infographic.pdf</a>
ACSM Moving Through Cancer	Exercise for Cancer Prevention and Treatment	<a href="https://www.acsm.org/docs/default-source/files-for-resource-library/exercise-for-cancer-prevention-and-treatment-infographic.pdf?sfvrsn=ad47b1e1_2">https://www.acsm.org/docs/default-source/files-for-resource-library/exercise-for-cancer-prevention-and-treatment-infographic.pdf?sfvrsn=ad47b1e1_2</a>
American Cancer Society	Diet and Activity Guidelines to Reduce Cancer Risk	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html</a>

## Body Weight and Lifestyle Changes

Source	Resources	Link
American Cancer Society	Take Control of Your Weight	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/take-control-your-weight.html">https://www.cancer.org/healthy/eat-healthy-get-active/take-control-your-weight.html</a>
American Cancer Society	Diet and Activity Guidelines to Reduce Cancer Risk	<a href="https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html">https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/infographic.html</a>
National Association of Chronic Disease Directors (NACDD)	Talk to Someone: Physical Activity and Nutrition Tool	<a href="https://simulations.kognito.com/ncsw/nutrition/">https://simulations.kognito.com/ncsw/nutrition/</a>

## Food Insecurity Among Cancer Survivors

Source	Resources	Link
American Cancer Society	Food Insecurity Resources and Tips for Cancer Survivors and Caregivers	<a href="https://www.acs4ccc.org/wp-content/uploads/2022/01/Caregiver-FI-Services-and-Tips-8.20.20.pdf">https://www.acs4ccc.org/wp-content/uploads/2022/01/Caregiver-FI-Services-and-Tips-8.20.20.pdf</a>

## Topics of Interest to Cancer Survivors

Source	Resources	Link
American Cancer Society	What you need to Know First about Dietary Supplements webpage	<a href="https://www.cancer.org/treatment/treatments-and-side-effects/complementary-and-alternative-medicine/dietary-supplements/intro.html">https://www.cancer.org/treatment/treatments-and-side-effects/complementary-and-alternative-medicine/dietary-supplements/intro.html</a>
American Cancer Society	What are Sleep Problems webpage	<a href="https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/sleep-problems/what-are-sleep-problems.html">https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/sleep-problems/what-are-sleep-problems.html</a>
American Cancer Society	Coping with Cancer webpage	<a href="https://www.cancer.org/treatment/survivorship-during-and-after-treatment/coping.html">https://www.cancer.org/treatment/survivorship-during-and-after-treatment/coping.html</a>
American Cancer Society	Six Tips for Managing Stress webpage	<a href="https://www.cancer.org/latest-news/6tipsformanagingstress.html">https://www.cancer.org/latest-news/6tipsformanagingstress.html</a>
National Association of Chronic Disease Directors	Talk to Someone: Anxiety and Distress simulated conversation for cancer survivors	<a href="https://simulations.kognito.com/ncsw/anxiety/">https://simulations.kognito.com/ncsw/anxiety/</a>
American Cancer Society	Marijuana and Cancer	<a href="https://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/complementary-and-integrative-medicine/marijuana-and-cancer.html#references">https://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/complementary-and-integrative-medicine/marijuana-and-cancer.html#references</a>
American Cancer Society	Social Support - Cancer Survivors' Network Webpage	<a href="https://csn.cancer.org">https://csn.cancer.org</a>



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