What is Cancer?
Cancer, also referred to as a malignant tumor, is a general term that refers to the rapid formation of abnormal cells that grow beyond their normal boundaries. Cancer can affect any part of the body, and originates from a single cell that transforms into a tumor cell through interactions between genetics and external agents.

What Increases the Risk for Cancer?
The risk factors for cancer — listed below — act cumulatively to contribute to the occurrence of cancer; they are not necessarily the cause of cancer. Lifestyle risk factors for cancer are usually preventable, and avoiding certain factors may lower one's risk in developing cancer. Key lifestyle risk factors to avoid include:

1. Overweight or obesity
2. Unhealthy diet high in processed foods
3. Lack of physical activity
4. Tobacco use
5. Alcohol use
6. Infections (hepatitis, HPV)
7. Environmental pollution (air, water, and soil)
8. Occupational Carcinogens (Asbestos)
9. Radiation (UV light, Radon gas)

Obesity and Cancer: What is the Relationship?
The American Cancer Society (ACS) reports that 1 out of every 5 cancer deaths in the United States is attributed to overweight and obesity. Overweight or obesity is linked to an increased risk for various cancers such as breast, colon and rectum, endometrium, esophagus, kidney, and pancreas. It also raises the risk for cancers of the gallbladder, liver, cervix, ovary, prostate, as well as non-Hodgkin lymphoma and multiple myelomas.

The most important factor in the relationship between diet and prevention of cancer is healthy weight maintenance throughout life. Weight maintenance can be achieved by balancing caloric intake from food and beverages, with physical activity. ACS recommends avoiding excess weight gain by limiting high caloric foods and beverages, decreasing food portions, limiting high calorie snacks, and engaging in regular physical activity.

Key Dietary Guidelines for Cancer Prevention
The following list contains key dietary factors for healthy weight maintenance — an important recommendation for the prevention of cancer. This guide also presents recommendations to reduce one's exposure to carcinogens present in food.

Quick Facts
- Lifestyle choices such as poor diet, lack of physical activity, obesity, tobacco, and alcohol use are all associated with an increased risk for cancer.
- One-third of all cancer deaths are preventable, and can be attributed to lack of physical activity and poor diet.
- Vitamin supplements have not been shown to reduce the risk for cancer.
- Consuming whole foods as part of a healthy diet, and controlling calorie intake, will help maintain a healthy weight and reduce the risk for cancer.

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1. **Reduce intake of saturated fat, processed meat, and red meat**

Increased consumption of saturated fat, processed meat, and red meat, have been shown to raise the risk for cancer, possibly through contact with carcinogenic substances during cooking and processing methods. Consumption of these foods may also lead to weight gain, which is also a risk factor for cancer.

**Saturated Fat** — Research suggests that too much dietary fat, especially from unhealthy fats like saturated and trans fat, may lead to an increased risk for a variety of cancers such as colon, rectum, and prostate cancer. This is especially true when fat, as a total percentage of caloric intake, is increased. The fat content in meat may contribute to the production of secondary compounds in the body that act as carcinogens. Overall, Americans should consume no more than 30-35% of their daily calories from fat, depending on age and gender, and should consume no more than 7-10% of their daily calories from saturated fatty acids. Saturated fats are mostly found in animal products. Major sources for Americans include: cheese, pizza, desserts, and red meat. These foods should be replaced with foods rich in unsaturated fats such as essential omega-3 fatty acids found in seafood and most plant based oils.

**Tips to Reduce Saturated Fat:**
- Use vegetable oils when cooking (canola, corn, or olive oil) instead of solid fats (butter, or lard).
- Purchase fat-free or low-fat milk instead of whole milk.
- Trim fat and skin from meat.
- Decrease consumption of fried foods.
- Eat smaller portions.
- Pay attention to fat content on food labels.
- Substitute low-fat products in recipes.
- Consume meat that has lower levels of saturated fat, such as seafood.

2. **Limit intake of salt-cured and charred foods**

Carcinogens are present in certain foods, and evidence suggests that eating salt-cured, smoked, pickled, and charcoal-broiled foods, increases the risk for cancer. Rates of stomach and esophageal cancer cases are especially high in parts of the world where food is often prepared using these methods.

**Salt-Cured Foods** — Salt-cured and pickled foods may increase one's risk for stomach cancer, especially when eaten in large quantities. Nitrates used in the curing process are known cancer causing agents in laboratory animals, and are suspected of causing cancer in humans. There is no evidence, however, that table salt or salt used in cooking increases the risk for cancer.
**Smoked Foods** — These foods absorb large amounts of tars that arise from incomplete combustion of wood or charcoal fire, which are known to contain numerous carcinogens. "Liquid Smoke," which may be less hazardous, is a commonly used substitute.

**Charcoal and Gas-Broiled Foods** — A substance called benzopyrene is formed when fat from meat drips on to hot coals. The rising smoke then deposits the carcinogenic substance on the meat. However, little evidence suggests that Americans are at risk from excessive consumption of charcoal-broiled food.

**High-temperature frying or broiling** — This process may convert some of the meat proteins into products that damage the genetic material of the body’s cells.

**Tips to Limit the Charring of Food:**
- Cover grill with aluminum foil to protect the food from smoke and fire.
- Cook meat until done, but do not char it.
- Remove charred portions before eating.
- Precook foods in the microwave to decrease grilling time.

**3. Increase Consumption of Fruits, Vegetables, and Whole-Grains**

Specific nutrients and food constituents of fruits, vegetables and whole grains may act as anti-cancer substances when consumed in amounts found in a varied diet. Consuming fruits, vegetables, and whole grains may also help in healthy weight maintenance — the ultimate goal in cancer prevention according to research.

**Whole-Grains** — Plants such as wheat, oats, rice, and barley, contain vitamins, minerals, and dietary fiber, which may help prevent cancers of the gastrointestinal tract such as colon and rectal cancer. Dietary fiber is the material from plant cells that the body cannot digest completely, and it is found in vegetables, legumes, fruit and whole-grain cereals, nuts and seeds. Fiber provides bulk in the diet, and it helps move food through the intestines and out of the body at regular intervals. It is unclear whether total fiber intake or components of dietary fiber are beneficial in reducing cancer risks. Fiber supplements are not recommended.

**Fruits and Vegetables** — Plants contain many beneficial compounds such as vitamins, minerals, antioxidants, phytochemicals, and fiber, which may act to reduce the risk for cancers such as lung, mouth, pharynx, larynx, esophagus, stomach, and colorectal. Researchers are still examining the effects of these complex interactions. There are several groups of fruits and vegetables that may offer particularly protective effects such as dark green and orange vegetables, cruciferous vegetables (cabbage, broccoli), flavonoids (soy, tea), legumes, sulfides (garlic, onion), and tomato products.

**Antioxidants and Cancer** — Antioxidants are compounds present in fruits and vegetables which help protect tissues from being damaged. Tissue damage is linked to increased cancer risk; therefore antioxidants may play a role in cancer prevention. Types of antioxidants include vitamin C (ascorbic acid), vitamin E, and the carotenoids — vitamin A, and beta-carotene. Many studies have demonstrated the role that antioxidants play in reducing the risk for cancer. Their protective effect is only observed when one consumes antioxidants from plant foods such as fruits and vegetables, and not from supplements.

**Phytochemicals and Cancer** — Phytochemicals (or phytonutrients) are chemicals made by plants that have antioxidant-like properties. Types of phytochemicals include dark green and orange vegetables, cruciferous vegetables, flavonoids, and sulfides. There is an association with a high consumption of plant foods and a decrease in risk for cancer, but the relationship is unknown.

**4. Consume Alcoholic Beverages in Moderation**

Heavy consumption of alcoholic beverages (more than two drinks per day for men, and more than one drink per day for women) increases the risk of mouth, pharynx, larynx,
esophagus, liver, pancreas, bladder, colorectal, and breast cancers. It is unclear whether it is the alcohol or other ingredients in these beverages that are responsible for the association with an increased risk for cancer.

**Alcohol Abuse and the Cancer Connection:** The link between cancer and alcohol is complex because frequent alcohol consumption may result in many health problems.

- The carcinogenic effect may result from the direct contact of alcohol on the mouth, pharynx and esophagus.
- Heavy drinking can result in liver cirrhosis, which may lead to liver cancer.
- Alcoholics commonly have nutritional deficiencies because alcohol contains only empty calories, and food intake often is compromised. This may result in a low fruit, vegetable, and whole grain intake.
- If heavy drinkers also smoke cigarettes, the risk for cancer is compounded.
- Alcohol is high in calories and low in nutrients. Calories from alcohol can contribute to weight gain, which is a risk factor for cancer.

**Tips to Moderate Alcohol Consumption:**

- Instead of alcohol, try non-alcoholic wine, beer, mineral or tonic water, cider, grape juice, or fruit juice.
- Always provide non-alcoholic beverages and nutrient-dense foods at social gatherings.
- Drink alcohol in moderation — no more than two drinks per day for men, and no more than 1 drink per day for women.

**American Cancer Society:** www.cancer.org

**National Cancer Institute:** www.cancer.gov — or call the Cancer Information Service at: 1-800-4-CANCER

**References**


**Image Sources**

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**Summary**

- Diets high in fiber and low in fat, with plenty of fruits, vegetables, whole-grain breads, and cereals, may reduce the risk of cancer, particularly in individuals at increased risk.
- In addition to the recommendations by the World Health Organization (WHO) and the Academy of Nutrition and Dietetics (AND), the American Cancer Society (ACS) also strongly recommends maintaining a healthy weight.
- A healthy weight can be maintained by regular physical activity and a healthful diet.
- A healthy diet should include the following dietary recommendations:
  1) Reduce intake of saturated fat, processed meat, and red meat,
  2) Limit intake of salt-cured and charred foods,
  3) Increase consumption of fruits, vegetables, and whole grains,
  4) Consume alcoholic beverages in moderation.

These are all important preventive actions that may safeguard ones health and reduce the risk for cancer.

- These dietary guidelines are intended for people who are healthy. If you have a condition that requires a special diet, consult a physician or registered dietician before beginning any modified diet plan.