



**Be a Whiz at Healthy Grilling
by the American Institute for Cancer Research**

Summertime is grilling time for Americans. Unless you take some simple precautions, however, grilling food can raise the risk of cancer. Take this multiple-choice quiz to see if you know the dos and don'ts of grilling for great taste and good health. Questions may have more than one correct answer.

1. Grilling can raise cancer risk because:

- A. The grill is usually dirty.
- B. Flies and pollution from the air can land on the food.
- C. Red meat, poultry or seafood can form carcinogenic compounds called heterocyclic amines (HCAs) when exposed to high heat. HCAs can damage the DNA of our genes, beginning the process of cancer development.
- D. Fat from red meat, poultry and seafood can drip, creating a cancer-causing substance called polycyclic aromatic hydrocarbons (PAHs). Smoke and flare-ups deposit the PAHs back on the meat.

2. What are the best choices for grilling?

- A. Vegetables and fruits because they don't form HCAs.
- B. Vegetables because natural phytochemicals in them stimulate enzymes that can convert HCAs to an inactive form that is easily eliminated from the body.
- C. Lean meats, like skinless chicken and fish, because they drip less fat.
- D. Small portions of red meat, like kebabs, because they cook fast.

3. A marinade can decrease carcinogens that form during grilling up to 96 percent because:

- A. It acts as a barrier, keeping flames from directly touching the meat.
- B. Typical marinade ingredients, like vinegar, citrus juices and olive oil, have special protective powers.
- C. Scientists aren't sure why.

4. If you decide to grill meat, which simple cooking adjustments(s) will reduce the formation of carcinogens?

- A. Covering the grill with punctured aluminum foil.
- B. Turning the gas down or waiting for charcoal to become low-burning embers.
- C. Raising the grill surface.
- D. Placing meats to the side of the heat source.

5. Flipping meat every minute can also reduce the formation of carcinogens for the following reason(s):

- A. Turning the meat often accelerates the cooking process, so there is less exposure to heat.
- B. Flipping propels HCAs off the meat into the air.
- C. Charring is less likely.

6. Safer methods of cooking meat than grilling include:

- A. Microwaving
- B. Roasting
- C. Stewing
- D. High-heat pan frying

7. If you decide to grill red meat, to limit cancer risk you should eat no more in a day than what amount?

- A. 22 ounces
- B. 1 pound
- C. 10 ounces
- D. 3 ounces

Answers: (1) C and D. (2) A, B, C and D. (3) C. Studies are underway to determine what ingredients in a marinade help reduce HCA formation the most, but even briefly marinating meats has been shown effective. About a half-cup of marinade is needed for every pound. Make sure all meat surfaces come into contact with the marinade. (4) A, B, C and D. (5) C. You should remove all charred portions of meat before eating. (6) A, B and C. Cooking meat at lower temperatures reduces HCAs. To give meats a grilled flavor without the risks, you can precook meats in the oven or microwave, and then place them on a grill for a few moments. (7) D.

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