



Quick Facts:

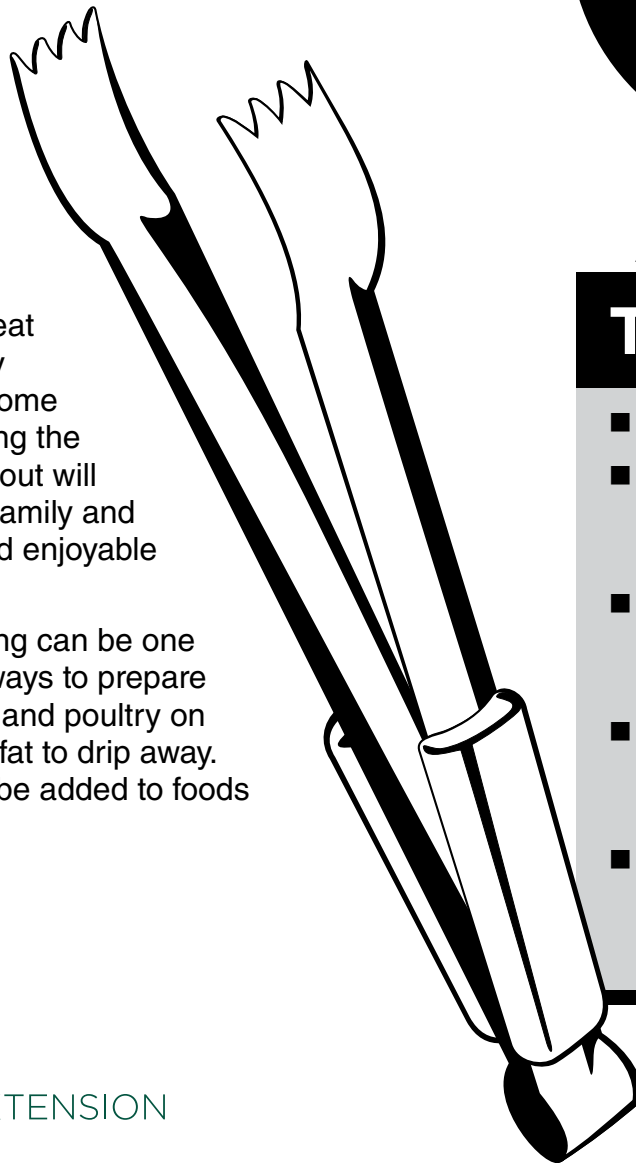
Becoming the Grill Master

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Grab those tongs, it's time to grill!

Picnics, get-togethers and tailgating are a great time to hang out, enjoy the weather and grill some delicious food. Following the safety tips in this handout will help ensure that your family and friends have a safe and enjoyable experience as well.

When done right, grilling can be one of the more healthful ways to prepare food. Preparing meats and poultry on the grill allows excess fat to drip away. Very little fat needs to be added to foods cooked on the grill.



Tailgating?

- Keep cold foods cold.
- Place beverages in one cooler and perishable food in another.
- Refrain from opening the cooler as much as possible.
- Keep the cooler in an air conditioned part of the car, not in the hot trunk.
- Keep meats wrapped and sealed to avoid cross-contamination.

What You Need to Know From the Store to the Grill

At the Store

At the grocery store, wait until right before you check out to pick out your cold items such as meat and poultry. Be sure to separate meat and poultry from the other items in your cart, especially fresh fruits and vegetables. Use the plastic bags provided in the meat and produce sections to help prevent cross-contamination, which can happen when raw meat drips onto other foods.

From the Store to Home

Make the grocery store the last stop if possible. Keep all cold foods together, or bring a cooler to transport cold items. Perishable food should be refrigerated within two hours.

Storage at Home

Place meat and poultry in the refrigerator immediately. Store raw meat in a container on the lowest shelf so it won't drip onto other food. If you don't plan to use the meat soon, freeze it.

Not preparing the meat or poultry immediately?

Freeze poultry and ground meat within one to two days of purchase

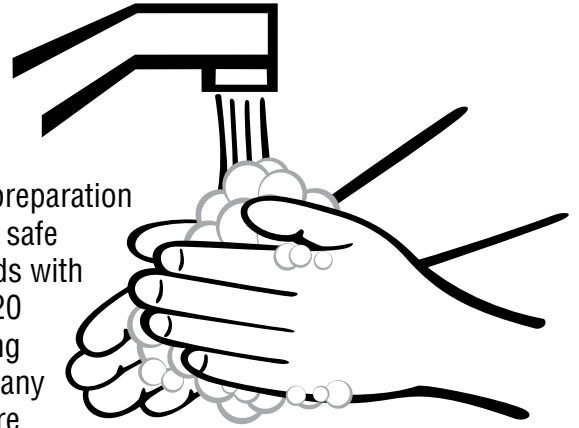
Freeze all other meat within four to five days of purchase

Keep cold foods below 40 F.

Keep frozen foods below 0 F.

Clean

Clean hands and clean preparation surfaces are the start to safe grilling. Wash your hands with warm, soapy water for 20 seconds before preparing or handling food. Clean any food contact areas before, during and after food preparation.



Don't forget to wash fresh fruits and vegetables, even those with peels and rinds, before preparing them.

Separate

Raw meat and poultry should be prepared separately from fruit, vegetables and cooked foods. When you cut up meats and vegetables, be sure to use different cutting boards and knives (or wash thoroughly with soap and warm water in between uses). Discard worn-out cutting boards.

To prevent foodborne illness, don't use the same plate/tray and utensils for raw and cooked meat/poultry.

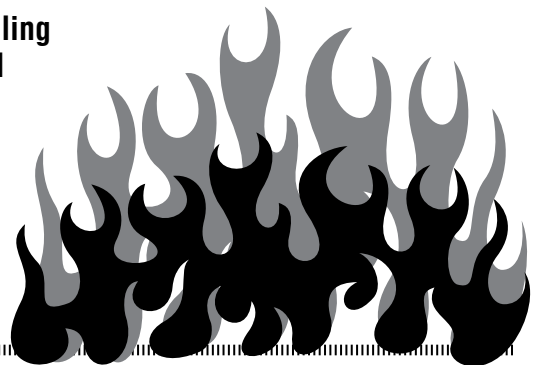
Thaw

Use the refrigerator or thaw sealed packages in cold water. If the meat is going right on the grill, you can use the microwave to defrost. Be sure meat is fully thawed before placing it on the grill.

Marinating

Marinate meat in the refrigerator, not on the counter. Poultry and cubed meat can marinate safely for two days. Beef, veal and pork roasts, chops and steaks can be marinated for up to five days. If you want to use some of the marinade for sauce after the meat is cooked, reserve some before you put the meat in it.

Avoid flareups when grilling by using lean meats and trimming excess fat off the meat. Be sure to keep a spray bottle of water nearby just in case a flareup occurs.



Cook - Fire up the Grill

Precooking

Using the microwave, oven or stove can be a good way to reduce grilling time. Just make sure the meat goes immediately onto the preheated grill.

Grill Prep

Grills need annual deep cleaning. A leaf blower and garden hose work great to get started. Then scour the grate with a wire brush to remove debris.

Clean the grill each time you use it.

Use nonstick cooking spray before each use to prevent food from sticking to the grill.

How Hot Is the Grill?

A good way to estimate the temperature of your grill is to place your hand, palm side down, about 4 inches above the coals. Count how many seconds you can leave your hand there before you have to pull away.

Seconds	Temperature
2	375 F or higher (Hot)
3	350-375 F (Medium-hot)
4	300-350 F (Medium)
5	200-300 F (Low)



Is It Done Yet? Don't Count on Color!

Cooking food to the minimum internal temperature can reduce the risk of foodborne illness greatly. Use a thermometer and the chart below to ensure the food has reached a safe temperature. Never partially grill meat or poultry and finish cooking later. Meat and poultry cooked on the grill often browns quickly on the outside and may not be done on the inside.

Safe Minimum Internal Temperatures

Whole poultry	165 F
Poultry breasts.....	165 F
Ground poultry.....	165 F
Hamburgers, ground beef.....	160 F
Beef, pork, veal, lamb (steaks, roasts and chops)	
Medium rare	145 F*
Medium.....	160 F
Fish	145 F

* Allow the meat to rest for three minutes

Reheating:

When reheating fully cooked meats, such as hotdogs, grill to 165 F.

Grill Safety

- Use long-handled tongs and flame-retardant mitts to protect your hands.
- Pick a safe area: Place the grill on a well-ventilated, flat, level surface away from overhangs, deck railings and shrubbery.
- Handle charcoal safely; never add lighter fluid directly to hot coals.
- Putting out the fire: Cover the grill and close the vents, allow the coals to cool completely for at least 48 hours and dispose of them in a noncombustible container.
- Never leave a lit grill unattended.
- Keep a bucket of water and/or a fire extinguisher close at hand.
- Keep children and pets away from hot grills and coals.

Is Charred Meat Linked to Cancer?

Meats that are fried or grilled, especially when cooked until extremely well-done or charred, contain the highest levels of HAA (heterocyclic aromatic amines). HAA are potentially carcinogenic. Polycyclic aromatic hydrocarbons (PAHS) form when fat drips on charcoal or hot stones, causing flare-ups and smoke formation. PAHS also are linked to increased cancer risk.

Consider these recommendations to reduce the amount of HAA in grilled meat:

- Use a marinade, especially one that contains an acidic ingredient, such as lemon juice or vinegar. Researchers have shown that marinating meat as little as 30 minutes can reduce the formation of HAA by more than 90 percent.
- Use a lower heat setting or raise the grate to reduce the intensity of the heat.
- Trim visible fat from meat to help prevent flare-ups on the grill.
- Leave the grilling fork in the house. Use tongs to turn the meat to reduce fat dripping and potential flare-ups and smoke formation. Keep a spray bottle at hand or consider covering the coals or stones with punctured aluminum foil to prevent flare-ups and smoking.
- Turn food frequently. Flipping meat often lessens the formation of HAA.
- Cook smaller portions of meat, such as kabobs, to reduce the amount of time the meat spends on the grill.
- Trim off any burned parts before serving grilled food.
- Consider grilled vegetables as a side dish. Because they are very low in protein, HAA formation is not an issue. Colorful vegetables contain antioxidants and other natural cancer-fighting chemicals.

Source: American Institute for Cancer Research.

Keep Hot Food Hot

After cooking meat and poultry on the grill, keep it hot until served: 140 F or warmer. Keep cooked meats hot by placing them away from the heat on the grill or in the oven at about 200 F

When you take food off the grill, be sure to use clean utensils and place the food on a clean platter. Juices left on the plate from the raw meat can cross-contaminate the cooked meat. In hot weather (above 90 F), food never should sit out for more than one hour.

Chill Food Quickly

- Refrigerate any leftovers promptly.
- Use shallow containers to speed up cool down.
- Discard any food left out for more than two hours (one hour if temperatures are above 90 F).

References:

Food Safety Inspection Service

www.fsis.usda.gov/food-safety/safe-food-handling-and-preparation/food-safety-basics/2021-summer-grilling-toolkit

www.usda.gov/media/press-releases/2021/05/27/usda-provides-food-safety-tips-grilling-pros-and-beginners

Minnesota Department of Health

www.health.state.mn.us/people/foodsafety/cook/grill.html

Environmental Management Department

<https://emd.saccounty.net/EH/Documents/FoodSafetyOutdoorGrilling.pdf#search=food%20safety%20grilling>

For more information on this and other topics, see: www.ag.ndsu.edu

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