The holidays are an opportunity for celebrations and feasts. Yet that stuffed turkey, cream pie or homemade ice cream, while looking and smelling fabulous, can be a danger to your health. Even the most well-meaning hosts can make food-handling blunders, inadvertently offering foods that can cause food-borne illnesses. Among groups with special health concerns, it is essential to practice safe food handling techniques when entertaining, during the holiday season and throughout the year.

Thus, in the spirit of the holidays, this article will (1) describe why there is a need to increase awareness of food safety principles, and (2) offer basic food safety tips that can be used to reduce risk of food-borne illnesses. Consider clipping out these resources and placing them on your fridge, or giving them to anyone who cooks for you during the holidays. For those who are vulnerable to infection, preventing food-borne illnesses—and promoting good health—may be the greatest holiday gift of all.

Who’s at Risk?

The United States has one of the safest food supplies in the world. Nevertheless, the Centers for Disease Control and Prevention (CDC) estimates that “76 million people get sick, more than 300,000 are hospitalized, and 5,000 Americans die each year from food-borne illness” (CDC, 2006). About one in four reported outbreaks are due to improper food handling practices at home. Today, preventing food-borne illness is a major public health challenge, and this is particularly relevant for at-risk groups, including people who live with weakened immune systems, pregnant women, young children, elderly and cancer survivors.

What Do I Need to Know? Fight BAC!

To reduce the rate of food-borne illnesses in the home, the Partnership for Food Safety Education developed the Fight BAC! campaign (as in Fight BACteria), bringing together industry associations, consumer and public health groups, and governmental organizations to provide guidelines for safe food-handling. Safety precautions are organized into four easy-to-use steps that will help everyone to reduce the risk of food-borne illness:

**Clean:** Wash hands and surfaces often.

**Separate:** Don’t cross-contaminate.

**Cook:** Cook to proper temperatures.

**Chill:** Refrigerate promptly.

Share these steps with those you love, for a safe and low-BACteria holiday.

1. **Clean:** With all due respect, please disinfect!
2. **True or False?** It is safe to assume that most people follow food safety principles.
   - **False.** In a study to see how well people generally follow the Fight BAC! guidelines (published in the Journal of the American Dietetic Association; Anderson, Shuster, Hansen, et al., 2004), researchers videotaped 99 people in their homes while they prepared their meals. Most of the participants did not follow the guidelines. Only one-third of the participants washed their hands with soap and only one-third used a clean kitchen surface during food preparation.

   **Tips:**
   - Wash hands with warm, soapy water for at least 20 seconds before and after preparing food. Remind friends and family to do the same!
   - Replace sponges every 1 to 2 weeks.
• Keep sponges and dishcloths clean (e.g., submerge in diluted non-scented bleach [1 tsp bleach: 1 quart water] for 1 to 2 minutes. Only bleach will kill both viruses and bacteria.
• Consider using paper towels to dry hands and clean kitchen surfaces.
• Keep pets away from the kitchen, eating surfaces and equipment.
• Clean the inside walls and shelves of the refrigerator monthly with hot, soapy water; then rinse. Clean up spills immediately.
• Rinse fresh fruits and vegetables under cool running water, including those with skins and rinds that will be sliced, and rub firm-skinned fruits and vegetables with a clean brush or coarse paper towel. Be sure to clean peels and rinds as well; microorganisms from the outside of the food can spread to the inside section when the fruit or vegetable is cut or peeled. Remove bruised or damaged areas.
• People with weakened immune systems should avoid eating alfalfa sprouts and prepackaged salad products until their safety is assured.

According to Martin Wiedmann, DVM, PhD, associate professor, Department of Food Science, Cornell University, “While washing leafy vegetables might reduce E. coli numbers, it cannot completely eliminate E. coli, since E. coli may sometimes be found inside plants and not just on the surface. In general, it may thus be advisable for people with severe immunosuppression to avoid any raw leafy vegetables.”

When in doubt, throw it out!

2. Separate: Use a clean serving plate, don’t cross-contaminate!
   **True or False?** Unwashed hands are the most common cross-contamination agent.
   True. In the study described above, Anderson et al. reported that “nearly all subjects handled food in a manner that caused cross-contamination” (J Am Diet Assoc, 2004).

   **Tips:**
   • Wash cutting boards and kitchen surfaces with hot, soapy water after preparing each food item.
   • Cut vegetables first, then raw meat and poultry.
   • Avoid cross contact, or contamination, by washing all surfaces that have been in contact with raw meats, poultry or eggs before reusing.
   • Mix foods with utensils, not hands.

• Wash your utensils, or place them in the dishwasher, after preparing each food item and before you go on to the next food.
• Avoid coughing or sneezing over food. A person with skin infection or infectious disease should not prepare food. If it must be done, use gloves and a mask.
• Never place cooked food on a plate that previously held raw meat, seafood, eggs, etc.

3. Cook: Keep hot foods hot!
   **True or False?** If a hamburger is brown in the middle, it is done.
   False. Looking at the color and texture of a food is not an adequate method of determining safety. You have to use a food thermometer to be sure. According to the USDA, about one out of every four hamburgers turns brown before it reaches a safe internal temperature. Ground beef should be cooked to at least 160°F (lift the patty out of the pan and insert the thermometer sideways). ➢

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Food Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;212°F</td>
<td>Rolling boil, reheat sauces and soups</td>
</tr>
<tr>
<td>212°F</td>
<td>Whole poultry</td>
</tr>
<tr>
<td>180°F</td>
<td>Ground or small cuts of poultry</td>
</tr>
<tr>
<td>165°F</td>
<td>Ground meat, roasts or steaks (med), egg dishes</td>
</tr>
<tr>
<td>160°F</td>
<td>Roasts and steaks (med rare), fish</td>
</tr>
</tbody>
</table>

Temperatures are Fahrenheit

This chart has been adapted for home use and follows the consumer guidelines for Fight BAC®. Individuals with severely weakened immune systems may require slightly different guidelines. Talk with your healthcare provider for assistance.
Tips:
• Seeing is not believing: Use a meat thermometer to test the internal temperature of meats and poultry. Insert the thermometer into the thickest parts of the meats. Food is safely cooked when it reaches a high enough internal temperature (160°F) to kill most "bugs" that cause food-borne illnesses.
• Cook whole poultry to at least 180°F. Small pieces of poultry should reach a safe minimum internal temperature of >165°F.
• Cook ground meat, where bacteria can spread during grinding, to at least 160°F and ground poultry to 165°F. Slightly higher temperatures (>165°F – 180°F) will produce well-done meats and further reduce risk.
• Cook roasts and steaks to >145°F. Medium well is 160°F and well done is 170°F.
• Cook fish to >145°F and until the flesh is opaque and separates easily with a fork.
• Cook eggs until the yolk and white are firm, not runny. Don’t use recipes in which eggs remain raw or only partially cooked. Cook casseroles, sauces, custards, etc., to at least 160°F.
• Reheat leftovers to 165°F. Reheat sauces, marinades, soups and gravy to a rolling boil (212°F).
• Reheat leftovers to 165°F. Reheat sauces, marinades, soups and gravy to a rolling boil (212°F).
• Avoid pockets of uncooked food in the microwave. Cover food, stir and rotate for even cooking.
• Crockpots and warming trays should be 140°F or warmer.
• Discard or avoid anything left out for two hours or more.

4. Chill: Cool Rules
True or False? Boiling hot chicken soup can be cooled to room temperature for a few hours and then placed in the refrigerator.
False. During the time that soup stands cooling at room temperature, bacteria that cause food-borne illnesses could have multiplied enough to cause gastrointestinal discomfort or food-borne illnesses. Always refrigerate leftovers promptly.

Tips:
• Use shallow containers to help foods cool faster.
• Place an appliance thermometer inside the refrigerator (follow manufacturer instructions).
• Maintain refrigerator temperature: 35°F – 40°F. Check the thermometer at the time your refrigerator compressor just turns on. This is when your refrigerator is at its highest temperature.
• Refrigerate foods quickly because cold temperatures slow the growth of harmful bacteria (e.g., use shallow containers, remove stuffing from turkey and refrigerate separately, etc.).
• Most cooked dishes can keep for up to three to four days in the refrigerator. Reheat thoroughly to 165°F. Throw away dishes that have been in the refrigerator for more than three days.
• Throw out foods with off odors. When in doubt, throw it out!
• Maintain the freezer at 0°F or lower.
• Thaw meat in the refrigerator or microwave. Never defrost food at room temperature. Follow the law when you thaw!
• Keep raw meat and poultry separate from other foods.
• Always marinate food in the refrigerator.
• Do not eat perishable foods that have been left out of the refrigerator for more than two hours on a cool day. Throw away perishables that have been left out for more than one hour on a warm day. Cold foods should be held over ice or cool gel packs.
• Keep cold foods cold!
• Be mindful of your meds: If your refrigerator contains immune globulin or other medications, take extra care when adjusting your refrigerator temperature. Never rely on the number dial (i.e., "1 to 7"). Use an appliance thermometer and consider purchasing a separate refrigerator for medications that require constant temperatures or sterile procedures.

Additional Tips
Food handling slip-ups made in shopping, transporting, storing, preparing or serving food can enable microorganisms to survive and flourish.

Grocery Shopping:
• Do not buy or use items that appear to have been opened; check safety seals, buttons and rings.
• Don’t buy cans or glass jars with dents, cracks or bulging lids.
• Observe expiration dates.
• Select perishable foods last before checking out.
• Do not taste or buy bulk foods from self-service bins.
• Follow label instructions for storing and preparing packaged and frozen foods.
• Treat your turkey with respect:
  ✓ Buy it last and place it in a plastic bag.
  ✓ Make room for it in the fridge.
  ✓ Defrost it in the fridge.
  ✓ Buy it less than two days before you cook it.
  ✓ Cook the stuffing separately or place it in the
    turkey just prior to cooking.
• Take food straight home and refrigerate perishable
  foods immediately.
• Do not overstuff the refrigerator. Cold air must circulate
  to keep food safe.
• Store canned goods in a cool dry place for use within
  a year. Avoid placing them above the stove or in a
  damp area.
• Put packages of raw meat, poultry or fish in a shallow
  pan or plastic bag before refrigerating, so their juices
  won’t drip onto other food.

Eating Away From Home for Special At-risk Groups:
• Don’t take chances—if you are in doubt, throw the
  food out.
• Never eat the following items if they are served raw:
  meat, poultry, eggs, seafood or smoked fish.
• Avoid eating refrigerated pâtés or meat spreads.
• Eat only deli meats and frankfurters that have been
  reheated to steaming hot.
• Use particular caution at potlucks, buffets or picnics
  where the food is sitting out.
• Discard egg-based products or prepared cream dishes
  left at room temperature for more than an hour.
• Avoid homemade ice cream, eggnog and mayonnaise,
  unless you know it is pasteurized.
• Pass up soft, moldy cheeses such as feta, brie and
  Camembert, blue-veined cheeses, queso blanco and
  queso fresco.
• Seek out fresh fruits that can be rewashed or peeled.
• Egg yolks and whites should be solid and not runny.
• Do not eat raw sprouts, including alfalfa sprouts.
• Do not use herbal infusions or supplements without
  the supervision of a physician. Some preparations may
  contain impurities or infection-causing organisms.

Think Before You Drink:
• Where the water supply may be suspect, boil it or use
  bottled water.
• For individuals living with immune deficiencies, boil all
  drinking water and use bottled water.
• Look for packaged juice that has been pasteurized. Be
  cautious with beverages that are kept in the refrigerated
  section of the store, because they rely on the temperature
  to keep bacterial contaminants down.

• Avoid fresh squeezed juices that are sold by the glass
  such as at cider mills, health food stores, fairs, etc.
  Warning labels are not required for these products.
• Do not drink raw ( unpasteurized) milk or any products
  made from unpasteurized milk or eggs.

Early Intervention
Even the most cautious people make mistakes, and some-
  times even the best precautions are not enough to prevent
  food-borne illnesses. In these cases, early intervention
  can make the difference between an uncomfortable few
  days and a serious problem. Many reactions appear within
  72 hours after eating contaminated food, but it is possible
  for them to occur between 30 minutes and weeks later.
  You should consider the possibility that you may have a
  food-borne illness if you experience any of the most com-
  mon symptoms, which include abdominal cramps, diar-
  rhea, head- and muscle -aches, fever, weakness and vom-
  iting. Very young children may present with these or other
  symptoms. Infants, for example, may show signs of constipa-
  tion and slowed eating as a first sign of clostridium bot-
  ulism poisoning. Contact your physician if you have any of
  these symptoms or suspect that you have a food-borne illness.

By following the guidelines presented in this article, you
  and your loved ones can minimize microbial contamination,
  maintain optimal health and enjoy the holiday festivities.
Happy holidays!

Food Safety Information and Resources
Bovine spongiform encephalopathy (BSE)

Childhood choking prevention http://www.ific.org/publications/
  brochures/index.cfm

American Academy of Allergy, Asthma & Immunology
(AAAAI) www.aaaai.org
Patient Information and Physician Referral Line: 800-822-2762

The Food Allergy & Anaphylaxis Network
www.foodallergy.org  800-929-4040

U. S. Food and Drug Administration, Center for
  Food Safety and Applied Nutrition: www.cfsan.fda.gov

Food Information Line (24 hours a day): 888-SAFEFOOD

USDA Meat and Poultry Hotline: www.IsItDoneYet.gov
888-MPHotline · 888-674-6854 · TTY: 800-256-7072