

Food Safety:

Preventing Foodborne Illness

Every year in America, 1 in 6 people get sick from eating or drinking contaminated foods and beverages. A variety of microbes/pathogens (bacteria, viruses, and parasites) can contaminate food and cause foodborne illness. Poisonous chemicals and other harmful substances are also responsible for foodborne illness if present in foods. With so many different causes of foodborne illness, there is no single “symptom” to look for when diagnosing foodborne illness. However, because toxins from microbes or chemicals pass through the body via the gastrointestinal tract, the first symptoms of foodborne illness that people often experience include nausea, vomiting, abdominal cramps and diarrhea.

If you have ever become sick from eating food contaminated with harmful microbes, perhaps you understand why preventing foodborne illness is so important. Foodborne illness can be very dangerous, especially for those who are at greater risk. People who are “at risk” or “vulnerable” often experience symptoms of foodborne illness (such as vomiting diarrhea, and fever) more intensely compared to those who are not categorized in the “at risk” population. According to Food and Drug Administration (FDA), the vulnerable population includes infants, pregnant women, older adults, and people with weak immune systems (E.g. people who have HIV/AIDS, cancer, diabetes, kidney disease, transplant patients). Young children are also at greater risk due to their developing immune system, which makes fighting off illness and disease more difficult compared to a healthy adult who has a well-developed immune system.

Keeping children healthy and safe can be challenging for care givers. Preventing foodborne illness, as well as recognizing signs and symptoms of foodborne illness, will help keep everyone healthy and safe. The following pages discuss types of pathogens responsible for foodborne illness, foods most associated with foodborne illness, and how to prevent food from becoming contaminated.

BACTERIA AND VIRUSES COMMONLY RESPONSIBLE FOR FOODBORNE ILLNESS

BACTERIA	ASSOCIATED FOODS	SYMPTOMS & POTENTIAL IMPACT	PREVENTION
Salmonella (over 2300 types)	Raw or undercooked meat, poultry, and eggs; unpasteurized juice and milk; soft cheese; seafood; contaminated fresh fruits and vegetables.	Abdominal cramps, diarrhea, fever usually appear 12 – 72 hours after eating; may last 4-7 days.	Cook meat, poultry and eggs to a safe temperature. Do not eat raw or unpasteurized milk/dairy products. Wash all produce before eating.
Clostridium botulinum (botulism)	Improperly canned foods, garlic in oil, vacuum-packed and tightly wrapped food.	A nerve toxin produced by bacteria can cause illness, affecting nervous system. Symptoms usually appear 18 – 36 hours, sometimes as late at 10 days after eating. Double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, and muscle weakness are all symptoms.	Avoid using damaged canned foods or canned foods that show signs of swelling, leakage, punctures, rusting, or crushing/denting. Follow safety guidelines when canning food at home. Boil home canned foods for at least 10 minutes before eating to ensure safety.
Clostridium perfringens	Meats, meat products and gravy. Outbreaks often occur due to food left out at room temperature for long periods of time (e.g. picnics and cafeterias).	Severe stomach cramps, nausea, and diarrhea may occur 6-24 hours after eating; symptoms can last from 1 day up to 2 weeks.	Keep hot foods hot and cold foods cold. After cooking, hot foods should be kept at an internal temperature of 140° or above. Use food thermometers to ensure proper temperature. Throw away all perishable foods kept at room temperature longer than 2 hours; 1 hour in temperatures above 90°

BACTERIA AND VIRUSES COMMONLY RESPONSIBLE FOR FOODBORNE ILLNESS (continued)

BACTERIA	ASSOCIATED FOODS	SYMPTOMS & POTENTIAL IMPACT	PREVENTION
E. coli (Escherichia coli O157:H7)	Uncooked beef (particularly ground beef), unpasteurized milk and juices, contaminated fruits and vegetables, or water. Person to person contamination is possible.	Severe diarrhea (often bloody), abdominal cramps, and vomiting. Little to no fever is common. Symptoms arise 2-8 days, but usually occur 3-4 days after being exposed.	Cook all ground beef to a minimum internal temperature of 160°F. Avoid all unpasteurized milk, juice and cider. Rinse fruits and vegetables under running tap water. Wash hands with warm water and soap after using the bathroom, changing diapers, handling pets or feces.
Listeria monocytogenes	Hot dogs, lunch meats, cold cuts, fermented or dry sausage, and other ready-to-eat foods; soft cheese made with unpasteurized milk; smoked seafood and salads made in the store like ham salad.	Muscle aches, fever and occasionally nausea or diarrhea. If infection spreads to nervous system, symptoms include headache, confusion, loss of balance can occur. High risk individuals, such as pregnant women, infants, children and elderly may develop more serious illness.	Use food thermometer to ensure raw meat, poultry and seafood are cooked to safe minimum internal temperature. Prevent cross contamination by separating ready to eat foods from raw animal and seafood products. Avoid unpasteurized milk and juice, deli products.
Campylobacter jejuni	Raw or unpasteurized milk; raw or undercooked meat, poultry, or shellfish; contaminated water	Diarrhea, cramping, abdominal pain, and fever that appear 2-5 days after eating; can spread to bloodstream and cause life-threatening infection.	Cook meat and poultry to a safe temperature. Avoid unpasteurized milk and milk products. Wash hands with soap and warm water after coming in contact with feces.

How does food become unsafe to consume?

Unless you are eating food grown from your own garden, numerous steps are taken to get food from a farm or fishery to your kitchen and table, otherwise known as the food production chain. Throughout the food production chain there are several points where mishandling of food could lead to contamination – during production, processing, distribution, or preparation. In general, the common person has minimal control over food production, processing, and distribution. Buying food from safe and reputable food distributors is important, but most control over food safety by the average consumer occurs during their contact with food. Shopping in grocery stores or markets, transporting food from store to home, and preparing and storing food in your home are examples of safe food handling practices that are encouraged and recommended.

Risk of foodborne illness can be significantly reduced if four main practices are followed: Clean, Separate, Cook, and Chill. The following list of tips for safe food handling go over the four practices that can help prevent foodborne illness and should be practiced by everyone every day.

TIPS FOR SAFE FOOD HANDLING:

- **CLEAN** hands, surfaces, and food properly. Bacteria spreads throughout the kitchen when hands, surfaces, and food are not properly cleaned.
 - Wash hands with warm soapy water for at least 20 seconds before and after handling food, as well as after using the restroom, changing diapers and handling pets.
 - Rinse and wash cutting boards, dishes, utensils, and counter tops with hot soapy water after every use and before you begin preparing a different food item.
 - Rinse fresh produce under running tap water, including fruits and vegetables that have skins or rinds that are not eaten.
- **SEPARATE** foods to prevent cross-contamination and the spread of bacteria.
 - Keep raw meat, poultry, seafood and eggs separated from other food items in your grocery cart and refrigerator.
 - Designate cutting boards for specific foods: one for raw meat/poultry/seafood and one for fresh produce.
 - Do not put cooked food onto plates that previously held raw meat/poultry/seafood/eggs.

TIPS FOR SAFE FOOD HANDLING (continued):

- **COOK** food to safe internal temperatures (see chart on page 6).
 - Cook/heat food until the internal temperature reaches a minimum safe temperature.
 - Use a food-grade thermometer to check internal temperatures.
 - Check food temperature regularly when serving buffet or banquet style.
 - Keep food out of the bacteria “danger zone” (40°F - 140°F) and throw away food that was in the bacteria danger zone for more than 2 hours.
- **CHILL** foods to slow down growth of harmful bacteria.
 - When shopping at grocery stores, add cold and frozen items to your shopping cart last to reduce time cold/frozen foods are exposed to warmer temperatures.
 - Bring insulated shopping bags to help keep foods cold during transportation from store to home refrigerator and/or freezer.
 - Drive/walk home directly from the grocery store – do not make additional stops if possible.
 - Keep your refrigerator at 40° F or lower and your freezer at or below 0° F.
 - Defrost food in the refrigerator, not on the kitchen counter.
 - Use smaller containers for storing leftovers to speed the cooling process in the refrigerator.
 - Store cold food items on ice in a cooler when picnicking.

Cooking Food to Safe Minimum Internal Temperatures

The chart on the next page is a general guide for cooking food to safe minimum internal temperatures and should be followed to reduce risk of foodborne illness. Using a food thermometer to ensure recommended internal temperatures are met is recommended. Some meats should be allowed to rest for a few minutes before serving. By doing so, the high temperature of cooked meat will continue to kill harmful bacteria while resting.

****NOTE:** You cannot tell if meat has been cooked to a safe temperature simply by looking at it.

Safe Minimum Cooking Temperatures

Category	Food	Temperature (°F)	Rest Time
Ground Meat & Meat Mixtures	Beef, pork, veal, lamb	160	None
	Turkey, chicken	165	None
Fresh Beef, Veal, Lamb	Steaks, roasts, chops	145	3 minutes
Poultry	Chicken & turkey, whole	165	None
	Poultry breasts, roasts	165	None
	Poultry thighs, legs, wings	165	None
	Duck & goose	165	None
	Stuffing (cooked alone or in bird)	165	None
Pork & Ham	Fresh pork	145	3 minutes
	Fresh ham (raw)	145	3 minutes
	Precooked ham (to reheat)	140	None
Eggs & Egg Dishes	Eggs	Cook until yolk and white are firm	None
	Egg dishes	160	None
Leftovers & Casseroles	Leftovers and casseroles	165	None
Seafood	Fin fish, shrimp, lobster, crabs, clams, oysters, mussels and scallops	145 or until flesh is opaque and shells open	None

REFERENCES

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