U.S. FOOD & DRUG ADMINISTRATION

FOOD SAFETY

For Pregnant Women, Their Unborn Babies, and Children Under Five

January 2022

A Pregnant Woman's Foodborne Illness Story

This is a true story. Trissi and Paul were awaiting the birth of their twins when her pregnancy made her and her unborn children vulnerable to foodborne illness.

Trissi told us: "I was pregnant with twins, and I had been put on bed rest because my iron counts were low. My sister brought me a meat product with a lot of iron to help with that, and I started feeling a little crampy and feverish. In the morning, I woke up feeling really achy in my back and just didn't feel great. Later that day, I suddenly went into labor, and my twins were born that day. They immediately took them to the NICU — Neonatal (newborn) Intensive Care Unit. At first, I wasn't alarmed because it's very common with a twin pregnancy."

"I think it was probably the next day that I really understood that they were very seriously ill. I was told that my son's Apgar was a 1 on a scale of 1 to 10 (the Apgar score is a way of evaluating the health of newborns based on a top score of 10. The higher the score, the better the baby is doing after birth. A score of 7 to 9 is normal and is a sign that the newborn is in good health). The medical staff could tell he was alive, but they couldn't register a temperature in him at all, and his vital signs were very weak. I was told my daughter's Apgar was a 4, little bit better, but definitely not what you want to hear. We had a priest come in and give the boy last rites, and you know prayed for the best."

Paul: "This was supposed to be the happiest day of my life, so it was extremely disconcerting to me — to see what was happening was very scary."

Trissi: "I started feeling very uncomfortable, and I was being asked unusual questions, such as, 'are you a marathon runner?' I said no, I've been on bed rest. I can barely walk up a flight of steps."

Paul: "Because my daughter's body temperature was going down so low and her pulse was extremely low, the medical staff had to put a bear hugger around her to warm her up. It was really at that point I realized everyone in my family was extremely sick."

It was unusually difficult in Trissi's case to identify the pathogen that had infected her and the twins. None of them were presenting with typical foodborne illness symptoms. There was no vomiting or diarrhea and no other gastrointestinal signs.

Trissi: "My doctor told me that I was one of the top 10 strangest cases that he had seen in his 20 years of practice. I think the doctors suspected an infection, but they had no idea what it was, and apparently, the hospital had not seen a case of *Listeria* in about 10 years.

Paul: "We're very fortunate to have an amazing NICU at our hospital. They were putting the babies through all the protocols and all the tests. Luckily, one of the nurses had seen a *Listeria* outbreak previously where she had w**Trissi:** "She was one of the first nurses to treat Chloe and Luke. I believe she saved our lives."

Paul: “We owe her everything.”

The treatment for Trissi and her daughter, Chloe, was a fairly straightforward course of antibiotics, but for the other twin, Luke, it was becoming complicated.

Trissi: “We were told by the doctors that Luke had ingested some of the meconium (the body waste of an infant in the womb) and that my womb was so infected that he developed pneumonia from ingesting that, which caused further complications. He had to be intubated.”

Paul: “I would go and visit the NICU every day. So at one point, I showed Trissi some pictures, and I told her Luke was doing this really cool thing. He was waving to me and whatnot, and then we subsequently found out, unfortunately, that he was actually having a seizure.”

Trissi: “He was given phenobarbital, which is a very strong drug. The doctor had to perform surgery on Luke to enable him to receive all the medications that he needed directly through his heart. They call it central line surgery.

The ordeal in the hospital lasted for some time. Trissi was in the Intensive Care Unit for 3 nights and in the regular maternity ward for another 5 nights. Chloe was in the NICU for 10 days and Luke for almost 3 weeks.

Paul: “This was supposed to be an amazing time for Trissi, coming into motherhood, and that was really just ripped away from her. And then here we are, seeing our kids struggling just to survive. Very, very hard.”

After several months of treatment, Trissi and the twins were out of the woods.

Trissi: “The strain of *Listeria* that we had, the mortality rate is about 20%, so the fact that the three of us survived is pretty lucky.”

Paul: “Sometimes I forget where we’ve been. For example, I’ll see my daughter do something amazing. Then I think back, and I’m like, ‘man, she’s here,’ and I have the ability to be with her. Then Luke, my gosh, this guy’s taller than me now, and he’s here – and he was 4 pounds, 14 ounces, when he was born!

Foodborne illness in pregnant women is a common, costly, sometimes life-threatening, yet largely preventable public health problem.

Table of Contents

Food Safety for Pregnant Women, Unborn Babies, and Children Under Five	**1**
Food Safety: Why It's Critically Important for Pregnant Women, Their Unborn Babies, and Children Under Five	**1**
Eating at Home: Making Wise Food Choices	**2**
Advice About Eating Fish For Women Who Are or Might Become Pregnant, Breastfeeding Mothers, and Young Children	**4**
Taking Care: Handling and Preparing Food for Pregnant Women and Children Under Five Safely	**6**
Taking Care: Handling and Preparing Food for Babies Safely	**11**
In the Know: Becoming a Better Shopper	**13**
Being Smart When Eating Out	**14**
Tips for Transporting Food to a Picnic or a Party	**15**
Foodborne Illness: Know the Symptoms	**16**
More Information on Food Safety for Pregnant Women, Unborn Babies, and Young Children	**17**
Additional Sources of Food Safety Information	**17**
Notes	**18**
Four Steps to Food Safety	**19**

Food Safety for Pregnant Women, Unborn Babies, and Children Under Five

Food safety is vital for everyone – but especially for pregnant women, their unborn babies, and children younger than five. This booklet explains why and provides real-world advice on how to lower the risk of foodborne illness for pregnant women and their unborn babies, and how parents can protect their young children from foodborne infections.

In addition to the information in this booklet, talk with your health care provider about any foods or other products to avoid because of any special health needs for you or your child.

Food Safety: Why It's Critically Important for Pregnant Women, Their Unborn Babies, and Children Under Five

When disease-causing bacteria, viruses, or parasites (germs) contaminate food, they can trigger foodborne illness, often called *food poisoning*. While the food supply in the United States is among the safest in the world, it can still be a source of infection.

- According to the Centers for Disease Control and Prevention (CDC), 48 million persons — or 1 of every 6 people — get foodborne infections each year. Of those, 128,000 are hospitalized, and 3,000 die from their foodborne illness.
- Pregnant women are at high risk of developing food poisoning because pregnancy affects their immune system's ability to fight foodborne infections. The **immune system** is made up of a network of cells, tissues, and organs that work together to protect the body against infectious organisms and other invaders.
- Unborn babies are just beginning to develop immune systems and have little power to resist foodborne disease.
- Because of the immune system changes in women during pregnancy and the developing immune systems of unborn children, they are both especially at risk for illnesses caused by *Listeria monocytogenes* and *Toxoplasma gondii*. The infection caused by these two organisms can pass to an unborn child even if the mother doesn't show signs of infection.
    - *Listeria monocytogenes* (*Lm*) is a harmful germ found in many foods, including ready-to-eat refrigerated foods like deli meats, unpasteurized (raw) milk, and such foods as soft cheeses made with unpasteurized milk. *Lm* can lead to a disease called listeriosis. Every year, 2,500 Americans become ill with listeriosis — 1 out of 5 cases result in death. About one-third of listeriosis cases happen during pregnancy. Listeriosis can cause miscarriage, premature delivery, stillbirth, and serious sickness or death for a newborn baby.

- *Toxoplasma gondii* is a parasite found in many food sources, as well as cat litter boxes and other areas where cats may leave their waste. It can cause hearing loss, blindness, and brain damage in babies.
- Other organisms that can cause food poisoning, including *Salmonella*, *Campylobacter*, and *E. Coli*, also may lead to health complications for pregnant women, unborn babies, and newborns.

- Children younger than 5 years have a high risk of foodborne illness and related health problems because their immune systems are still developing, and they cannot fight off infections as well as older children and adults. Also, young children make less stomach acid that kills harmful bacteria, making it easier for them to get sick.
- Because young children's bodies are small, the vomiting and/or diarrhea often resulting from foodborne illness can lead to serious dehydration.

- In children under 5 years, some foodborne infections with the bacterium *Escherichia coli* (*E. coli*) can lead to hemolytic uremic syndrome, a severe complication that can cause chronic kidney disease, kidney failure, and death. *E. coli* infections are likely to come from undercooked ground meat, unpasteurized ("raw") milk, unpasteurized fruit juice, lettuce, spinach, sprouts, and even frozen cookie dough, if eaten before it is cooked.

The good news is that choosing and preparing foods safely helps avoid getting food poisoning.

Eating at Home: Making Wise Food Choices

Some foods are riskier than others. The foods most likely to contain harmful bacteria or viruses fall into two categories:

- **Uncooked** fresh fruits and vegetables.
- **Some animal products**, such as unpasteurized (raw) milk; soft cheeses made with raw milk; and raw or undercooked eggs, raw meat, raw poultry, raw fish, raw shellfish and their juices; luncheon meats and deli-type salads (without added preservatives) prepared onsite in a deli-type establishment.
- Honey can cause botulism, a rare but very serious disease, in babies under 12 months old. Do not give them honey or pacifiers dipped in or filled with honey.

The risk these foods pose depends on the **origin or source of the food and how the food is processed, stored, and prepared**.

Follow these guidelines (see chart on page 3) for safe selection and preparation of your favorite foods.

Common Foods: Select the Lower Risk Options

Type of Food	Higher Risk	Lower Risk
Meat and Poultry *Tip: Use a food thermometer to check the internal temperature. See the Safe Minimum Internal Temperatures chart on page 8.*	Raw or undercooked meat or poultry	Meat or poultry cooked to a safe minimum internal temperature (Food Safety for Pregnant Women)
Seafood *Tip: Use a food thermometer to check the internal temperature. See the Safe Minimum Internal Temperatures chart on page 8.*	• Any raw or undercooked fish, or shellfish, or food containing raw or undercooked seafood, e.g., sashimi, found in some sushi or ceviche • Refrigerated smoked fish • Partially cooked seafood, such as shrimp and crab	• Previously cooked seafood heated to 165°F • Canned fish and seafood • Seafood cooked to 145°F
Milk	Unpasteurized (raw) milk	Pasteurized milk
Eggs **Tip: Pre-made foods from grocery stores, such as Caesar dressing, cookie dough, or eggnog that say made with pasteurized eggs/pasteurized egg products are lower risk.*	Foods that contain raw/undercooked eggs, such as: • Homemade Caesar salad dressings* • Homemade raw cookie dough* • Homemade eggnog*	*At home:* • Recipes that call for raw or undercooked eggs are made with pasteurized eggs *When eating out:* • Ask if pasteurized eggs were used
Sprouts	Raw sprouts (alfalfa, bean, or any other sprout)	Cooked sprouts
Vegetables	Unwashed fresh vegetables, including lettuce/salads and raw sprouts	• Washed fresh vegetables, including salads • Cooked vegetables
Cheese	Soft cheeses made from unpasteurized (raw) milk, such as: • Feta • Brie • Camembert • Blue-veined • Queso fresco	• Hard cheeses • Processed cheeses • Cream cheese • Mozzarella • Soft cheeses that are clearly labeled "made from pasteurized milk"
Hot Dogs and Deli Meats *Hot Dogs and Deli Meats* *Tip: You need to reheat hot dogs, deli meats, and luncheon meats before eating them because Listeria monocytogenes bacteria grow at refrigerator temperatures (40ºF or below). These bacteria may cause severe illness, hospitalization, or even death. Reheating these foods until they are steaming hot destroys these dangerous bacteria and makes these foods safe for you to eat.*	Hot dogs, deli, and luncheon meats that have not been reheated	Hot dogs, luncheon meats, and deli meats reheated to steaming hot or 165ºF
Deli Salads	Deli salads prepared without preservatives in a deli-type store or restaurant	Deli salads freshly prepared at home
Pâtés	Unpasteurized, refrigerated pâtés or meat spreads	Canned or shelf-stable pâtés or meat spreads

Advice About Eating Fish For Women Who Are or Might Become Pregnant, Breastfeeding Mothers, and Young Children

Fish‡ Provide Key Nutrients That Support A Child's Brain Development

Fish are part of a healthy eating pattern and provide key nutrients during pregnancy, breastfeeding, and/or early childhood to support a **child's brain development**:

- Omega-3 (called DHA and EPA) and omega-6 fats
- Iron
- Iodine (during pregnancy)
- Choline

Choline also supports development of the **baby's spinal cord**. Fish provide iron and zinc to support **children's immune systems**. Fish are a source of other nutrients like protein, vitamin B12, vitamin D, and selenium, too.

Eating Fish Can Provide Other Health Benefits Too

Fish intake during pregnancy is recommended because moderate scientific evidence shows it can help your baby's cognitive development.

Strong evidence shows that eating fish, as part of a healthy eating pattern, **may have heart health benefits**. Healthy eating patterns that include fish may have other benefits too. Moderate scientific evidence shows that eating patterns relatively higher in fish but also in other foods, including vegetables, fruits, legumes, whole grains, low- or non-fat dairy, lean meats and poultry, nuts, and unsaturated vegetable oils, and lower in red and processed meats, sugar-sweetened foods and beverages, and refined grains are associated with:

- **Promotion of bone health – decreases the risk for hip fractures***
- **Decreases in the risk of becoming overweight or obese***
- **Decreases in the risk for colon and rectal cancers***

**There is moderate scientific evidence of a relationship between the eating pattern as a whole and the potential health benefit.*

A **healthy eating pattern** consists of choices across all food groups (vegetables, fruits, grains, dairy, and protein foods, which includes fish), eaten in recommended amounts, and within calorie needs. Healthy eating patterns include foods that provide vitamins, minerals, and other health-promoting components and have no or little added sugars, saturated fat, and sodium.

The *Dietary Guidelines For Americans* Recommends Eating Fish As Part Of A Healthy Eating Pattern

The *Dietary Guidelines for Americans* recommends:

- At least 8 ounces of seafood (less for children§) per week based on a 2,000 calorie diet.
- Those who are pregnant or breastfeeding consume between 8 and 12 ounces per week of a variety of seafood from choices that are lower in mercury.

Choose A Variety Of Fish That Are Lower In Mercury

While it is important to limit mercury in the diets of women who are pregnant and breastfeeding and young children, many types of fish are both nutritious and lower in mercury.

This chart can help you choose which fish to eat, and how often to eat them, based on their mercury levels.

What is a serving? As a guide, use the palm of your hand.

Pregnancy and breastfeeding:
1 serving is 4 ounces

Eat 2 to 3 servings a week from the "Best Choices" list
(OR 1 serving from the "Good Choices" list).

Childhood:
On average, a serving is about:
1 ounce at age 1 to 3
2 ounces at age 4 to 7
3 ounces at age 8 to 10
4 ounces at age 11
Eat 2 servings a week from the "Best Choices" list.

Best Choices

- Anchovy
- Atlantic croaker
- Atlantic mackerel
- Black sea bass
- Butterfish
- Catfish
- Clam
- Cod
- Crab
- Crawfish
- Flounder
- Haddock
- Hake
- Herring
- Lobster, American and spiny
- Mullet
- Oyster
- Pacific chub mackerel
- Perch, freshwater and ocean
- Pickerel
- Plaice
- Pollock
- Salmon
- Sardine
- Scallop
- Shad
- Shrimp
- Skate
- Smelt
- Sole
- Squid
- Tilapia
- Trout, freshwater
- Tuna, canned light (includes skipjack)
- Whitefish
- Whiting

Good Choices

- Bluefish
- Buffalofish
- Carp
- Chilean sea bass/ Patagonian toothfish
- Grouper
- Halibut
- Mahi mahi/ dolphinfish
- Monkfish
- Rockfish
- Sablefish
- Sheepshead
- Snapper
- Spanish mackerel
- Striped bass (ocean)
- Tilefish (Atlantic Ocean)
- Tuna, albacore/ white tuna, canned and fresh/frozen
- Tuna, yellowfin
- Weakfish/seatrout
- White croaker/ Pacific croaker

Choices to Avoid HIGHEST MERCURY LEVELS

- King mackerel
- Marlin
- Orange roughy
- Shark
- Swordfish
- Tilefish (Gulf of Mexico)
- Tuna, bigeye

What about fish caught by family or friends? Check for fish and shellfish advisories to tell you how often you can safely eat those fish. If there is no advisory, eat only one serving and no other fish that week. Some fish caught by family and friends, such as larger carp, catfish, trout and perch, are more likely to have fish advisories due to mercury or other contaminants.

www.FDA.gov/fishadvice
www.EPA.gov/fishadvice

U.S. FOOD & DRUG ADMINISTRATION

EPA United States Environmental Protection Agency

This advice supports the recommendations of the *Dietary Guidelines for Americans*, which reflects current science on nutrition to improve public health. The Dietary Guidelines for Americans focuses on dietary patterns and the effects of food and nutrient characteristics on health.

§ For some children, the amounts of fish in the *Dietary Guidelines for Americans* are higher than in this FDA/EPA advice. The Dietary Guidelines for Americans states that to consume those higher amounts, children should only be fed fish from the "Best Choices" list that are even lower in mercury – these fish are anchovies, Atlantic mackerel, catfish, clams, crab, crawfish, flounder, haddock, mullet, oysters, plaice, pollock, salmon, sardines, scallops, shad, shrimp, sole, squid, tilapia, trout, and whiting.

‡ This advice refers to fish and shellfish collectively as "fish."

A Note on Flour and Raw Dough

Flour, regardless of the brand, can contain bacteria that cause disease. An outbreak of illness caused by a strain of bacteria called *E. coli* sickened dozens of people across the country. Ten million pounds of flour were recalled, including unbleached, all-purpose, and self-rising varieties.

Some of the recalled flours had been used by restaurants that allow children to play with dough made from raw flour while waiting for their meals, although the Federal government advises restaurants not to give customers raw dough.

Flour is ground from raw grain. It may be bleached, but it isn't usually treated to kill bacteria like *E. coli.* or *Salmonella*. So, keep yourself and your family healthy:

- Do not eat any raw cookie dough, cake mix, batter, or any other raw dough or batter product that is supposed to be cooked or baked.
- Follow package directions for cooking products containing flour at proper temperatures and for specified times.
- Wash hands, work surfaces, and utensils thoroughly after contact with flour and raw dough products.
- Keep raw foods separate from other foods while preparing them to prevent any contamination that may be present from spreading. Be aware that flour may spread easily due to its powdery nature.

Follow label directions to chill products containing raw dough promptly after purchase until baked.

Taking Care: Handling and Preparing Food for Pregnant Women and Children Under Five Safely

Foodborne germs are sneaky. Food that looks fine can contain pathogens – disease-causing bacteria, viruses, or parasites – that can make you sick. **Never taste a food to see if it is safe to eat.**

It's important for anyone handling and preparing food to always be careful. For pregnant women, and anyone fixing food for them, it's vital. The proven way to do this is to know and follow the four basic steps to food safety – clean, separate, cook, and chill.

NOTE: Young children learn food safety behaviors from their parents and caregivers. Handwashing is especially important, both by children as well as those caring for them.

Four Basic Steps to Food Safety

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

Bacteria can spread throughout the kitchen and get onto your hands, cutting boards, utensils, counter tops, and food.

To ensure that hands and surfaces are clean, be sure to:

- Wash hands in warm soapy water for at least 20 seconds before and after handling food, using the bathroom, changing diapers, or handling pets.
- Wash cutting boards, dishes, utensils, and counter tops with hot soapy water between the preparation of raw meat, poultry, and seafood products and preparation of any other food that will not be cooked.
- An added precaution is to run plastic cutting boards through the wash cycle in your dishwasher. Or, sanitize cutting boards and counter tops by rinsing them in a solution made of 1 tablespoon of unscented liquid chlorine bleach per gallon of water.
- Clean the lids on canned goods before opening.
- Use paper towels to clean up kitchen surfaces. If using cloth towels, wash them often in the hot cycle of the washing machine.

- Wash produce. Rinse fruits and vegetables and use a clean vegetable brush to scrub firm-skinned fruits and vegetables under running tap water, including those with skins and rinds that are not eaten.
- Don’t wash meat, poultry, or eggs.

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

Cross-contamination occurs when germs are spread from one food product to another. This is especially common when handling raw meat, poultry, seafood, and eggs. The key is to keep these foods – and their juices – away from vegetables and fruit that will be eaten raw and any other ready-to-eat foods.

To prevent cross-contamination, remember to:

- Separate raw meat, poultry, seafood, and eggs from other foods in shopping carts, grocery bags, and in the refrigerator. Place raw meat, poultry, and seafood on the lowest shelf in the

refrigerator so their juices won't drip on foods that will not be cooked.

- Never place cooked food on a plate or cutting board that previously held raw meat, poultry, seafood, or eggs without first washing the plate/cutting board with hot soapy water.
- Consider using one cutting board only for raw foods and another only for ready-to-eat foods, such as bread, fresh fruits and vegetables, and cooked meat.
- Don't reuse marinades used on raw foods unless they are brought to a boil first.

3. Cook: *Cook to safe temperatures.*

Foods are safely cooked when they are heated to the recommended safe minimum internal temperatures, as shown on the chart on page 9.

To ensure that your foods are cooked safely, always:

- Use a **food thermometer** to measure the internal temperature of cooked foods. Check the internal temperature in several places to make sure that the meat, poultry, seafood, or egg product is cooked to safe minimum internal temperatures.
- Cook **ground beef** to at least 160ºF and **ground poultry** to a safe minimum internal temperature of 165ºF. The color of food is not a reliable indicator of safety or doneness.
- Reheat **fully cooked hams** packaged at a USDA-inspected plant to 140ºF. For fully cooked ham that has been repackaged in any other location or for leftover fully cooked ham, heat to 165ºF.
- Cook **seafood** to 145ºF. Cook ***shrimp***, **lobster**, and **crab** until they turn red and the flesh is the color of pearls. Cook **clams**, **mussels**, and **oysters** until the shells open. If the shells do not open, do not eat the food inside.
- Cook **eggs** until the yolks and whites are firm. Use only recipes in which the eggs are cooked or heated to 160ºF.
- Cook all raw **beef**, **lamb**, **pork**, and **veal steaks**, **roasts**, and **chops** to 145ºF with a 3-minute rest time after removal from the heat source. Resting cooked meat allows the juices, which have been driven by cooking to the center of the meat, to be reabsorbed throughout the meat. Bring **sauces**, **soups**, and **gravy** to a boil when reheating. Heat other leftovers to 165ºF.
- Reheat **hot dogs**, **luncheon meats**, **bologna**, and **other deli meats** until steaming hot or, better, to 165ºF.

- When cooking in a microwave oven, cover food, stir, and rotate for even cooking. If there is no turntable, rotate the dish by hand once or twice during cooking.
- Always allow standing time, which completes the cooking, before checking the internal temperature with a food thermometer. Food is done when it reaches the recommended safe minimum internal temperature.

Is It Done Yet?

Use a food thermometer to be most accurate. You can't always tell if food is cooked to a safe temperature by looking at it.

U.S. Department of Agriculture/ U.S. Food and Drug Administration
Recommended Safe Minimum Internal Temperatures

Category	Food	Temperature (°F)	Rest Time
Ground Meat & Meat Mixtures	Beef, Pork, Veal, Lamb	160°F	None
	Turkey, Chicken	165°F	None
Fresh Beef, Veal, Lamb	Steaks, Roasts, Chops	145°F	3 minutes
Poultry	Chicken & Turkey, Whole	165°F	None
	Poultry Breasts, Roasts	165°F	None
	Poultry Thighs, Legs, Wings	165°F	None
	Duck & Goose	165°F	None
	Stuffing (Cooked Alone or in Bird)	165°F	None
Pork and Ham	Fresh Pork	145°F	3 minutes
	Fresh Ham (Raw)	145°F	3 minutes
	Precooked Ham (To Reheat)	140°F	None
Eggs & Egg Dishes	Eggs	Cook until yolk and white are firm	None
	Egg Dishes	160°F	None
Leftovers & Casseroles	Leftovers	165°F	None
	Casseroles	165°F	None
Seafood	Fin Fish (Cod, Snapper, Tilapia, Etc.)	145°F or cook until flesh is opaque and separates easily with a fork.	None
	Shrimp, Lobster, & Crabs	Cook until flesh is pearly and opaque.	None
	Clams, Oysters, & Mussels	Cook until shells open during cooking.	None
	Scallops	Cook until flesh is milky white or opaque and firm.	None

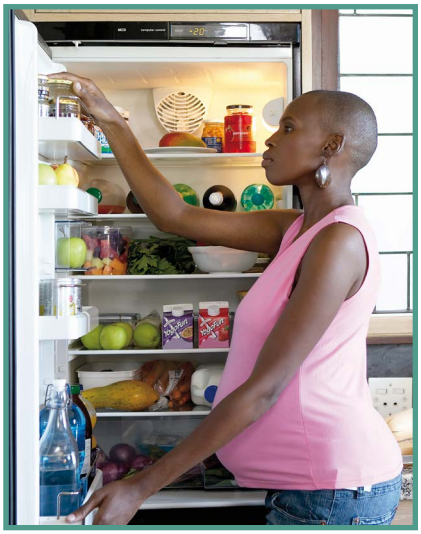
4. Chill: *Refrigerate promptly.*

Cold temperatures slow the growth of harmful bacteria. Keeping a constant refrigerator temperature of 40°F or below is one of the best ways to lower the risk of foodborne illness. Use an appliance thermometer to be sure the refrigerator temperature is consistently 40°F or below and the freezer temperature is 0°F or below.

To chill foods properly:

- Refrigerate or freeze meat, poultry, eggs, seafood, and other perishables within 2 hours of cooking or purchasing. Refrigerate within 1 hour if the temperature is above 90°F.
- Never thaw food at room temperature, such as on the counter top. It is safe to thaw food in the refrigerator, in cold water, or in the microwave. If you thaw food in cold water or in the microwave, you should cook it immediately.
- Divide large amounts of food into shallow containers for quicker cooling in the refrigerator.

Follow the recommendations in the Cold Storage Chart below.



U.S. Department of Agriculture/ U.S. Food and Drug Administration Cold Storage Chart

These time limit guidelines will help keep refrigerated food safe to eat. Because freezing keeps food safe indefinitely, recommended storage times for frozen foods are for quality only.

Category	Food	Refrigerator (40°F)	Freezer (0°F)
Eggs	Fresh, in shell	3 to 5 weeks	Don't freeze
	Hard cooked	1 week	Don't freeze well
Liquid Pasteurized Eggs, Egg Substitutes	Opened	3 days	Don't freeze well
	Unopened	10 days	1 year
Deli and Vacuum-Packed Products	Egg, chicken, ham, tuna, & macaroni salads	3 to 5 days	Don't freeze well
Hot Dogs	Opened package	1 week	1 to 2 months
	Unopened package	2 weeks	1 to 2 months
Luncheon Meats	Opened package	3 to 5 days	1 to 2 months
	Unopened package	2 weeks	1 to 2 months
Bacon & Sausage	Bacon	7 days	1 month
	Sausage, raw—from chicken, turkey, pork, beef	1 to 2 days	1 to 2 months
Hamburger and Other Ground Meats	Hamburger, ground beef, turkey, veal, pork, lamb, & mixtures of them	1 to 2 days	3 to 4 months
Fresh Beef, Veal, Lamb, Pork	Steaks	3 to 5 days	6 to 12 months
	Chops	3 to 5 days	4 to 6 months
	Roasts	3 to 5 days	4 to 12 months
Fresh Poultry	Chicken or turkey, whole	1 to 2 days	1 year
	Chicken or turkey, pieces	1 to 2 days	9 months
Seafood	Lean fish (flounder, haddock, halibut, etc.)	1 to 2 days	6 to 8 months
	Fatty fish (salmon, tuna, etc.)	1 to 2 days	2 to 3 months
Leftovers	Cooked meat or poultry	3 to 4 days	2 to 6 months
	Chicken nuggets, patties	3 to 4 days	1 to 3 months
	Pizza	3 to 4 days	1 to 2 months

Taking Care: Handling and Preparing Food for Babies Safely

Baby Formula and Baby Foods DOs

- Follow the manufacturer's recommendations for preparing bottles before filling them with formula or milk.
- Follow "use-by" dates on formula cans. FDA requires 29 nutrients in infant formula. FDA's nutrient specifications include minimum amounts for all of them and maximum amounts for 9 of them.
- Understand that the "use by" date on infant formulas is identified by the manufacturer, based on tests and other information, to inform retailers and consumers that until that date the infant formula will contain no less than the amount of each nutrient declared on the product label and will otherwise be of acceptable quality.
- Check to see that the safety button on the lid of commercial baby-food jars is down. If the jar lid doesn't "pop" when opened, don't use the product. Discard any jars with chipped glass or rusty lids.
- Use detergent and hot water to wash all blenders, food processors, and utensils (including the can opener) that contact a baby's foods. Rinse well with hot water after washing.
- Transport bottles and food in an insulated cooler when traveling with the baby. Perishable items (milk, formula, or food) left out of the refrigerator or without a cold source for more than 2 hours should not be used. Cold temperatures keep most harmful bacteria from multiplying.
- Freeze homemade baby food by putting the mixture into an ice cube tray. Note: One cube equals one serving.

Cover with heavy-duty plastic wrap and place the tray in the freezer. Once the food cubes are frozen, pop them into a freezer bag or airtight container and date it.

As an option, small jars can also be used for freezing. Leave about 1/2 inch of space at the top because food expands when frozen.

You can store the frozen baby food for up to 3 months (discard unused food after 3 months).

Baby Formula and Baby Foods DON'Ts

- Don't make more formula than needed. Formula can become contaminated during preparation.

  If a large quantity of formula is prepared and not properly refrigerated, bacteria can multiply to very large numbers. The more bacteria there are, the greater the chances for foodborne illness. Preparing formula in smaller quantities on an as-needed basis greatly reduces the possibility of contamination.

  If using powder, reconstitute immediately before feeding.

If using liquid concentrates or ready-to-feed products, follow label instructions provided by the manufacturer.

- Don't put a bottle back in the refrigerator if the baby doesn't finish it. Harmful germs from a baby's mouth can get into the bottle during feeding. These germs can grow and multiply *even after refrigeration some bacteria can grow at refrigerator temperatures and reheating.*

  The temperature that's needed to kill harmful bacteria when reheating a bottle is extremely high for feeding to a baby. Also, it's not a good idea to repeatedly reheat formula because lots of nutrients can be lost.

- Don't feed a baby from a jar of baby food and then put the jar with leftover food in the refrigerator. Saliva on the spoon may contaminate the remaining food.

- Instead, put a serving size of food on a dish. Refrigerate the food remaining in the jar. Throw away the food in the serving dish that's not eaten.

- Don't use honey as a sweetener to entice babies to drink water from a bottle. Honey isn't safe for children less than a year old. It can contain the botulism organism, which could cause serious illness or death.

- Don't give raw or unpasteurized milk or unpasteurized fruit or vegetable juice to infants or young children.

  Unpasteurized milk or juice may contain harmful germs. Unpasteurized juices are normally found in the refrigerated sections of grocery stores, health-food stores, cider mills, or farm markets. Such juices must have this warning on the label: *WARNING: This product has not been pasteurized and therefore may contain harmful bacteria that can cause serious illness in children, older adults, and persons with weakened immune systems.*

  NOTE: Juices that are fresh-squeezed and sold by the glass, such as at farmer's markets, at roadside stands, or in some juice bars, may not be pasteurized or otherwise treated to ensure their safety. Warning labels are not required on these products. Young children should avoid these juices. If you can't tell if a juice has been processed to destroy harmful bacteria, either don't use the product or boil it to kill any harmful bacteria.

- Don't leave formula out at room temperature for more than 2 hours. Harmful bacteria can grow rapidly in food at room temperature. Discard formula that's been left out for more than 2 hours.

- Don't place dirty diapers in the same bag with bottles or food. Harmful bacteria from a dirty diaper can spread to the baby's food.

- Don't give infants "teas" brewed from star anise. Brewed "teas" containing star anise have been associated with illnesses affecting infants. The illnesses range from serious neurological effects, such as seizures, to vomiting, jitteriness, and rapid eye movement.

Safe Storage of Puréed and Solid Baby Food

Purées and Solids (opened commercial or freshly homemade)	Refrigerator	Freezer
Strained fruits and vegetables	2 to 3 days	6 to 8 months
Strained meats and eggs	1 day	1 to 2 months
Meat/vegetable combinations	1 to 2 days	1 to 2 months
Homemade baby foods	1 to 2 days	1 to 2 months

In the Know: Becoming a Better Shopper

Follow these safe food-handling practices when shopping:

- Carefully read food labels while in the store to make sure food is not past its "sell by" date.
- Put raw packaged meat, poultry, or seafood into a plastic bag before placing it in the shopping cart so that its juices will not drip on – and contaminate – other foods. If the meat counter does not offer plastic bags, pick some up from the produce section before you select your meat, poultry, and seafood.
- Buy only pasteurized milk, cheese, and other dairy products from the refrigerated section. When buying fruit juice from the refrigerated section of the store, be sure that the juice label says it is **pasteurized**.
- Purchase eggs in the shell from the refrigerated section of the store. (Note: Store the eggs in their original carton in the main part of your refrigerator once you are home.)
- For recipes that call for eggs that are raw or undercooked when the dish is served – homemade Caesar salad dressing and homemade ice cream are two examples – use either shell eggs that have been treated to destroy *Salmonella* by pasteurization or pasteurized egg products. When consuming raw eggs, using pasteurized eggs is the safer choice.

- **Never** buy food that is displayed in unsafe or unclean conditions.
- When purchasing canned goods, make sure that they are free of dents, cracks, or bulging lids. (Once you are home, remember to clean each lid before opening the can.)
- Buy produce that is not bruised or damaged.

Food Product Dating

Many consumers misunderstand the purpose and meaning of the date labels that often appear on packaged foods. Confusion over date labeling accounts for an estimated 20 percent of consumer food waste.

Except for infant formula, manufacturers are not required by Federal law or regulation to place quality- based date labels based on safety or quality on packaged food.

There are no uniform or universally accepted descriptions used on food labels for open dating (calendar dates) in the United States. As a result, there are a wide variety of phrases used for product dating.

FDA supports efforts by the food industry to make "**Best if Used By**" the standard phrase to indicate the date when a product will still be at its best flavor and quality. Consumers should examine foods for signs of spoilage that are past their "Best if used by" date. If the products have changed noticeably in color, consistency, or texture, consumers may want to avoid eating them. If you have questions or concerns about the quality, safety, and labeling of the packaged foods you buy, reach out to the company that produced the product. Many packaged foods provide the company's contact information on the package.

Manufacturers provide dating to help consumers and retailers decide when food is of best quality. Except for infant formula, dates are not an indicator of the product's safety.

Industry is moving toward more uniform practices for date labeling of packaged foods. But, for now, consumers may see different phrases used for product dating, such as Sell By, Best By, and Expires on, etc.

To learn how best to store foods and how long they will keep safely, access the FoodKeeper at here. The FoodKeeper is a complete guide to how long virtually every food available in the United States will keep in the pantry, in the refrigerator, and in the freezer.

Bringing Groceries Home

Follow these tips for safe transporting of groceries:

- Pick up perishable foods last, and plan to go directly home from the grocery store.
- Always refrigerate perishable foods within 2 hours of cooking or purchasing.
- Refrigerate perishable foods within 1 hour if the temperature is above 90°F.
- In hot weather, take a cooler with ice, insulated bags, or another cold source to transport foods safely.

Being Smart When Eating Out

Eating out can be enjoyable — to make sure it is, follow some simple guidelines to avoid foodborne illness. Don't hesitate to ask questions before you order and let your server know you don't want any food item containing raw meat, poultry, seafood, sprouts, or eggs. Servers can be quite helpful if you ask how a food is prepared.

Basic Rules for Ordering

- Ask whether the food contains uncooked ingredients such as eggs, sprouts, meat, poultry, or seafood. *If in doubt, make another selection!*
- Don't order meat cooked "rare."
- Ask how the foods have been cooked. If the server does not know the answer, ask to speak to the chef to be sure your food has been cooked to a safe minimum internal temperature.
- If you plan to take home leftovers to eat later, refrigerate perishable foods as soon as possible – and always within 2 hours after purchase or delivery. If the leftover is in temperatures above 90 °F, refrigerate within 1 hour.

Make Safe Menu Choices

Higher Risk:	Lower Risk:
Soft cheese made from unpasteurized (raw) milk.	**Hard or processed cheeses.** Soft cheeses only if they are made from pasteurized milk.
Refrigerated smoked seafood and raw or undercooked seafood.	**Fully cooked fish or seafood.**
Cold or improperly heated hot dogs.	**Hot dogs reheated to steaming hot.** If the hot dogs are served cold or lukewarm, ask to have them reheated until steaming, or choose something else.
Sandwiches with cold deli or luncheon meat.	**Grilled sandwiches** in which the meat or poultry is heated until steaming.
Raw or undercooked fish, such as sashimi, non-vegetarian sushi, or ceviche.	**Fully cooked fish** that is firm and flaky.
Soft-boiled or "over-easy" eggs, as the yolks are not fully cooked.	**Fully cooked eggs** with firm yolk and whites.
Salads, wraps, or sandwiches containing raw (uncooked) or lightly cooked sprouts	Salads, wraps, or sandwiches containing **cooked sprouts.**

Tips for Transporting Food to a Picnic or a Party

- Keep cold food cold, at 40°F or below. To be sure, put cold food in cooler with ice or frozen gel packs. Use plenty of ice or frozen gel packs. Cold food should be at 40°F or below the entire time you are transporting it.
- Hot food should be kept at 140°F or above. Wrap the food well and place it in an insulated container.

Stay Safe When Traveling Internationally

Discuss your travel plans with your healthcare provider before traveling to other countries. He or she may have specific recommendations for the places you are visiting and may suggest extra precautions or medications to take on your travels.

For more information about safe food and water while traveling abroad, access the Federal Centers for Disease Control and Prevention Traveler's Health page.

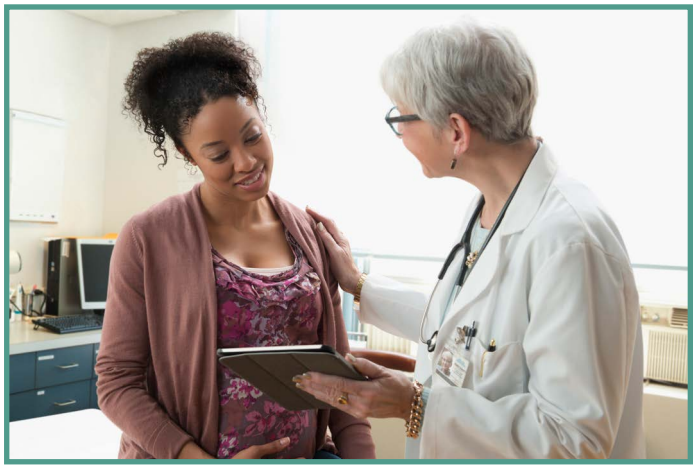
Foodborne Illness: Know the Symptoms

Despite your best efforts, you may find yourself in a situation where you suspect you have a foodborne illness. Foodborne illness often presents itself with flu-like symptoms, including:

- Nausea
- Diarrhea
- Vomiting
- Fever
- Abdominal Cramps

As a pregnant woman, you are at increased risk for a severe case of food poisoning. If you suspect that you have a foodborne illness, take these four key steps:

1. Contact your healthcare provider immediately if you develop symptoms or think you may be at risk.
2. Keep the food.
    - If a portion of the suspect food is available, wrap it securely, label it to say "DANGER," and freeze it.
    - The remaining food may be used in diagnosing your illness and in preventing others from becoming ill.
3. Save all the packaging materials, such as cans or cartons.
    - Write down the food type, the date and time consumed, and when the onset of symptoms occurred. Write down as many foods and beverages you can recall consuming in the past week (or longer), since the onset time for various foodborne illnesses differ.
    - Save any identical unopened products.
    - If the suspect food is a USDA-inspected meat, poultry, or egg product, call the USDA Meat and Poultry Hotline, **1-888-MPHotline** (**1-888-674-6854**).
    - For all other foods, call the FDA office of Emergency Operations at 1-866-300-4374 or 301-796-8240.



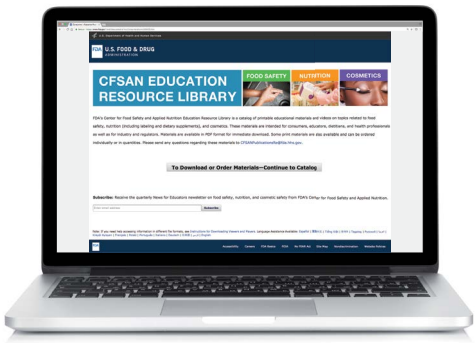
4. Call your local health department if you believe you became ill from food you ate in a restaurant or other food establishment.
    - The health department staff will be able to assist you in determining whether any further investigation is warranted.
    - To locate your local health department, visit Health Guide USA.

More Information on Food Safety for Pregnant Women, Unborn Babies, and Young Children

- Food Safety for Moms-To-Be
- Preventing Listeria Infections
- Eating Fish: What Pregnant Women and Parents Should Know
- Centers for Disease Control and Prevention 1-800-232-4636 (24-hour recorded information)
  - Travel Health Notices
  - Food and Water Safety
  - Healthy Childcare
- U.S. Environmental Protection Agency, Office of Water

Additional Sources of Food Safety Information

- FoodSafety.gov, The Gateway to Government Food Safety Information, including all food recalls and alerts.
- The U.S. Food and Drug Administration's Food and Cosmetics Information Center, **1-888-SAFEFOOD (1-888-723-3366)** for information on nutrition and food, cosmetic and dietary supplement safety. This toll-free hotline is available Monday through Friday from 10 a.m. to 4 p.m. ET (except Thursdays from 12:30 PM to 1:30 PM ET and Federal holidays).
- For questions about the safety and safe handling of meat and poultry, call the USDA Meat and Poultry Hotline, **1-888-MPHotline (1-888-674-6854)**, available Monday through Friday from 10 a.m. to 4 p.m. ET
- To order or download this publication or other food safety, nutrition, dietary supplements, and cosmetics materials, or to find videos on these topics, visit the CFSAN Education Resource Library.
- Partnership for Food Safety Education (Fight BAC)



Notes

Four Steps to Food Safety

CLEAN
Wash hands and surfaces often

- Wash your hands with warm water and soap for at least 20 seconds before and after handling food and after using the bathroom, changing diapers, and handling pets.
- Wash your cutting boards, dishes, utensils, and counter tops with hot soapy water after preparing each food item.
- Consider using paper towels to clean up kitchen surfaces. If you use cloth towels, launder them often in the hot cycle.
- Rinse fresh fruits and vegetables under running tap water, including those with skins and rinds that are not eaten. Scrub firm produce with a clean produce brush.
- With canned goods, remember to clean lids before opening.

SEPARATE
Separate raw meats from other foods

- Separate raw meat, poultry, seafood, and eggs from other foods in your grocery shopping cart, grocery bags, and refrigerator.
- Use one cutting board for fresh produce and a separate one for raw meat, poultry, and seafood.
- Never place cooked food on a plate that previously held raw meat, poultry, seafood, or eggs unless the plate has been washed in hot, soapy water.
- Don't reuse marinades used on raw foods unless you bring them to a boil first.

COOK
Cook to the right temperature

- Color and texture are unreliable indicators of safety. Using a food thermometer is the only way to ensure the safety of meat, poultry, seafood, and egg products for all cooking methods. These foods must be cooked to a safe minimum internal temperature to destroy any harmful bacteria.
- Cook eggs until the yolk and white are firm. Only use recipes in which eggs are cooked or heated thoroughly.
- When cooking in a microwave oven, cover food, stir, and rotate for even cooking. If there is no turntable, rotate the dish by hand once or twice during cooking. Always allow standing time, which completes the cooking, before checking the internal temperature with a food thermometer.
- Bring sauces, soups, and gravy to a boil when reheating.

CHILL
Refrigerate foods promptly

- Use an appliance thermometer to be sure the temperature is consistently 40°F or below and the freezer temperature is 0°F or below.
- Refrigerate or freeze meat, poultry, eggs, seafood, and other perishables within 2 hours of cooking or purchasing. Refrigerate within 1 hour if the temperature outside is above 90°F.
- Never thaw food at room temperature, such as on the counter top. There are three safe ways to defrost food: in the refrigerator, in cold water, and in the microwave. Food thawed in cold water or in the microwave should be cooked immediately.
- Always marinate food in the refrigerator.
- Divide large amounts of leftovers into shallow containers for quicker cooling in the refrigerator.

U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
5001 Campus Drive
College Park, MD 20740
www.fda.gov

January 2022

AR08