# Research, food-safety fundamentals guide holiday meal preparations

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Cook the turkey to a minimum of 165 F. That minimum cooking temperature has been shown to destroy the bacterial pathogens naturally associated with poultry. Use a meat thermometer to be sure. Credit: Penn State

This is the time of year when we gather to feast on roasted turkey, stuffing and other fixings. For many, it will be the first time they will prepare a holiday dinner, while for others, it will be the latest of many memorable occasions. But those memories should not revolve around foodborne illness, according to a Penn State expert.

Research over the years—much of it conducted by scientists at land-

grant universities such as Penn State—has increased the safety of the U.S. food supply significantly, from farm to fork. For example, researchers in Penn State's College of Agricultural Sciences currently are exploring ways to more quickly trace foodborne illness outbreaks so they can be stopped at the source; studying methods to identify and eliminate antibiotic-resistant pathogens; and developing novel processing technologies to kill bacteria without damaging the food they contaminate.

But, according to Martin Bucknavage, food safety specialist with Penn State Extension, the best research and technology can be rendered useless if consumers don't follow science-based food-safety fundamentals that greatly reduce the risk of bacterial pathogens commonly found in meats and poultry—including Salmonella, Listeria and Campylobacter.

As the holidays approach, Bucknavage noted, Penn State Extension still receives many questions involving the safe preparation and serving of food. And it's not just inexperienced food preparers who need to hear this food-safety advice.

"Too often, people are willing to overlook food-safety rules because they don't understand the science behind them," he said. "It seems that once people understand why it's important, they are more willing to follow these food-safety fundamentals in order to keep their family safe from foodborne illness."

He emphasized the following steps for preparing a turkey dinner:

**Thaw the frozen bird in a refrigerator**. "The problem is that poultry has been shown to contain pathogens, especially on the surface," Bucknavage explained. "As the bird defrosts at room temperature, the outside will be closer to room temperature while the middle still may be

frozen. Because of this, pathogens present on the outside of the turkey are more likely to multiply. Thawing the bird at refrigeration temperature will limit this growth."

It does take longer, so it requires planning—you can't wait until the last minute and then use drastic measures to defrost the bird. Defrosting at high temperatures could result in higher levels of pathogens. "The more bacterial pathogens you have on the bird, the greater the chance of cross contamination to your kitchen surfaces and other food, thus the greater the risk of getting foodborne illness."

**No need to wash the outside of the bird**. When you wash the bird in your sink, you are more likely to spread pathogenic bacteria that can be on the skin of the turkey through the water droplets splashing off the bird or dripping from it after you wash it. The cooking process will destroy these bacteria, so there is no need to wash the surface of the bird.

**Cook the turkey to a minimum of 165 F.** U.S. Department of Agriculture has set the minimum cook temperature for poultry at 165 F. This temperature has been shown to destroy the bacterial pathogens naturally associated with poultry. Research also has shown that cooking to higher temperatures, above 172 F, will improve the sensory aspects of the meat.

**Cook stuffing separately**. While many enjoy cooking the turkey with the stuffing already in it, there is a risk of either overcooking the bird or undercooking the stuffing. If you pre-stuff the turkey, both the stuffing and the bird must reach a minimum temperature of 165 F. Because the bird insulates the stuffing, it will take much longer for the stuffing to reach that temperature, meaning that you are likely to overcook the bird. Cooking separately allows for optimal cooking for both the bird and the stuffing. "You always can stuff the bird afterwards," Bucknavage said.

**Clean as you go**. In handling a big turkey, there is the likelihood of cross contamination from raw bird drippings contacting kitchen surfaces, other food or your hands. "These droplets can contain pathogenic bacteria, and even a small droplet can contain hundreds or thousands of bacteria," Bucknavage warned.

"So if someone should put a food item or their finger into a small droplet, bacteria in that droplet easily can make their way into the person's mouth, potentially resulting in illness."

**Properly handle and refrigerate leftovers**. Even if the bird is cooked properly, there are bacteria that can survive the cooking process and grow in a temperature abused-product. Spore-forming organisms, such as Clostridium perfrigens, can grow very rapidly in meat if that meat is held at room temperature for too long, and the longer it is out of the refrigerator, the higher the numbers can get.

Along with this are organisms naturally found on people that can contaminate the bird after cooking. Staphylococcus aureus, a common organism found on people's skin, is not a problem normally but can be if it gets onto a cooked meat item that is temperature abused.

Staphylococcus aureus can grow on cooked poultry left out too long, and as it grows, it can produce a potent toxin that will cause vomiting. For both these organisms, the longer the time the food is held at room temperature or higher, the more likely they are to grow.

"What is a safe amount of time that food can be left out? Two hours or less at room temperature is normally a good standard to set," Bucknavage said, adding that planning is the key to preparing a safe turkey for the holidays.

"Plan enough time to thaw your bird in the refrigerator, have a

thermometer available to ensure it has reached the proper temperature, have cleaning material on hand to wash and sanitize your surfaces and your hands, and finally, get those leftovers refrigerated."

Provided by Pennsylvania State University