Cooking won't cure all food safety ills

I was making soup in the slow cooker but forgot to plug it in. After five hours, I realized what happened and cooked the soup, which included cooked chicken, on high for five more hours. I thought it would be OK, but my wife said no and threw it out. Who was right?

She did the right thing by throwing away the soup.

One of the basic rules of food safety is that perishable foods should be kept at room temperature — well, actually, anywhere between 40 degrees F and 140 degrees F — for no more than two hours. Any longer than that, and you're taking too big of a chance that any bacteria or other pathogens will multiply so much that they could make you sick.

At room temperature, bacteria in food can double every 20 minutes. That means that a mere five cells of bacteria can multiply to 320 cells in two hours, or to 163,840 cells in five hours. The more bacteria there are, the greater the chance of illness.

In fact, experts recommend that food be refrigerated within one hour, not two, if the temperature outside is above 90 degrees F, because the risk is just too great that bacteria could multiply even more quickly.

It's true that if you cook food thoroughly even after allowing it to sit out, bacteria will be killed. But some types of pathogens that cause food-borne illness produce spores or toxins that are not eliminated by cooking. For example, a few types of *E. coli* bacteria produce something called Shiga toxin, which can cause a serious illness that can lead to renal failure.

Similarly, a bacterium called *Clostridium perfringens* produces tiny spores that can turn into full-fledged bacteria after cooking. With this bacteria, it's especially important to refrigerate food within two hours after cooking. Refrigeration does a great job at slowing down bacteria's multiplication process — so much that it greatly reduces the chance this bacteria will cause illness. But it's important to note that refrigeration only slows down the process — it doesn't destroy the bacteria.

Some other temperature-related food safety tips include:

• When refrigerating large amounts of leftovers, use shallow containers to allow the food to cool more quickly.

• Don't thaw frozen food at room temperature. It's always best to thaw food in the refrigerator. Other, quicker options are to use the defrost setting in the microwave oven, or use cold water (lower than 70 degrees F) to thaw the food. If you try the latter, be sure the food is wrapped in a leak-proof package, and change the water every 30 minutes.

For more information, see http://www.foodsafety.gov/.

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