

New U.S. Foodborne Illness Estimates

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[Karen Hunter] Hello, I'm Karen Hunter. With me today is Dr. Elaine Scallan, an assistant professor at the University of Colorado and former lead of the CDC's FoodNet surveillance system. We're talking about two papers that appear in the January 2011 issue of CDC's journal, *Emerging Infectious Diseases*. The articles report on CDC's new estimates of illnesses due to eating contaminated food in the United States.

Welcome Dr. Scallan.

[Elaine Scallan] Thank you.

[Karen Hunter] CDC has released the first new comprehensive estimates of foodborne illness in the U.S. since 1999. What did you find?

[Elaine Scallan] Well, our study estimates that there are around 48 million foodborne illnesses each year in the United States. That means that, on average, one of every six people becomes ill every year. These foodborne illnesses result in about 128,000 hospitalizations and 3,000 deaths. Many of the germs are familiar because they've caused outbreaks that have been in the news; for example, *Salmonella* and *E. coli* O157. The good news is that 90 percent of all illnesses, hospitalizations, and deaths caused by germs that we know about are caused by just seven germs. So public health officials can target those germs for prevention measures.

[Karen Hunter] When you looked at the germs that are known to cause foodborne illness, *Salmonella* was the leading cause of hospitalizations and deaths. It was responsible for more than a third of estimated foodborne-related hospitalizations and about 28 percent of deaths caused by germs we know. Why do you think that is?

[Elaine Scallan] *Salmonella* lives in the intestines of most of our food animals and many wild animals. There are many different types of *Salmonella*, and different types of *Salmonella* prefer to live in different animals. *Salmonella* can contaminate meat and poultry from these animals during either slaughter or processing. *Salmonella* from the fecal matter of animals can also contaminate fruits and vegetables in the fields where they're grown, and food can be contaminated or cross-contaminated in the home; for example, if someone uses the same cutting board for cutting chicken as they use for cutting salad ingredients. Because the sources of *Salmonella* are so varied, preventing human illness is complex and will require many control measures.

[Karen Hunter] How did you go about making these estimates?

[Elaine Scallan] So, CDC has surveillance systems for many important germs, but we only get reports of illnesses when a laboratory test confirms it. So we know many people don't get lab tests, so the ones in our surveillance systems are really just the tip of the iceberg. In our

estimates, we used surveillance data that we had available and then adjusted for the fact that many people don't seek care or get a lab test when they're ill with a foodborne illness.

[Karen Hunter] In these papers, you talk about what you're calling "unspecified agents," which were responsible for 80 percent of the estimated illnesses. So if they're unknown, how do you estimate them?

[Elaine Scallan] To estimate these other or unspecified foodborne agents, we did surveys that asked people about episodes of diarrhea or vomiting, so what we refer to as acute gastroenteritis, and then estimated how much of it was acquired from contaminated food. From this total, we subtracted our estimate of the number of foodborne illnesses caused by germs that we know about and the remaining illnesses were then these unspecified agents. We estimated that 80 percent of foodborne illnesses are caused by unspecified agents.

[Karen Hunter] That seems like a lot of illnesses caused by unspecified agents. Do you have any thoughts about these agents and what we can do about them?

[Elaine Scallan] Some of the unspecified agent illnesses may really be caused by germs that we know about but we have underestimated. Also, some illnesses are probably caused by food ingredients. For example, many people cannot tolerate lactose, an ingredient in milk products. Although many people recognize this and avoid these products, some don't realize that milk is the cause of their diarrhea. Also, it's likely that there are causes of foodborne illness that we have not identified. For example, E. coli O157 was only discovered in the 1980s. So there may be other pathogens that we haven't discovered yet and that we will discover in the future.

[Karen Hunter] What can be done to better understand these unspecified agents?

[Elaine Scallan] We have several ideas. First, we need to get better data on the known pathogens to figure out which ones may have been underestimated. We also need to continue to do intensive laboratory investigation on outbreaks for which at first we can't find the germ causing illness. That's how we discovered E. coli O157, for example. The good news is that implementing measures that we know will decrease illnesses caused by *known* pathogens will also likely decrease illnesses caused by these unspecified agents.

[Karen Hunter] I understand that these estimates are lower than the estimates CDC made in 1999, which were a total of 76 million illnesses per year, 325,000 hospitalizations, and about 5,000 deaths per year. Does this mean foodborne illness has gone down by that much?

[Elaine Scallan] The estimates made in 1999 were the state of the art at the time. In the past 10 years, we've obtained better data and developed new methods. Most of the difference between our estimate and those made in '99 are due to these improvements. For example, we have better data on how many people have acute gastroenteritis and how many people with acute gastroenteritis seek medical care. We also have a better understanding of the causes of norovirus infection and now estimate that 26 percent of norovirus illnesses are foodborne, compared to an estimate of 40 percent in 1999. These and many other improvements in the calculations resulted in these lower numbers.

[Karen Hunter] So has there been any evidence of improvement in the past 10 years?

[Elaine Scallan] Yes, we have evidence that there has been some improvement. CDC's FoodNet surveillance system that tracks laboratory confirmed infections caused by nine pathogens showed a 20 percent decrease in illness in these specific pathogens during the past 10 years.

[Karen Hunter] So now that CDC has these estimates, what can we do with them?

[Elaine Scallan] Now that we have a better understanding of which germs are causing the most illnesses, hospitalizations, and deaths, we can work to target them. We expect that CDC's regulatory partners, the Food and Drug Administration and the U.S. Department of Agriculture, and other public health agencies, will use these data to help prioritize food safety policies and programs, estimate the cost of foodborne illnesses, and assess whether interventions are working. The food industry and academic institutions will likely use these data to inform their research programs and food safety activities.

[Karen Hunter] With so much estimated illness out there, what can people do to protect themselves from foodborne infections?

[Elaine Scallan] People can follow some easy steps when preparing food at home. These include separating raw meats from produce, cooking meat and poultry to the right temperatures, promptly chilling leftovers, and not eating unpasteurized milk and cheese and raw oysters which have been linked to outbreaks in the past.

[Karen Hunter] Thanks, Dr. Scallan. I've been talking with Dr. Elaine Scallan, who is the lead author of two papers that appear in the January 2011 issue of CDC's journal, Emerging Infectious Diseases. You can see the articles online at www.cdc.gov/eid. If you'd like to comment on this podcast, send an email to eeditor@cdc.gov. I'm Karen Hunter, for Emerging Infectious Diseases.

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