

Q&A for the FoodNet MMWR with data from 2007

1) According to data from 2007, are we on track to reach the national health objectives, as specified in Healthy People 2010, for reducing foodborne illness by 2010?

There are national health objectives for foodborne infections caused by *Campylobacter*, *Listeria*, *Salmonella*, and Shiga toxin-producing *Escherichia coli* (STEC) O157. While there has been progress towards the 2010 national health objectives for the incidence of foodborne infections, this progress occurred before 2004. None of these health objectives were met in 2007, however, we are on track to reach the Healthy People 2010 objective for *Campylobacter*. We are also approaching the national health objectives for *Listeria* and STEC O157. *Salmonella* is the pathogen furthest from its national health objective, suggesting that reaching it will require new approaches.

2) Why has the incidence of infections caused by STEC O157 (*E. coli* O157) not declined when compared with previous years?

The incidence of infections with STEC O157 has decreased significantly when compared to 1996-1998; but there hasn't been a decrease in the past three years. Reasons for the lack of decrease in the incidence of infections caused by STEC O157 in recent years are not fully understood. A marked decrease in STEC O157 infections occurred in 2003 and 2004, but these declines have not been maintained. One possible explanation may be a shift in the food vehicles causing illness. STEC O157 lives in the intestines of healthy cattle, and not (to any great extent) in other food animals. While ground beef continues to be an important source of STEC O157 infections, it is safer now than it was five years ago. STEC O157 from cattle ranches can get into the environment and can contaminate other animals, plant crops, and water supplies. Therefore, additional efforts to control STEC O157 in cattle and to prevent its spread to other food animals and to the environment are necessary.

3) Why has the incidence of infections caused by *Salmonella* not declined much compared with previous years?

The incidence of *Salmonella* infections has not decreased in the past three years and the incidence of *Salmonella* is twice its national health objective. Reasons for the lack of decrease in the incidence of infections caused by *Salmonella* in recent years are not fully understood. *Salmonella* is carried in the intestines of many types of food animals and transmission of *Salmonella* to humans can occur by many routes, including consumption of food animal products (e.g., poultry, other meat, eggs), consumption of raw produce contaminated with food animal or wild animal waste, direct contact with animals and their environment, and contaminated water. Efforts are needed to more effectively prevent contamination of a variety of foods from farm to table. Several large, multi-state outbreaks of illness associated with the consumption of commercially produced foods in 2007 (contaminated frozen pot pies, peanut butter, and a puffed vegetable snack) highlight the need to prevent contamination of commercially produced food products. Also, the outbreak associated with turtle exposure in 2007 highlights the need to consider animal contact as a non-food source of human infections. Regulatory agencies are working to introduce initiatives to respond to these trends.

4) Why is the incidence of infections with *Cryptosporidium* increasing?

The increase in the estimated incidence of infections caused by *Cryptosporidium* may be due in part to increased reporting based on increased diagnostic testing stimulated by the licensing of a new treatment for this disease. These infections are most often associated with contaminated recreational water, but can also be associated with contaminated foods.

5) How does the incidence of infections differ in children under 5 years of age, and what are some risk factors for these infections?

The incidence of *Campylobacter*, *Salmonella*, *Shigella*, and STEC O157 infections is highest among children <5 years of age, highlighting the need for targeted interventions among these age groups. FoodNet studies have shown that some of the risk factors for bacterial enteric illness among young children are: riding in a shopping cart next to raw meat or poultry, attending day care, visiting or living on a farm, and living in a home with a reptile. Young children are most likely to visit the doctor, which may contribute to a higher incidence of reported illnesses. Breastfeeding protects young infants and should continue to be encouraged.

6) How is the incidence of infections described by FoodNet influenced by outbreaks of foodborne diseases?

Outbreaks can also cause the incidence of infections to increase. In 2004, FoodNet began collecting data on which laboratory-confirmed infections were associated with outbreaks. From 2004-2007, between 9% and 23% of STEC O157 cases each year were associated with outbreaks, and 5-6% of *Salmonella* cases were associated with outbreaks. FoodNet will continue to collect data on which infections were outbreak-associated. In future years, this will allow FoodNet to comment on how outbreaks have affected the overall incidence of foodborne disease.

7) What does the FoodNet data from 2007 tell us about the human health burden of foodborne diseases?

The FoodNet data from 2007 tell us that the incidence of infections caused by *Campylobacter*, *Listeria*, Shiga toxin-producing *Escherichia coli* O157 (STEC O157), *Salmonella*, *Shigella*, *Vibrio*, and *Yersinia* did not change significantly, and *Cryptosporidium* increased compared with the previous three years. This indicates that further measures are needed to reduce the human health burden of certain foodborne pathogens.

8) How many cases of foodborne disease are there in the United States?

While it is difficult to precisely estimate the incidence of foodborne disease, in 1999 CDC estimated that 76 million cases of foodborne disease occur each year in the United States. Although many of these cases are mild and cause symptoms for only a day or two and most people do not seek medical help, some infections result in serious illnesses. Each year, foodborne diseases are estimated to result in 325,000 hospitalizations and 5,000 deaths. The most severe cases tend to occur in the elderly, the very young, those who already have an illness that reduces their immune system function, and in healthy people exposed to a high dose of an organism.

9) What is CDC doing to control and prevent foodborne disease?

CDC performs surveillance, investigates outbreaks, conducts research, identifies prevention measures, and provides consumer education on foodborne illnesses. CDC researchers develop new methods for identifying, characterizing and fingerprinting the pathogens or germs that cause disease. CDC also provides expert consultation to health departments and other federal agencies and assesses the effectiveness of prevention efforts.

10) What other efforts are underway to reduce foodborne illness?

New initiatives have been launched to better control foodborne illnesses. In early 2006, the U.S. Department of Agriculture's Food Safety and Inspection Service (USDA FSIS) launched an initiative to reduce *Salmonella* in poultry and other meat and announced further enhancements in 2008. The FSIS *Salmonella* initiative includes facilitating improvements in the ongoing control of *Salmonella*, sharing *Salmonella* subtyping information with CDC-PulseNet, and scheduling Food Safety Assessments at establishments with medium or high levels of serotypes of human health concern. In fall 2007, USDA FSIS launched a STEC O157 initiative to expand testing of additional beef components used to make ground beef, develop risk-based sampling at slaughter and grinding, verify control of *E. coli* O157:H7 at all FSIS-regulated establishments, and conduct training sessions for smaller ground beef processors. FSIS also hosted a public meeting in the spring of 2008 to explore with stakeholders and experts the possible solutions presented by this foodborne disease. In November 2007, FDA published its Food Protection Plan which is designed to address foodborne illness caused by either unintentional or intentional contamination. In February 2008, the Food and Drug Administration published guidance advising fresh-cut produce processors on how to minimize food safety hazards. However, we need to know more about the complex ecologies that link pathogens to animals and plants, controlling or eliminating pathogens in food sources, reducing or preventing contamination during growing, harvesting, and processing, and we must continue to educate restaurant workers and consumers about risks and prevention measures.

11) What are some limitations of the FoodNet data?

- FoodNet relies on laboratory diagnoses and changing laboratory practices may affect incidence for some pathogens, especially STEC.
- Many foodborne illnesses (e.g., norovirus) are not reported to FoodNet. Also, illnesses might have been acquired through non-food sources, so incidence rates do not reflect foodborne transmission exclusively.
- There are differences in health-care seeking behaviors by age groups and this may contribute a higher incidence of reported illnesses in certain age groups (e.g. young children).
- Although the FoodNet population is similar to the U.S. population, the findings might not be generalizable for the entire U.S. population.

12) Are the data from FoodNet representative of the entire United States?

FoodNet is a useful gauge that provides valid and reliable information about incidence and trends of foodborne illness in the United States. Since its launch in 1996, FoodNet has increased from five sites to the current ten sites, which has improved representativeness. A comparison of FoodNet data from 2005 to national census data suggested that differences in characteristics between persons who live within the FoodNet surveillance area and persons who live in the United States overall were limited. The only notable difference was the under-representation of the Hispanic population at FoodNet sites. Otherwise, data from FoodNet are generally representative of the entire United States.

13) What can consumers do to reduce the risk for foodborne illness?

Consumers can reduce their risk for foodborne illness by following safe food-handling recommendations and by avoiding consumption of unpasteurized milk, raw or undercooked oysters, raw or undercooked eggs, raw or undercooked ground beef, and undercooked poultry. The risk for foodborne illness can also be decreased by choosing in-shell pasteurized eggs, irradiated ground meat, and high pressure-treated oysters. Also, consumers should always wash hands after contact with raw meat, animals, animal products, and animal environments (for additional information on food safety and safety around animals see www.foodsafety.gov, www.fightbac.org, and www.cdc.gov/healthypets).