

CDC and Food Safety

Foodborne illness is a common, costly—yet preventable—public health problem. CDC estimates that 1 in 6 Americans get sick from contaminated foods or beverages each year, and 3,000 die. The U.S. Department of Agriculture (USDA) estimates that foodborne illnesses cost more than \$15.6 billion each year.

What Is CDC's Role in Food Safety?

CDC provides the vital link between illness in people and the food safety systems of government agencies and food producers.



CDC, the [U.S. Food and Drug Administration \(FDA\)](#), and [USDA's Food Safety and Inspection Service](#) collaborate closely at the federal level to promote food safety. State and local health departments, the food industry, and consumers also play essential roles in all aspects of food safety.

CDC helps make food safer by:

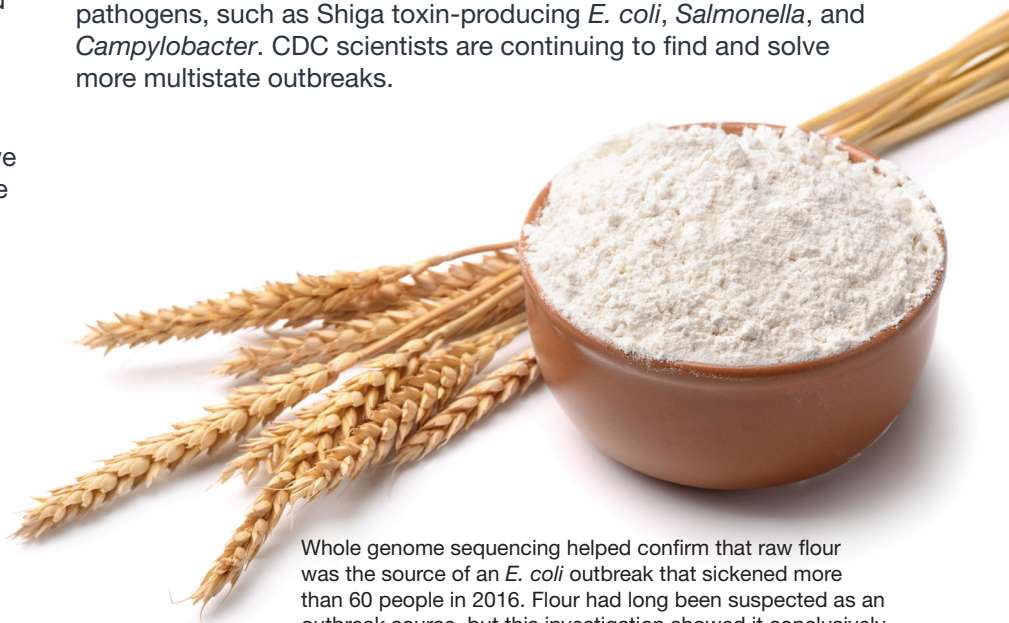
- Building state and local capacity to improve surveillance and investigation of foodborne illnesses through [PulseNet](#), the Integrated [Food Safety Centers of Excellence](#), and other programs.
- Working with local, state, and federal partners to investigate outbreaks, and to implement systems to better detect, stop, and prevent them.
- Using data to evaluate and revise foodborne disease prevention strategies and policies.
- Working with other countries and international agencies to improve surveillance, investigation, and prevention of foodborne infections in the United States and around the world.

A Better Way to Find Outbreaks

CDC is improving food safety by developing and sharing whole genome sequencing (WGS) technology with all 50 state PulseNet laboratories. CDC scientists and partners in local, state, and federal agencies use [whole genome sequencing](#) to show which bacterial strains are most alike genetically. Strains that are very alike may have the same source.

This laboratory method can provide important clues during outbreak investigations to help link specific sources of food to illness and death. Genome sequencing provides scientists with more detailed genetic information about the bacteria that is causing an illness than the traditional DNA fingerprinting method, pulsed-field gel electrophoresis. This next-generation technology allows scientists to more efficiently find, investigate, and identify sources of foodborne outbreaks.

For example, since 2013 WGS has been improving CDC's ability to detect *Listeria* outbreaks and link illnesses to food sources. CDC is quickly expanding WGS technology in U.S. local, state, and federal laboratories to better detect outbreaks of other foodborne pathogens, such as Shiga toxin-producing *E. coli*, *Salmonella*, and *Campylobacter*. CDC scientists are continuing to find and solve more multistate outbreaks.



Whole genome sequencing helped confirm that raw flour was the source of an *E. coli* outbreak that sickened more than 60 people in 2016. Flour had long been suspected as an outbreak source, but this investigation showed it conclusively. More than 45 million pounds of flour were recalled.



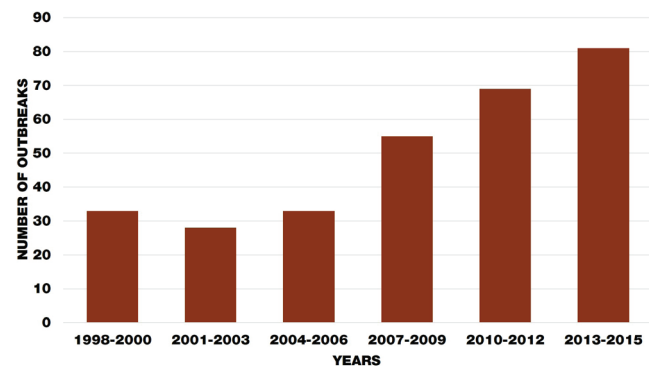
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

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Challenges to America's Food Safety

Sometimes foods we love to eat and rely on for good health are contaminated with bacteria, viruses, and parasites that cause illness, and can be deadly for certain people. Efforts that focus on foods responsible for many illnesses are needed to protect people and reduce foodborne illnesses in America.

Multistate Foodborne Disease Outbreaks by Year, 1998–2015



Challenges to food safety will continue to arise in unpredictable ways, largely due to:

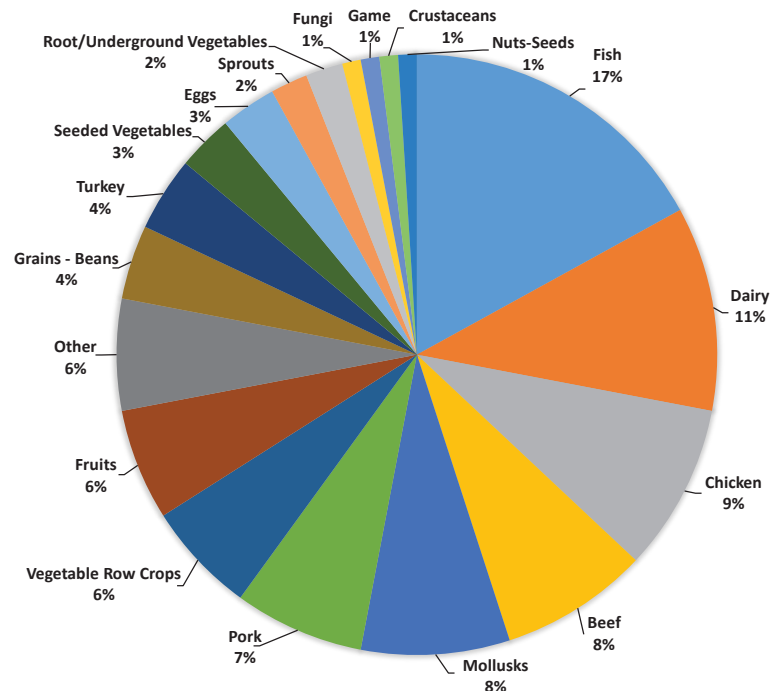
- Changes in our food production and supply, including more central processing and widespread distribution, and many imported foods.
- New and emerging bacteria, toxins, and antibiotic resistance.
- Unexpected sources of foodborne illness, such as flour and meal replacement shake mixes.

The Threat of Antibiotic Resistance

Antibiotic resistance in foodborne bacteria is a growing food safety challenge that is made worse by overuse of antibiotics in people and food animals. CDC estimates that every year, more than 400,000 people in the United States are sickened with resistant *Salmonella* or *Campylobacter*.

Preventing foodborne infections from resistant bacteria is not easy. To address this important issue, CDC works closely with partners including federal agencies, state and local health departments, the food industry, healthcare providers, and academia. Key parts of the strategy include:

Food That Sickened People in Outbreaks with a Single Known Source, 2009–2016



Source: CDC National Outbreak Reporting System, 2009–2016

- Increasing state laboratory capacity to detect foodborne drug-resistant bacteria using whole genome sequencing, investigating cases using enhanced patient interviews, and preventing illnesses by rapidly responding to outbreaks.
- Using surveillance data to detect the emergence and spread of specific resistance genes and patterns.
- Working with partners to ensure veterinarians have the tools, information, and training to prevent drug resistance by using antibiotics appropriately.
- Working within the One Health framework, across the human, animal, and environment sectors to improve food safety and the health of people and animals.