

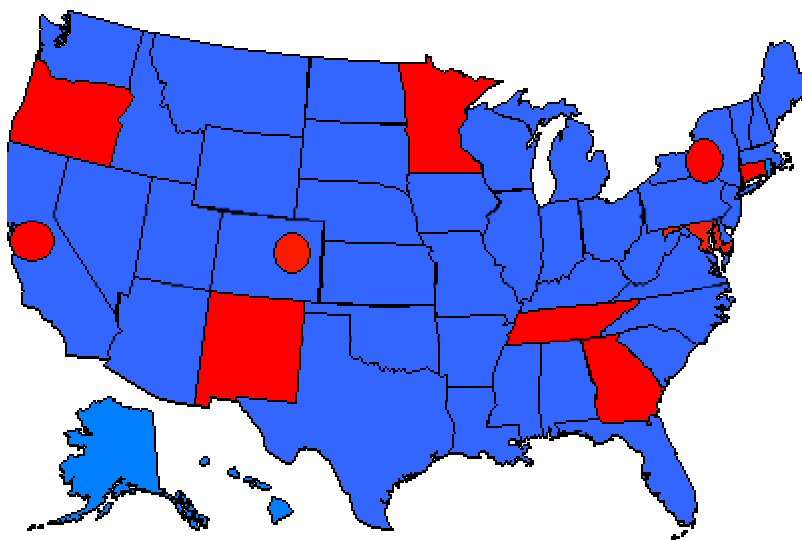
# FoodNet Overview

## CDC's Emerging Infections Program Foodborne Diseases Active Surveillance Network (FoodNet) [www.cdc.gov/foodnet/](http://www.cdc.gov/foodnet/)

The Foodborne Diseases Active Surveillance Network (FoodNet) is the principal foodborne disease component of CDC's Emerging Infections Program (EIP). FoodNet is a collaborative project of the CDC, ten EIP sites (California, Colorado, Connecticut, Georgia, New York, Maryland, Minnesota, Oregon, Tennessee and New Mexico), the [U.S. Department of Agriculture \(USDA\)](#), and the [Food and Drug Administration \(FDA\)](#). The project consists of active surveillance for foodborne diseases and related epidemiologic studies designed to help public health officials better understand the epidemiology of foodborne diseases in the United States.

Foodborne diseases include infections caused by bacteria such as [Salmonella](#), [Shigella](#), [Campylobacter](#), [Escherichia coli O157](#), [Listeria monocytogenes](#), [Yersinia enterocolitica](#), and [Vibrio](#), and parasites such as [Cryptosporidium](#) and [Cyclospora](#). In 1995, FoodNet surveillance began in five locations: California, Connecticut, Georgia, Minnesota and Oregon. Each year the surveillance area, or catchment, has expanded, with the inclusion of additional counties or additional sites (New York and Maryland in 1998, Tennessee in 2000, Colorado in 2001 and New Mexico in 2004). The total population of the 2003 bacterial catchment is 37.6 million persons, or 13.8% of the United States population.

FoodNet provides a network for responding to new and emerging foodborne diseases of national importance, monitoring the burden of foodborne diseases, and identifying the sources of specific foodborne diseases.



### FoodNet goals

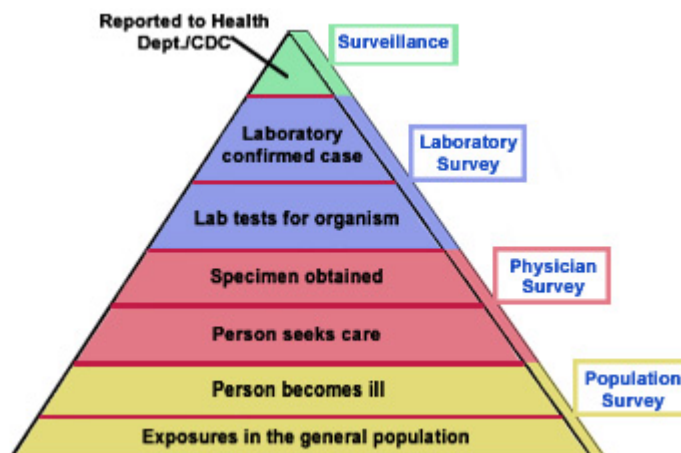
- Determine the burden of foodborne illness in the United States
- Monitor trends in the burden of specific foodborne illness over time
- Attribute the burden of foodborne illness to specific foods and settings
- Develop and assess interventions to reduce the burden of foodborne illness

### Why is FoodNet important to public health?

Foodborne diseases are common; an estimated [76 million cases](#) occur each year in the United States. Although most of these infections cause mild illness, severe infections and serious complications do occur. The public health challenges of foodborne diseases are changing rapidly; in recent years, new and emerging foodborne pathogens have been described and changes in food production have led to new food safety concerns. Foodborne diseases have been associated with many different foods, including some previously thought to be safe, such as eggs and fruit juice, both of which have transmitted [Salmonella](#) during recent outbreaks. Public health officials in the nine EIP sites are monitoring foodborne diseases, conducting epidemiologic and laboratory studies of these diseases, and responding to new challenges from these diseases. Information gained through this network will lead to new interventions and prevention strategies for addressing the public health problem of foodborne diseases.

## How is FoodNet different from other foodborne disease surveillance systems?

Current "passive" surveillance systems rely upon reporting of foodborne diseases by clinical laboratories to state health departments, which in turn report to CDC. Although foodborne diseases are extremely common, only a fraction of these illnesses are routinely reported to CDC via these surveillance systems. This is because a complex chain of events must occur before such a case is reported, and a break at any link along the chain will result in a case not being reported. FoodNet is an "active" surveillance system, meaning public health officials frequently contact laboratory directors to find new cases of foodborne diseases and report these cases electronically to CDC. In addition, FoodNet is designed to monitor each of the events that occurs along the foodborne diseases pyramid and thereby allow more accurate and precise estimates and interpretation of the burden of foodborne diseases over time. Because most foodborne infections cause diarrheal illness, FoodNet focuses these efforts on persons who have a diarrheal illness.



## FoodNet Has 6 Components:

1. **Active laboratory-based surveillance**
2. **Survey of clinical laboratories**
3. **Survey of physicians**
4. **Survey of the population**
5. **Epidemiologic studies**
6. **Outbreak reporting and response**

### **Component 1. Active laboratory-based surveillance**

The core activity of the CEIP's FoodNet project is laboratory-based active surveillance at over 30 clinical and reference laboratories that test stool samples in the FoodNet catchment area, which consists of Alameda, Contra Costa, and San Francisco counties. FoodNet investigators identify and collect information on all laboratory-confirmed cases of selected foodborne illnesses at least once a month from laboratories in the catchment area. FoodNet active surveillance supplements the work of local health departments that rely on passive reporting by health care providers and laboratorians. Pathogens under surveillance include *Salmonella*, *Shigella*, *Campylobacter*, *Escherichia coli* O157, *Listeria monocytogenes*, *Yersinia*, *Vibrio*, *Cryptosporidium*, and *Cyclospora* infection among residents of the catchment area. In addition to laboratory surveillance, FoodNet conducts active surveillance of pediatric hemolytic uremic syndrome (HUS), a serious complication of *E. coli* O157 infection, through a network of nephrologists in the catchment area. Data are transmitted electronically to CDC and combined with data from other EIP FoodNet sites to provide a timely database of foodborne illness in a well-defined population.

### **Component 2. Survey of clinical laboratories**

Clinical laboratories have different practices for testing specimens, regarding both what pathogens are screened and which methods are used. Such differences may contribute to variation in the rate of pathogen isolation observed in surveillance. To understand better the practices of clinical laboratories, FoodNet administered a survey of laboratories serving the catchment area. FoodNet has conducted multiple laboratory surveys since 1995.

The laboratory surveys have collected information on the total number of stool specimens submitted for testing, the number of stool specimens submitted for specific pathogen testing, agar and media used, routine pathogen testing, practice setting served, and testing criteria for each laboratory. Since 2000, Laboratory Surveys have focused on the use of new techniques (e.g., non-culture test methods) and changes in the use of reference facilities.

### **Component 3. Survey of physicians**

In 1996, FoodNet conducted a survey of 5,074 randomly selected physicians in the five FoodNet sites. Physicians were selected from state physician license lists for nonsurgical specialties. The questionnaire collected information on hours per week involved in direct patient care, specialty, training, inpatient/outpatient information and estimates of patients seen who were HIV infected. The physician survey specifically asked questions about the last patient seen with diarrhea.

In 2000, FoodNet sites administered a knowledge, attitudes, and practices (KAP) survey to physicians. The primary purpose of the survey was to determine the current role of physicians as food-safety educators for their patients. Adults considered "at-risk" for severe forms of foodborne diseases included pregnant women, persons undergoing chemotherapy, and persons with acquired

immunodeficiency syndrome (AIDS)/ human immunodeficiency virus (HIV) infection. Because these populations are often targeted by food-safety educational materials, the survey focused on physicians working in obstetric, oncology and infectious disease clinics.

#### **Component 4. Survey of the population**

FoodNet has conducted four 12-month cycles of the Population Survey, a population-based survey, in 1996-1997, 1998-1999, 2000-2001, and 2002-2003. The purpose of the surveys is to more precisely estimate the burden of acute diarrheal illness in the United States, and the frequency of important exposures. FoodNet Population Survey data are useful in determining the prevalence and severity of self-reported diarrheal illness, common symptoms associated with diarrhea and the proportion of persons with diarrhea who seek care. Exposures that might be risk factors for foodborne illness, such as the consumption of potentially "risky" foods or recent travel out of the United States, are included as questions on the survey instrument and are asked in conjunction with illness questions.

#### **Component 5. Epidemiologic studies**

Epidemiologic studies are conducted as part of FoodNet to help improve the understanding of foodborne disease epidemiology in the United States and to determine the proportion of foodborne diseases that are caused by specific foods or food preparation and handling practices. FoodNet's large epidemiologic studies have provided more accurate estimates of risk factors for foodborne illnesses which have been instrumental in guiding preventive measures. FoodNet studies have also evaluated the burden and clinical outcomes of foodborne infections, including infections with drug-resistant pathogens.

#### **Component 6. Outbreak reporting and response**

The California FoodNet Epidemiologist and other CEIP colleagues work with communicable disease and environmental health officials from Alameda County, the City of Berkeley, Contra Costa County, and San Francisco County to enhance the detection, investigation and reporting of foodborne outbreaks in their jurisdictions. Efforts in this area include assistance with outbreak investigation fieldwork, data analysis and assistance with reporting of all outbreaks to CDC via the electronic Foodborne Outbreak Reporting System (eFORS). To facilitate identification of operational barriers to outbreak etiology determination, CEIP has continued collection of outbreak supplemental form data and has participated in revision of the form. The CEIP provided on-the-job-training to local health department staff during investigations, when appropriate, to improve the capacity of local health departments to respond to outbreaks. In addition to working with public health officials, we routinely invite participation from students from the University of California Berkeley, School of Public Health in an effort to enhance their training and education.