

G **Emerging Infections Program** **GEORGIA**

The Georgia Emerging Infections Program conducts laboratory-based active surveillance for certain bacterial and parasitic pathogens that fall into two broad categories: 1. Active Bacterial Core surveillance (ABCs) and 2. Foodborne Diseases Active Surveillance Network (FoodNet). Surveillance staff from the Atlanta VA Medical Center, Grady Health System, and the Georgia Department of Human Resources, Division of Public Health conduct active surveillance and special studies.

ABCs

Active Bacterial Core surveillance (ABCs) is a core component of the Centers for Disease Control and Prevention's Emerging Infections Program Network, a collaborative network of CDC and state health departments with their academic partners. ABCs is an active laboratory- and population-based surveillance system that tracks invasive bacterial pathogens of public health importance. Currently, ABCs is conducted in selected areas of California, Colorado, Connecticut, Georgia, Maryland, Minnesota, New Mexico, New York, Oregon, and Tennessee, representing a population of over 38 million people. Surveillance is conducted for Group A *Streptococcus*, Group B *Streptococcus*, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Neisseria meningitidis*, and Methicillin-resistant *Staphylococcus aureus* (MRSA) isolated from normally sterile sites (blood, CSF, pleural fluid, peritoneal fluid, joint/synovial fluid, bone and other internal body sites).

Active Surveillance

In Georgia, surveillance is conducted at several levels. ABCs active surveillance is performed statewide for *Neisseria meningitidis* (all ages) and Group B *Streptococcus* in children less than 1 year old. In the 20 county Atlanta Metropolitan Statistical Area (MSA), surveillance is done for Group A *Streptococcus*, Group B *Streptococcus*, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Neisseria meningitidis* for all age groups. Active surveillance for MRSA is done in the 8 MSA counties that make up Georgia Health District 3 (Clayton, Cobb, DeKalb, Douglas, Fulton, Gwinnett, Newton, and Rockdale).

Isolates are provided by hospital and reference laboratories for all ABCs cases. These isolates are sent to CDC for further microbiological characterization, including serotyping and antibiotic sensitivity testing.

Special Studies

ABCs provides an infrastructure for further public health research, including special studies aiming at identifying risk factors for disease, post-licensure evaluation of vaccine efficacy and monitoring effectiveness of prevention policies. Current special studies being done in Georgia include:

- **Enhanced Surveillance for Early- and Late-Onset Group B Streptococcus**
- **Active Surveillance for Pathogens Causing Neonatal Sepsis**
- **Expanded Data Collection for *Streptococcus pneumoniae* in Children**
- **Evaluation of Tetravalent Meningococcal Conjugate Vaccine Effectiveness**
- **Effect of Tetravalent Meningococcal Conjugate Vaccine on Serogroup Specific Carriage of *Neisseria Meningitidis***

FoodNet

The Foodborne Diseases Active Surveillance Network (FoodNet) is the principal foodborne disease component in the Emerging Infections Program of the Centers for Disease Control and Prevention (CDC). Selected state health departments, the U.S. Department of Agriculture Food Safety Inspection Service, and the U.S. Food and Drug Administration collaborate with CDC on FoodNet.

FoodNet began in 1996 with five sites. Since then, it has expanded to 10 sites or catchment areas—seven states (Connecticut, Georgia, Maryland, Minnesota, New Mexico, Oregon, and Tennessee) and selected counties in three other states (California, Colorado, and New York). These sites cover 44.5 million people or 15% of the U.S. population.

FoodNet provides accurate estimates of foodborne illness in the United States through laboratory-based active surveillance and epidemiologic studies. FoodNet sites conduct surveillance for seven bacteria that cause foodborne illness (*Campylobacter*, *Listeria*, *Salmonella*, *Shigella*, Shiga toxin-producing *Escherichia coli*, including O157, *Vibrio*, and *Yersinia* -), two parasitic organisms (*Cyclospora* and *Cryptosporidium*) and one syndrome (hemolytic uremic syndrome).

Active Surveillance

Most foodborne disease surveillance systems are passive. Doctors who treat patients with foodborne illness, and clinical laboratories that identify causes of foodborne illness from samples submitted by doctors, report their findings to local and state health departments. The health departments then report to CDC. Information from this passive method often is incomplete.

To identify all pathogens under surveillance, FoodNet personnel in all sites contact about 650 clinical laboratories serving the catchment area to identify pathogens that each laboratory has confirmed in a resident of the catchment area. Each clinical laboratory is audited at least twice yearly to ensure that FoodNet captures every case.

Special Studies

- **Case-Control Study of Selected Salmonella Serotypes**

Each year, an estimated 1.4 million persons are infected with *Salmonella* in the United States. Most of these infections are self-limited, but severe illness can occur. An estimated 400 persons die of *Salmonella* infections annually. This case-control study is being conducted to identify behavioral, dietary, and medical risk factors for *Salmonella* Javiana, *Salmonella* Infantis, and *Salmonella* I 4,[5],12:i:- infections. The results may be potentially applicable to the U.S. population and may lead to science-based interventions to prevent infections from these *Salmonella* serotypes. During the 12-month study period, a case-patient will be considered any individual > 1 year of age residing in Georgia, who has a specimen collected from which *S. Javiana*, *S.*

Infantis, or *S. I 4,[5],12:i:-* is isolated from stool or a normally sterile site (including blood, urine, or CSF).

- **Study of *E.coli* O157:H7 Infection: Antibiotic Exposure and the risk of Hemolytic Uremic Syndrome**

Escherichia coli O157:H7 is an important cause of foodborne illness. The incidence of laboratory-confirmed *E. coli* O157 infections has been ascertained by the Foodborne Diseases Active Surveillance Network (FoodNet) since 1996. Studies from FoodNet suggest that 13-27 cases of *E. coli* O157 infection occur for each laboratory-confirmed case. Severe outcomes associated with *E. coli* O157 infections include hemolytic uremic syndrome (HUS), a leading cause of acute renal failure among children in the United States. HUS often follows a bloody diarrheal prodrome and occurs in 5-10% of persons with laboratory-confirmed *E. coli* O157 infection.

Treatment options for *E. coli* O157 primarily consist of supportive care. Antibiotic treatment of *E. coli* O157 infection is controversial and might increase the risk of developing HUS. The goal of this study is to estimate the effect of antibiotics as a factor in the development of HUS among persons with laboratory-confirmed *E. coli* O157 infection. The study population will be comprised of persons with laboratory-confirmed *E. coli* O157 infection residing within the catchment area of FoodNet. Data will be collected by administration of questionnaires to case-patients or their families and through review of hospital records and outpatient medical records. The expected benefit of the study will be recommendations for clinical management of persons with *E. coli* O157 infection to reduce the risk of HUS.

- **Cohort Study of the Impact of Resistance on Clinical Outcome Among Non-Typhi *Salmonella* Serotypes**

The purpose of this study is to investigate the impact of infection with non-Typhi Multi-Drug Resistant (MDR) *Salmonella* on clinical outcome (i.e. hospitalization, illness severity). Non-Typhi MDR *Salmonella* includes *Salmonella* with resistance or reduced susceptibility to clinically important antimicrobial agents. The study will be carried out by (i) identifying subjects with non-Typhi MDR *Salmonella* infections isolated from stool or a normally sterile site, (ii) interviewing them, and (iii) if hospitalized, extracting information about clinical course from their medical records.

The study's primary objective is to determine and compare severity of clinical outcome among infections with pansusceptible or MDR non-Typhi *Salmonella* strains.

Surveys

- **Population Survey**—FoodNet has conducted five population surveys lasting twelve months each. These surveys are conducted by telephone of a cross-section of the general population. The purpose is to accurately estimate the number of acute diarrheal illnesses in the U.S. By estimating how often ill persons seek medical care and submit a stool culture, FoodNet can determine how often other surveillance

systems fail to detect foodborne diseases. Also, FoodNet population survey data are used to learn more about how often people eat certain food items.

- **Laboratory Survey**—To understand differences among clinical laboratory practices, four surveys were administered to clinical laboratories serving the FoodNet sites in 1995, 1997, 2000, and 2006. The surveys help determine how many cases of foodborne illness go undetected because of laboratory testing practices. An upcoming survey will focus on laboratory practices for testing for shiga-toxin producing *E. coli*.
- **Physician Survey**—FoodNet also conducted physician surveys in 1996 and 2000. The 1996 survey was used to understand doctor practices in diagnosing acute diarrheal diseases, and the 2000 survey examined the roles of doctors in teaching food safety.

Contact Information for Surveillance Staff

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