Foodborne Disease Surveillance & Investigation in the U.S.

- **FoodNet** – active surveillance
- **PulseNet** – laboratory network that performs microbial sub-typing
- **Outbreak Alert!** – food attribution
Foodborne Diseases Active Surveillance Network (FoodNet)

- Active, laboratory-based surveillance within ten well-defined surveillance areas around the United States
- Monitor trends in foodborne diseases
- Conduct case-control studies
FoodNet Pathogens

- *Campylobacter*
- *Cyclospora*
- *Cryptosporidium*
- *Escherichia coli O157:H7*
- *Listeria monocytogenes*
- *Salmonella*
- *Shigella*
- *Vibrio*
- *Yersinia enterocolitica*

- Approximately 15,000 laboratory-diagnosed cases, each year
- Data collected includes patient demographics, co-morbidities, hospital stay details, and laboratory results
PulseNet USA

- National database of pulsed-field gel electrophoresis (PFGE) patterns
- Enables outbreak cases and concurrent sporadic cases to be distinguished
- Does not include routine PFGE patterns from food and animal sources
PulseNet USA (cont.)

PulseNet Pathogens
Campylobacter jejuni
Cyclospora
Cryptosporidium
Escherichia coli O157:H7
Listeria monocytogenes
Salmonella
Shigella
Vibrio
Yersinia enterocolitica

• The PulseNet database includes tens of thousands of PFGE patterns

• Labs at the national, state, and local levels have access to the database
Outbreak Alert!

**Food Categories**
- Beef
- Beverages
- Breads & Bakery
- Dairy
- Eggs & Egg Dishes
- Game
- Luncheon/Other Meats
- Multi-Ingredient Foods
- Multiple Foods
- Pork
- Poultry
- Produce
- Seafood

- Outbreaks in the U.S. occurring between 1990-2004
- Contains almost 5,000 outbreaks including over 152,000 individual cases of foodborne illness
- Covers an unlimited number of pathogens
- A project managed and maintained by a private, non-profit, consumer advocacy group
Trends in Outbreak Reporting, 1990-2004

Source: The Center for Science in the Public Interest
Outbreaks With Unknown Food or Etiology Are the MAJORITY of Reported Outbreaks

Source: The Center for Science in the Public Interest and CDC
Advice for Consumers

• Many intestinal problems commonly referred to as “stomach flu” are not caused by the influenza virus but by foodborne pathogens.
• Foodborne illness often shows itself with symptoms such as nausea, vomiting, diarrhea, or fever.
• Many people may not recognize that the illness is caused by bacteria or other pathogens in food because the onset of symptoms often occurs 2 or more days after the contaminated food was eaten.

Source: FDA/CFSAN
Advice for Consumers

• A health care provider should be consulted for a diarrheal illness is accompanied by
  o high fever (temperature over 101.5 F, measured orally)
  o blood in the stools
  o prolonged vomiting that prevents keeping liquids down (which can lead to dehydration)
  o signs of dehydration, including a decrease in urination, a dry mouth and throat, and feeling dizzy when standing up.
  o diarrheal illness that lasts more than 3 days

Source: CDC Disease Listing
How are foodborne illnesses diagnosed?

- The infection is often diagnosed using laboratory tests that identify the causative organism.
  - Bacteria such as *Salmonella* and *E. coli O157* are found by culturing stool samples in the laboratory and identifying the bacteria that grow on the agar or other culture medium.
  - Parasites such as Giardia can be identified by examining stools under the microscope.
  - Viruses like Norovirus or Hepatitis A are more difficult to identify, as they are too small to see under a light microscope and are difficult to culture. Viruses are usually identified by testing stool samples for genetic markers that indicate a specific virus is present.

BUT IF NO TEST IS DONE, THERE WILL BE NO CONFIRMED DIAGNOSIS
Advice for Consumers

- If you believe you or someone you know became ill from something they ate, please contact your county or city health department.
- Most state health department have websites that give consumers information about how to reach the local health department.
- Reporting illnesses to your local health department promptly helps them identify and possibly stop foodborne disease outbreaks.
- By investigating foodborne disease outbreaks, public health officials learn about practices in food production, distribution and preparation that may cause illness.