Infectious Disease Epidemiology Report

Shiga toxin producing E. coli Surveillance Report – Maine, 2009

Introduction

Escherichia coli (*E. coli*) are bacteria that normally live in the digestive tract. There are hundreds of different strains of *E. coli* and most strains do not cause illness. Some strains, including *E. coli* O157:H7, produce a toxin known as shiga toxin that causes illness. *E.coli* strains that produce this toxin are called shiga toxin producing *E. coli* (STEC).

Symptoms of an STEC infection include fever, cramping, diarrhea, nausea, and vomiting. Symptoms usually begin 1-8 days after exposure to the bacteria (average of 3-4 days). The illness is usually self-limiting and recovery is within 5-7 days.

Children under 5 years of age, women and the elderly are at an increased risk of complications from infection. Hemolytic uremic syndrome (HUS) is a severe complication that results in kidney failure and abnormalities in the blood. HUS can result in chronic kidney disease and death.

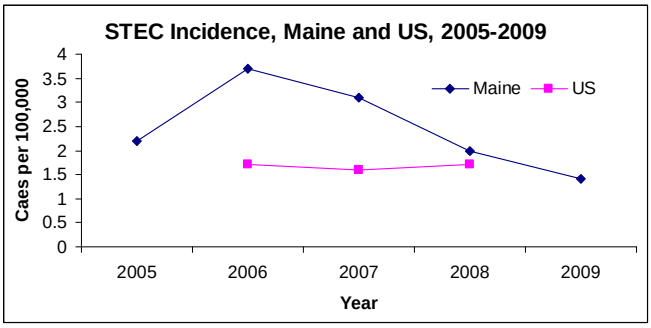
Methods

The Infectious Disease Epidemiology Program and the Maine Health and Environmental Testing Laboratory (HETL) of the Maine Center for Disease Control and Prevention monitor the incidence of STEC through disease reports from health care providers and laboratories. All cases are investigated by epidemiologists to find possible sources of the bacteria. Cases are asked for information about prior food consumption, travel, water exposures and animal exposures. All information collected on exposures is reviewed/analyzed to determine if there are any common sources of infection.

HETL routinely conducts serotype testing and molecular laboratory testing on all STEC isolates. The testing, Pulsed Field Gel Electrophoresis (PFGE), allows for identification of specific DNA patterns for strains of STEC. The pattern identified by PFGE is compared with other STEC isolates within the state and across the country to identify clusters of illness.

Results

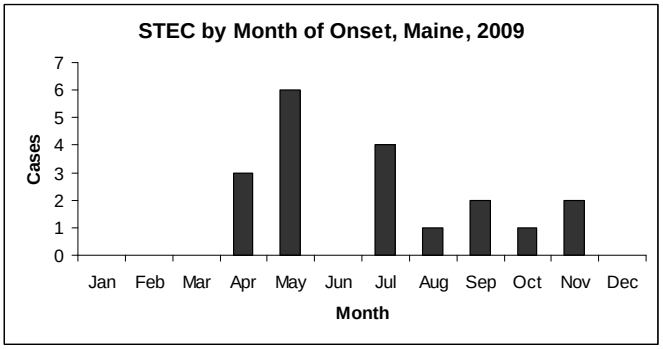
During 2009, a total of 19 cases of STEC were reported to the Maine CDC. Seventeen of the cases were laboratory confirmed, the remaining two cases were symptomatic and epidemiologically linked to a confirmed case. The incidence of STEC in 2009 was 1.4 cases per 100,000 residents. The incidence of STEC has been decreasing over the past three years.



Twelve cases (63%) were females and seven (37%) were male. The median age of cases was 26 years, with a range of 2 to 88 years old.

Two cases developed HUS, a 5 year old male and an 81 year old female. Both cases were part of the same national outbreak involving contaminated ground beef.

In 2009, STEC cases occurred mostly in the warmer months of the year, spring, summer and early fall. In May of 2009 there was a national *E. coli* investigation associated with refrigerated cookie dough. Five cases in Maine were associated with the national outbreak.



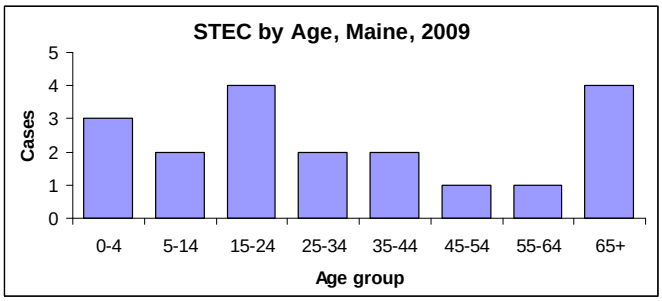
The majority of cases were reported in Cumberland County, the largest populated county in Maine. Eight of the sixteen counties reported no STEC cases in 2009.

STEC Surveillance Report – Maine, 2009

STEC by County, Maine 2009

County	Cases	Rate	Percentage
Androscoggin	2	1.9	10.5
Aroostook	0	0.0	0.0
Cumberland	10	3.6	52.6
Franklin	0	0.0	0.0
Hancock	1	1.9	5.3
Kennebec	2	1.7	10.5
Knox	0	0.0	0.0
Lincoln	0	0.0	0.0
Oxford	1	1.8	5.3
Penobscot	2	1.3	10.5
Piscataquis	0	0.0	0.0
Sagadahoc	0	0.0	0.0
Somerset	0	0.0	0.0
Waldo	0	0.0	0.0
Washington	0	0.0	0.0
York	1	0.5	5.3
Total	19	1.4	100

In 2009 all age groups had cases of STEC, however most cases occurred in people younger than 24 and older than 65.



During 2009 there were no Maine specific clusters of illness. STEC cases in Maine were either sporadic cases or associated with two national *E. coli* outbreak investigations. As noted above, five Maine residents were part of an *E. coli* O157:H7 national outbreak associated with refrigerated cookie dough products. In the fall, five cases, including two HUS cases, were part of an *E. coli* O157:H7 outbreak investigation involving mostly New England states. Testing on both humans and ground beef samples revealed identical strains and linked the outbreak to the source.

Prevention and Control

STEC can be prevented using the following guidance:

- Wash hands with soapy water for at least 20 seconds before and after eating or preparing food, after using the toilet, and after changing diapers
- Wash counters and cooking utensils with hot soapy water before and after preparing food
- Rinse all fresh fruits and vegetables under running water
- Separate raw meat, poultry, seafood and eggs from other foods in the grocery cart and in the refrigerator at home
- Use separate cutting boards for fresh fruits and veggies and for raw meat, poultry, and fish
- Do not reuse plates that held raw meat, poultry, seafood or eggs
- Cook meats thoroughly, ground beef should be cooked to a temperature at least 160 degrees F
- Do not eat raw or cracked eggs, unpasteurized juices, milk, or other dairy products made with raw unpasteurized milk
- Immediately wash hands after handling any animals or spending time in their environment, especially at farms, petting zoos or fairs
- People with STEC should not prepare or serve food/beverages for others until their diarrhea has resolved
- Avoid swallowing water while swimming in recreational water sources, such as ponds, lakes, streams, swimming pools and “kiddie” pools

STEC is on the Notifiable Conditions List and can be reported in Maine by calling 1-800-821-5821, or by faxing reports to 207-287-6865. All specimens must be sent to the DHHS Health and Environmental Testing Laboratory for confirmation.

For more information on STEC:

- Maine CDC website http://www.maine.gov/dhhs/boh/ddc/epi/disease/escherichia-coli.shtml
- Federal CDC website http://www.cdc.gov/ecoli
- HETL website http://www.maine.gov/lab
- USDA website http://www.fsis.usda.gov/factsheets/e_coli/index.asp

Prepared by Amy Robbins, MPH
7/20/2010