

Leading Bacterial Causes of Foodborne Illness in Vermont

There is a wide variety of bacterial pathogens that can cause foodborne illness in humans. Many of these diseases - including Listeriosis, Shigellosis, Yersiniosis and Shiga toxin-producing *E. coli* (STEC) – are considered public health threats that are reported to the Department of Health. However, 88% of all bacterial foodborne illnesses reported within Vermont are caused by just two pathogens: *Campylobacter* and *Salmonella* (Figure 1).

Both illnesses cause similar symptoms such as diarrhea, nausea and abdominal pain that last for several days, and both can also cause severe illness but, *Salmonella* tends to do so with more frequency. In 2012, 31% of Vermont salmonellosis cases were hospitalized while only 13% of campylobacteriosis cases required hospitalization.

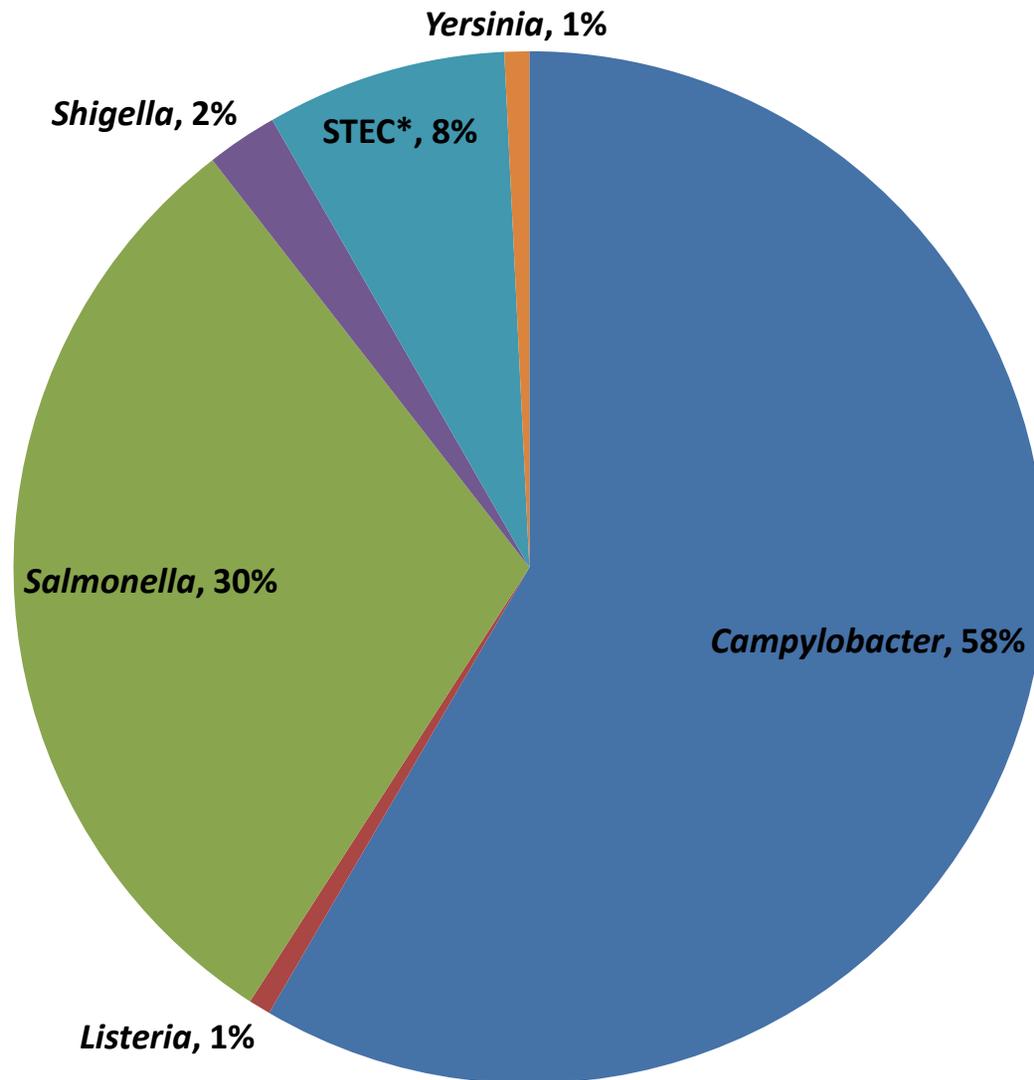
While salmonellosis causes more severe illness, campylobacteriosis occurs more frequently. In 2012, 88 cases of salmonellosis were reported in Vermont. That gives the state an incidence (number of cases per 100,000 people) of 13.9, slightly less than the national average in 2011 of 16.5. Nearly twice as many (169) cases of campylobacteriosis were reported here in the same year. This gave Vermont an incidence of 27.0, well above the 2011 national average of 14.3.

The current, elevated burden of campylobacteriosis on Vermont is the result of a steady rise in the number of reported cases (Figure 2). In 2005, Vermont recorded only 108 cases, but since then the number of Vermonters ill with this disease has increased each year, until it peaked in 2011 at 233 cases. Meanwhile the number of reported salmonellosis cases has remained relatively stable over that same time. The cause for this rise in *Campylobacter* cases is unclear, but one known risk factor for this disease is the consumption of raw milk. Since 2005, 13% of Vermont cases have reported drinking unpasteurized milk prior to their illness.

Attributing a patient's foodborne illness to a specific food item such as raw milk is difficult, particularly when that patient's illness is sporadic. But when there are multiple people sick with the same pathogen, an outbreak is suspected and attribution can become less problematic. In 2012, there were notable *Salmonella* and *Campylobacter* outbreaks in Vermont that were successfully tied to tainted food. Over the summer, 11 Vermonters and 35 others in 8 states were sickened by *Salmonella* Enteritidis that was traced back to ground beef produced by Cargill Meat Solutions, Inc. As a result of that investigation, Cargill recalled 30,000 pounds of their ground beef from store shelves.

In the autumn, what appeared at first to be a small restaurant outbreak of *Campylobacter jejuni* eventually mushroomed into a multi-state outbreak that stretched back to April of that year. When the investigation was complete, four Vermonters, one New York and one New Hampshire resident were all found to have been sickened by contaminated chicken livers from one Vermont poultry farm. One of the people with campylobacteriosis was exposed to the pathogen while working on the farm. The other four cases became ill after eating the livers, which were deliberately undercooked to maintain their texture. In response to the investigation, the farm ceased the harvesting and distribution of the livers.

Figure 1. Percentage of Bacterial Foodborne Illnesses Reported to VDH (2005-2012)



*Shiga toxin-producing *Escherichia coli*

Note: five *Vibrio* cases were also reported during this time

Figure 2. Number of Reported *Campylobacter* & *Salmonella* Cases in Vermont

