

## Enteric disease outbreaks in BC

In 2015, 26 outbreaks were investigated in BC (Table 5.1). The number of outbreaks was comparable with previous years, when 14-24 investigations were investigated each year (Figure 5.2). While 38.5% of the enteric outbreaks were reported by Interior Health, only 15.7% of the BC population resides there. This likely reflects different regional policies and practices for reporting enteric outbreaks, rather than increased outbreak incidence.

As in previous years, bacteria caused the greatest proportion (46.2%) of outbreaks (Figure 5.3). The high proportion of bacterial outbreaks is likely due to the fact that viral outbreaks in long-term care, acute care, and day care facilities are not reportable and excluded from analyses. In addition, viral outbreaks are less likely to get confirmed via laboratory testing. The pathogen was laboratory-confirmed in 19 (73.0%) outbreaks; this proportion is similar to previous years. In 2015, a greater variety of pathogens was reported; however, norovirus and *Salmonella* remained the two most frequently identified pathogens. No *E. coli* O157 outbreaks were reported in 2015. Outbreaks are reported with unknown pathogens for clusters of gastrointestinal illness with the same exposure, but no pathogen confirmed by laboratory testing. Unknown pathogens may be classified as one of the pathogen types (e.g., bacteria, viruses), based on the clinical presentations of the cases. Over 460 lab-confirmed cases were associated with a prolonged, province-wide *Salmonella* Enteritidis outbreak (see [SE section]). The majority of the clinical cases (212) were associated with one outbreak of *Clostridium perfringens* at a catered event.

Outbreaks occurred in a variety of settings, most commonly food service establishments and private functions (Table 5.4). In previous years, food service establishments and the community were the most commonly reported settings.

Similar to previous years, the most common mode of transmission was foodborne (Table 5.5). Among the 13 foodborne outbreaks, 10 (76.9%) identified a food source. Mixed foods and meat were the most commonly reported source types in 2015 (Table 5.6); however, all three meat-related outbreaks had different meats implicated (beef, chicken, duck). This is a shift from 2013 and 2014, when the most commonly identified sources of foodborne outbreaks were eggs, produce and seafood. A food handler was identified as contributing to the contamination of a food source in one foodborne outbreak, caused by norovirus.

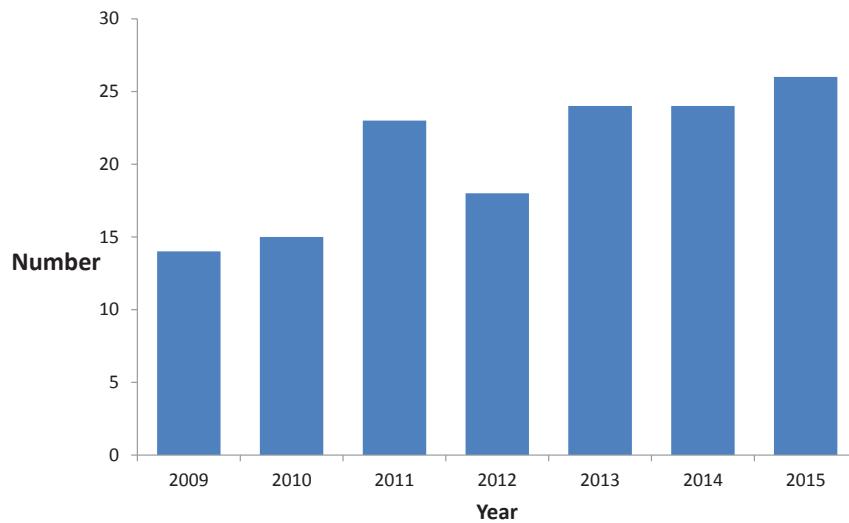
Among foodborne outbreaks, factors that contributed to the identification of a source included: cases with a history of exposure to the implicated source (11), environmental investigation identified critical control point failures linked to the implicated source (3), laboratory pathogen/toxin/chemical identified in a food sample (3), epidemiological case-control study showed elevated risk for cases exposed to the implicated source (1), and laboratory pathogen identified in a food handler (1).

Similar to previous years, education was the most common public health intervention used for foodborne outbreaks in 2015 (used in 8 outbreaks). Other interventions used in the 2015 foodborne outbreaks included closing the facility (2), press release (2), excluding staff (1) and sanitizing the facility (1).

*5.1 Enteric disease outbreaks by reporting organization, BC, 2015*

<b>Reporting Organization</b>	<b>Number of outbreaks</b>
Fraser Health Authority	2
Interior Health Authority	10
Northern Health Authority	3
Vancouver Coastal Health	4
Island Health Authority	2
BCCDC	5
<b>Total</b>	<b>26</b>

*5.2 Number of Outbreaks By Year Investigation Started, BC, 2009-2015 (N=144)*



### 5.3 Characteristics of Enteric Outbreaks by Pathogen Type, BC, 2015

	Bacterial (N=12)	Viral (N=10)	Parasitic (N=1)	Toxin/Chemical Poison (N=1)	Unknown (N=2)	Total (N=26)
Number of lab confirmed outbreaks	11	7	1	0	0	19
Total number of lab confirmed cases	521	16	5	0	0	542
Total number of clinical cases	243	137	0	9	24	413
Total number of hospitalizations	90	0	1	0	0	91
Total number of deaths	0	0	0	0	0	0
Median duration of outbreak (days)	4	2.5	60	3	3.5	4
Causative agent	<i>Salmonella</i> (6) <i>Shigella</i> (2) <i>Bacillus</i> (1) <i>Campylobacter</i> (1) <i>Clostridium</i> (1) Unknown (1)	Norovirus (6) Hepatitis A (1) Unknown (2)	<i>Cyclospora</i> (1)	Unknown (1)		

### 5.4 Outbreak by Setting Type, BC, 2015

Outbreak setting	Number of outbreaks
Food service establishment	6 (23.1%)
Private Function	6 (23.1%)
Community	4 (15.4%)
Hotel/Motel/Lodge	3 (11.5%)
Other	5 (19.2%)
Unknown	2 (7.7%)
Total	26 (100%)

*5.5 Outbreaks by Mode of Transmission, BC, 2015*

<b>Outbreak mode of transmission</b>	<b>Number of outbreaks</b>
Foodborne	13 (50.0%)
Person-to-person	8 (30.8%)
Animal-to-person	1 (3.8%)
Unknown	4 (15.4%)
<b>Total</b>	<b>26 (100%)</b>

*5.6 Source of Foodborne Outbreaks by Pathogen, BC, 2015*

	<b>Bacillus</b>	<b>Campylobacter</b>	<b>Clostridium</b>	<b>Cyclospora</b>	<b>Norovirus</b>	<b>Salmonella</b>	<b>Unknown</b>	<b>Total</b>
<b>Meat</b>	0	1	0	0	0	1	1	3
<b>Mixed Foods</b>	1	0	1	0	1	0	0	3
<b>Vegetables</b>	0	0	0	0	0	0	1	1
<b>Other</b>	0	0	0	0	0	2	1	3
<b>Unknown</b>	0	0	0	1	1	1	0	3
<b>Total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>13</b>