E.coli (shigatoxigenic)

Shigatoxigenic *E. coli* (STEC), also known as verotoxigenic *E. coli* and enterohemorrhagic *E. coli,* causes the most serious *E. coli* infections which can lead to hemolytic uremic syndrome (or kidney failure) and death.

In 2018, 193 cases of STEC infection were reported of which 30.8% were associated with international travel. The incidence rate (3.87/100,000) has increased every year since 2015. Annual peaks in STEC incidence are usually associated with outbreaks, of which 2 occurred in 2018. In addition, changes in laboratory tests used in BC in the last few years have led to an increase in the rate of *E. coli* non-O157 which has also contributed to the overall increased incidence (Noftall 2019[1]).

There was one outbreak of 7 cases of *E. coli* O121 which was associated with a locally-produced unpasteurized cheese (BCCDC, 2018[2]) and one international outbreak including 3 BC cases of *E. coli* O157 associated with romaine lettuce (PHAC, 2018[3]).

The incidence was highest among adults aged 20-24 and children 1-4 years of age. The higher risk in children is similar to that seen in other enteric diseases and is likely due to lower immunity as well as behaviours that increase the risk of infection (e.g. use of diapers). The increased incidence in adults was likely due to the outbreak associated with unpasteurized cheese. Cases were reported in all health authorities with the highest rate in Central Vancouver Island at 12.0/100,000, the majority of cases associated with the unpasteurized cheese outbreak were also from this HSDA. Island Health reported 81 cases in 2018, higher than any other health authority. This may be associated with the use of a more sensitive nucleic acid test implemented in Island Health in 2017. Although cases were reported throughout the year, peaks occurred in the spring and fall. The fall peak coincides with the outbreak associated with unpasteurized cheese.

Since 2017, *E. coli* O121 was the most commonly reported serogroup in BC. Non-*E. coli* O157 isolates made up 70.0% of the *E. coli* isolates in BC in 2018. This may in part be due to the outbreak caused by *E. coli* O121 in 2018 as well as the increasing use of nucleic acid tests to detect *E. coli* and other enteric pathogens in VIHA laboratories. These tests are more sensitive in their detection of non-O157 serogroups. The number of *E. coli* O157 cases remained low in 2018, the reason for this low number of cases is unclear but could be due to improved meat processing practices (Pollari, 2017[4]).

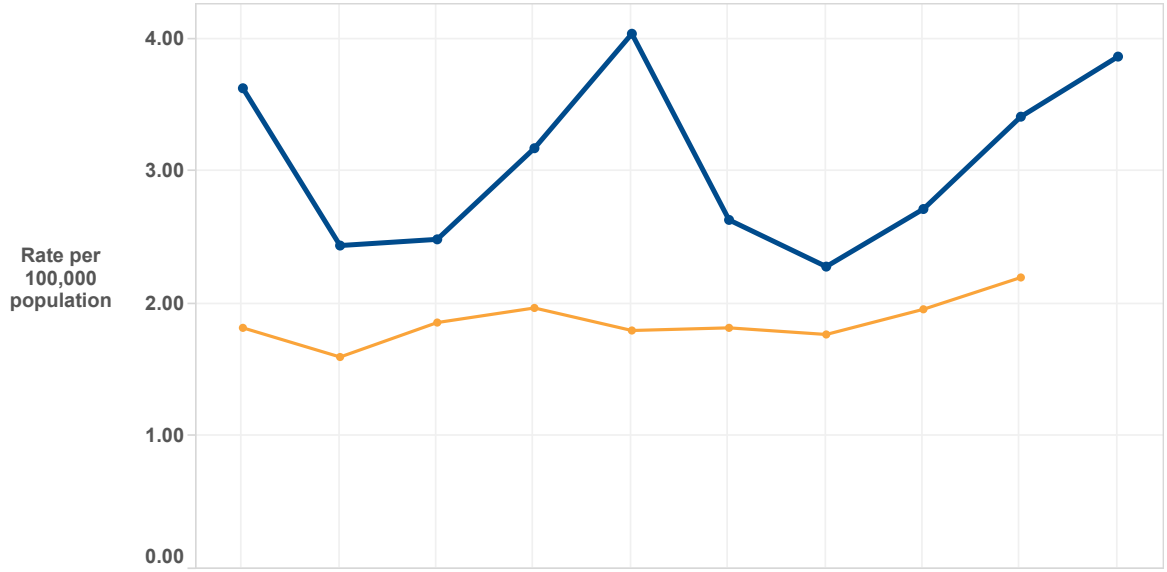
1. Noftall 2019, expect to be published in September, 2019.

2. BCCDC. Updated: Qualicum Spice cheese E. coli outbreak over. Accessed on May 10 2019 from: http://www.bccdc.ca/about/news-stories/news-releases/2018/bccdc-advises-public-to-discard-%E2%80%98qualicum-spice%E2%80%99-cheese

3. PHAC. Public Health Notice - Outbreak of E. coli infections linked to romaine lettuce. Accessed on May 10 2019 from: https://www.canada.ca/en/public-health/services/public-health-notices/2018/outbreak-ecoli-infections-linked-romaine-lettuce.html

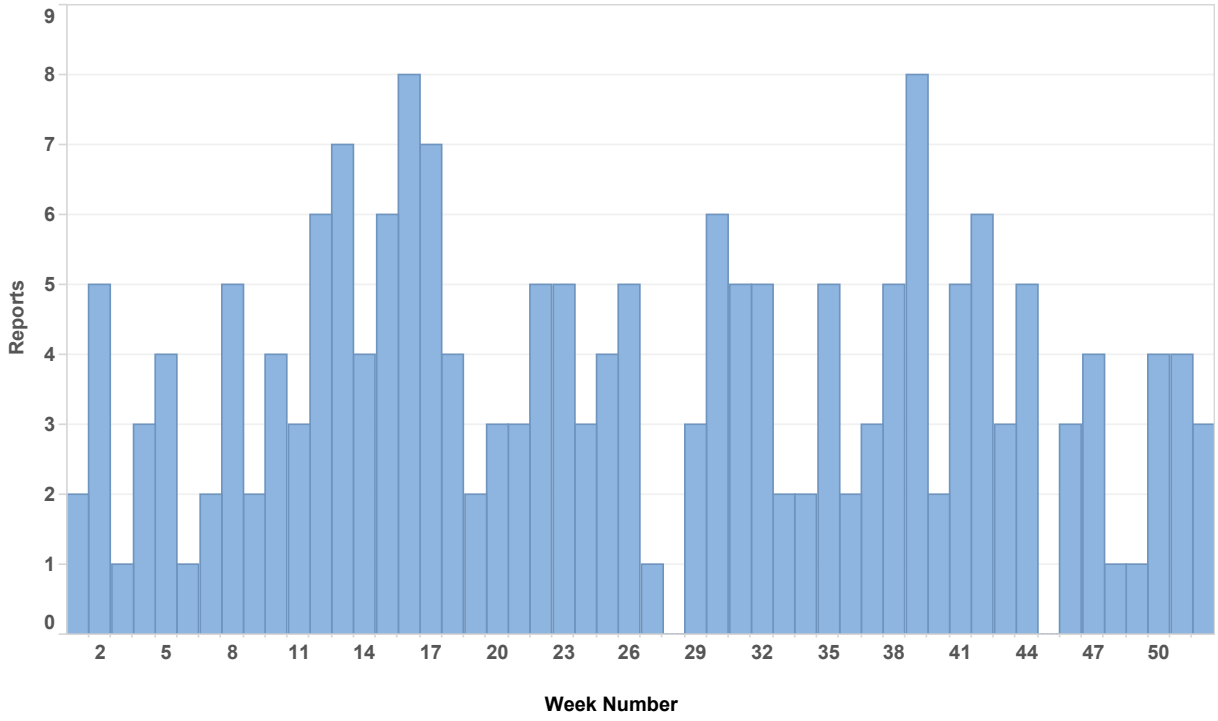
4. Pollari et al. 2017. Evidence for the ebenfits of food chain interventions on E. coli O157:H7/NM prevelance in retail ground beef and human disease incidence. Canadian Journal of Public Health. 108:71-78

7.1 Shigatoxigenic E. coli by Year, 2009-2018

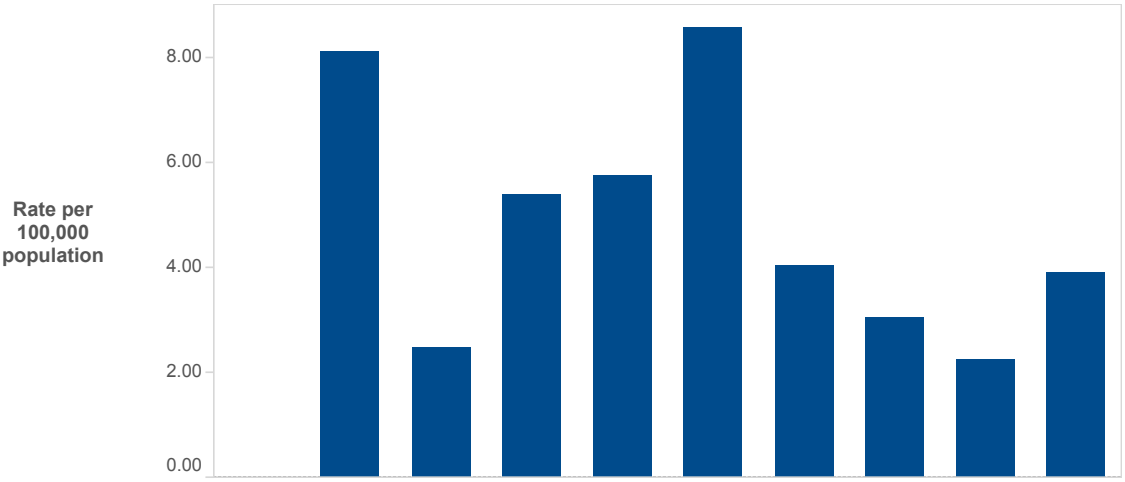


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Reports	160	109	112	145	187	124	109	132	168	193
BC Rate	3.63	2.44	2.49	3.18	4.04	2.63	2.28	2.72	3.41	3.87
Canada Rate	1.82	1.60	1.86	1.97	1.80	1.82	1.77	1.96	2.20	

7.2 Shigatoxigenic E. coli Reports by Week, 2018

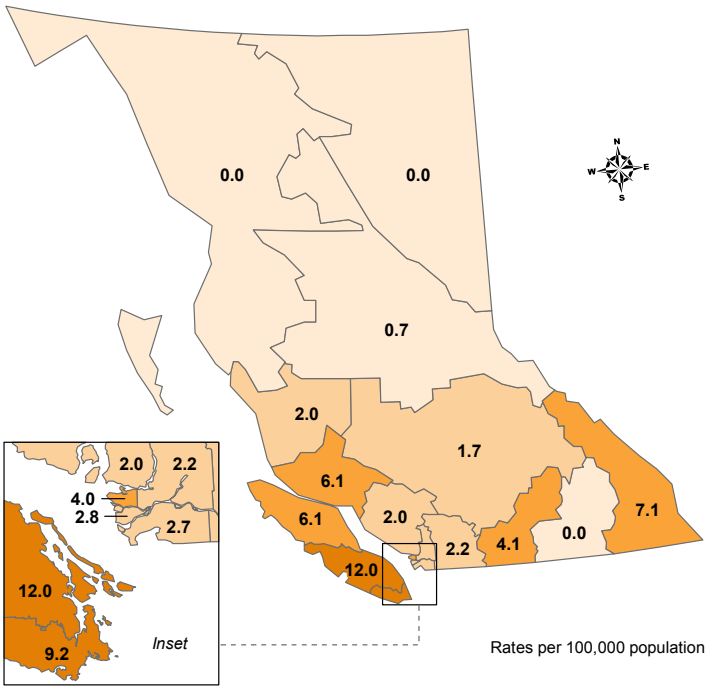


7.3 Shigatoxigenic E. coli Rates by Age Group, 2018

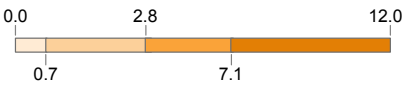


		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Reports	Female	0	2	4	6	7	18	8	14	19	30
	Male	0	13	2	7	9	10	6	7	12	19
	Total	0	15	6	13	16	28	14	21	31	49
BC Rate	Female	0.00	2.25	3.41	5.05	5.18	11.60	4.71	4.06	2.70	4.51
	Male	0.00	13.57	1.62	5.72	6.28	5.84	3.37	2.01	1.79	3.19
	Total	0.00	8.12	2.49	5.39	5.75	8.58	4.02	3.03	2.26	3.89

7.4 Shigatoxigenic E. coli Rates by HSDA, 2018



ID	Health Service Delivery Area	Cases	Rate
11	East Kootenay	6	7.1
12	Kootenay Boundary	0	0.0
13	Okanagan	16	4.1
14	Thompson Cariboo Shuswap	4	1.7
21	Fraser East	7	2.2
22	Fraser North	15	2.2
23	Fraser South	23	2.7
31	Richmond	6	2.8
32	Vancouver	28	4.0
33	North Shore/Coast Garibaldi	6	2.0
41	South Vancouver Island	38	9.2
42	Central Vancouver Island	35	12.0
43	North Vancouver Island	8	6.1
51	Northwest	0	0.0
52	Northern Interior	1	0.7
53	Northeast	0	0.0



7.5 Shigatoxigenic E. coli Serogroup Distribution, 2018

Rank	Serogroup	Number of Isolates	Proportion
1	O121	31	19.0%
2	O157	31	19.0%
3	O117	13	8.0%
4	O26	11	6.7%
5	O103	10	6.1%
	Other Non-O157	49	30.1%
	Only shiga-toxin gene identified	18	11.0%
	Total	163	100.0%

Note: Serogroup distribution is based on BCCDC PHL data. Numbers may vary from those reported in Panorama.