

# Communicable Disease Surveillance Report

Fiscal Quarter 2  
July 1 – September 30, 2020

Date: November 13, 2020



Labrador - Grenfell  
**Health**

## Communicable Disease Surveillance Report

### Disclaimer

The purpose of this report is to provide an overview of reportable communicable disease activity within the Labrador-Grenfell Health (LGH) Regional Health Authority. This activity is represented by case counts. The text of any disease that has exceeded the upper threshold for this quarter (calculated based on the previous 5 years) is coloured **red**.

Please note that due to continuous reporting, as well as potential delays in reporting, data is subject to change.

### Diseases that Exceeded Threshold

LGH flags diseases that exceed an upper threshold. This is calculated using the 3<sup>rd</sup> quartile + 1.5 \* interquartile range for each quarter, over the previous five calendar years. This may mean increased activity of this disease during this period.

During the current quarter, three diseases exceeded the upper threshold: **Neonatal Group B Streptococcal Disease, Chlamydia, and Infectious Syphilis**.

### Disease Counts

Table 1. Enteric, Food, and Waterborne Diseases

	Current Quarter	YTD	YTD 2019	5-Year Historical Median	Upper Threshold
Amoebiasis	0	0	0	0	0
Botulism	0	0	0	0	0
Campylobacteriosis	2	2	11	0	5
Cryptosporidiosis	1	1	2	0	1
Cyclosporiasis	0	2	0	0	0
Cytomegalovirus	1	4	1	1	2
Giardiasis	2	3	3	1	2
Hepatitis A	0	1	0	0	0
Listeriosis	0	0	0	0	0
Salmonellosis	7	9	22	3	9
Shigellosis	0	0	0	0	0
Typhoid/Paratyphoid Fever	0	0	0	0	0
Verotoxigenic Escherichia coli	0	0	0	1	1
Yersiniosis	0	0	0	0	0

Table 2. Diseases Transmitted by Direct Contact and Respiratory Route

	Current Quarter	YTD	YTD 2019	5-Year Historical Median	Upper Threshold
COVID-19	1	7			
Creutzfeldt-Jakob Disease (CJD)	0	0	0	0	0
<b>Group B Streptococcal Disease, Neonatal</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
Influenza Virus of a Novel Strain	0	0	0	0	0
Invasive Group A Streptococcal Disease	1	2	0	0	2
Invasive Haemophilus Influenza non-type B	0	0	1	0	1
Invasive Meningococcal Disease (IMD)	0	0	0	0	1
Invasive Pneumococcal Disease (IPD)	0	1	3	0	2
Legionellosis	0	0	0	0	0
Meningitis, Bacterial (excl Hib, IMD, IPD)	0	0	0	0	0
Meningitis, Viral	0	0	0	0	0
Nontuberculosis Mycobacterial Disease	0	0	0	0	0
Severe Respiratory Illness, Unknown Origin	0	0	0	0	0
Tuberculosis, Non-respiratory	0	0	1	0	1
Tuberculosis, Respiratory	0	6	3	5	14
Tuberculosis (all)	0	6	4	6	15

Table 3. Sexually Transmitted and Blood Borne Infections (STBBIs)

	Current Quarter	YTD	YTD 2019	5-Year Historical Median	Upper Threshold
<b>Chlamydia</b>	<b>62</b>	<b>158</b>	<b>126</b>	<b>42</b>	<b>61</b>
Gonorrhoea	0	0	0	1	2
Hepatitis C	0	8	10	1	8
HIV Infection	0	0	2	0	1
<b>Syphilis, Infectious</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
Syphilis, Noninfectious	0	0	0	0	0

Table 4. Vectorborne and Other Zoonotic Diseases

	Current Quarter	YTD	YTD 2019	5-Year Historical Median	Upper Threshold
Lyme Disease	0	0	0	0	0
Malaria	0	0	0	0	0
Q Fever	0	0	0	0	0
Rabies	0	0	0	0	0
Toxoplasmosis	0	0	0	0	0
Trichinellosis	0	0	0	0	0
West Nile Virus	0	0	0	0	0

Table 5. Vaccine Preventable Diseases

	Current Quarter	YTD	YTD 2019	5-Year Historical Median	Upper Threshold
Congenital Rubella Syndrome	0	0	0	0	0
Hepatitis B	0	1	0	0	1
Invasive Haemophilus Influenza type B (Hib)	0	1	0	0	0
Measles	0	0	0	0	0
Mumps	0	0	0	0	0
Pertussis	0	0	0	0	0
Rubella	0	0	0	0	0
Tetanus	0	0	0	0	0
Varicella/Chickenpox	3	9	15	3	17

## In Focus: Enteric, Food, & Waterborne Diseases

### About Enteric, Food, & Waterborne Diseases

Enteric, food, and waterborne diseases, hereafter referred to as enteric diseases, are caused by a variety of different pathogens, including viruses, bacteria, and parasites. [1] Typically, contaminated food or water is the source of infection; however, some pathogens can also spread from person-to-person via direct personal [1] or sexual contact [2] or from animal-to-human through direct or indirect contact with an infected animal [3]. There is also a possibility of iatrogenic infection, particularly in the case of injected botulinum toxin. [1]

The incubation period of enteric diseases can range from a few hours to several days, depending on the causative pathogen. [1] Enteric diseases typically present with gastrointestinal illness, although infections at other sites can also occur. For example, typhoid and paratyphoid infection produce a systemic illness. [1] Human illness can be caused directly by the pathogen, via a toxin produced by the pathogen, or both, depending on the pathogen. [1]

Enteric infections can present with one or more of the following symptoms, depending on the pathogen involved: abdominal pain, abdominal bloating, diarrhea, flatulence, nausea, vomiting, fever, malaise, anorexia, or weight loss. Extra-intestinal infections present with symptoms corresponding to the site of infection. For instance, botulism also manifests with neurological symptoms, such as descending symmetrical weakness, double vision, and difficulty speaking. [1] It should also be noted, however, that many enteric infections may also be asymptomatic. [1]

Treatment depends on the causative pathogen, although it usually consists of supportive care with fluids and electrolytes. The use of antimicrobials depends on the specific pathogen, length and severity of illness, disease complications, comorbidities, and clinical judgment. [1]

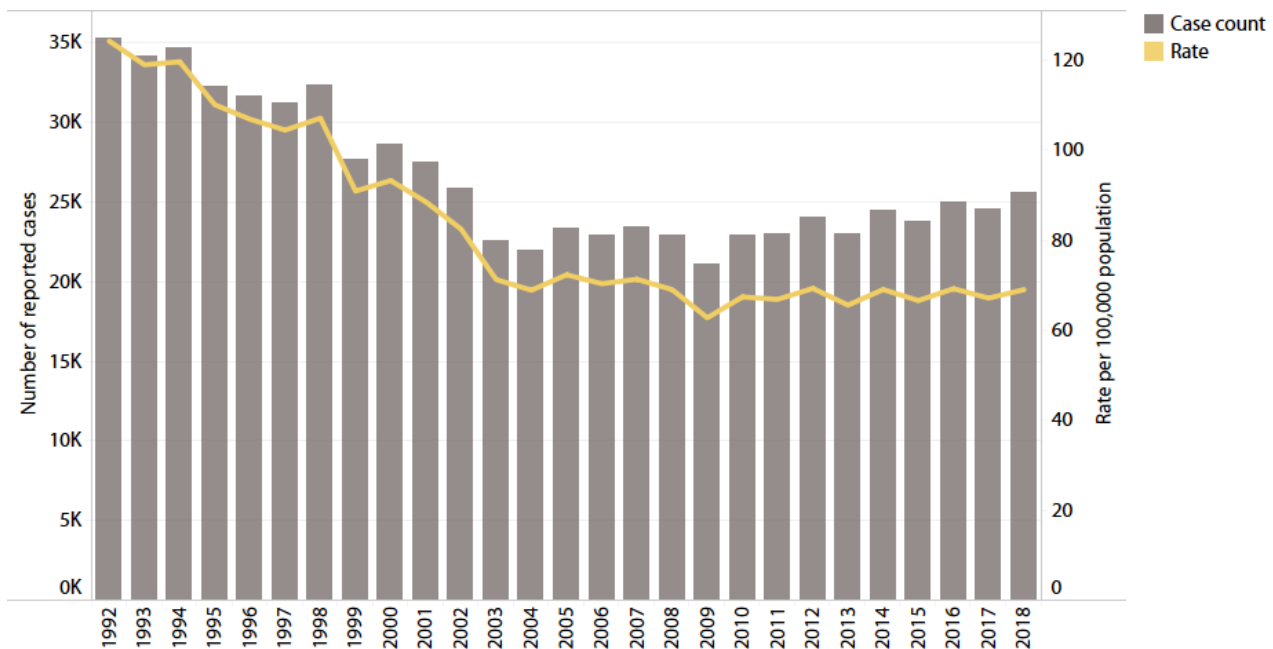
For detailed, pathogen-specific information about etiology, case definition, clinical presentation, diagnosis, epidemiology, control measures, and prevention, please consult Section 2 of the Newfoundland and Labrador Communicable Disease Control Manual.

## Epidemiology of Enteric, Food, & Waterborne Disease in Canada

Enteric disease is likely underreported in Canada. According to one estimate, on average, foodborne illnesses, from both known and unknown pathogens, infect 1 in 8 Canadians annually, resulting in 11,600 hospitalizations and 238 deaths. [4,5] However, many of these cases are not reported because passive surveillance systems typically require affected individuals to pursue healthcare and produce a specimen for laboratory examination. [5,6]

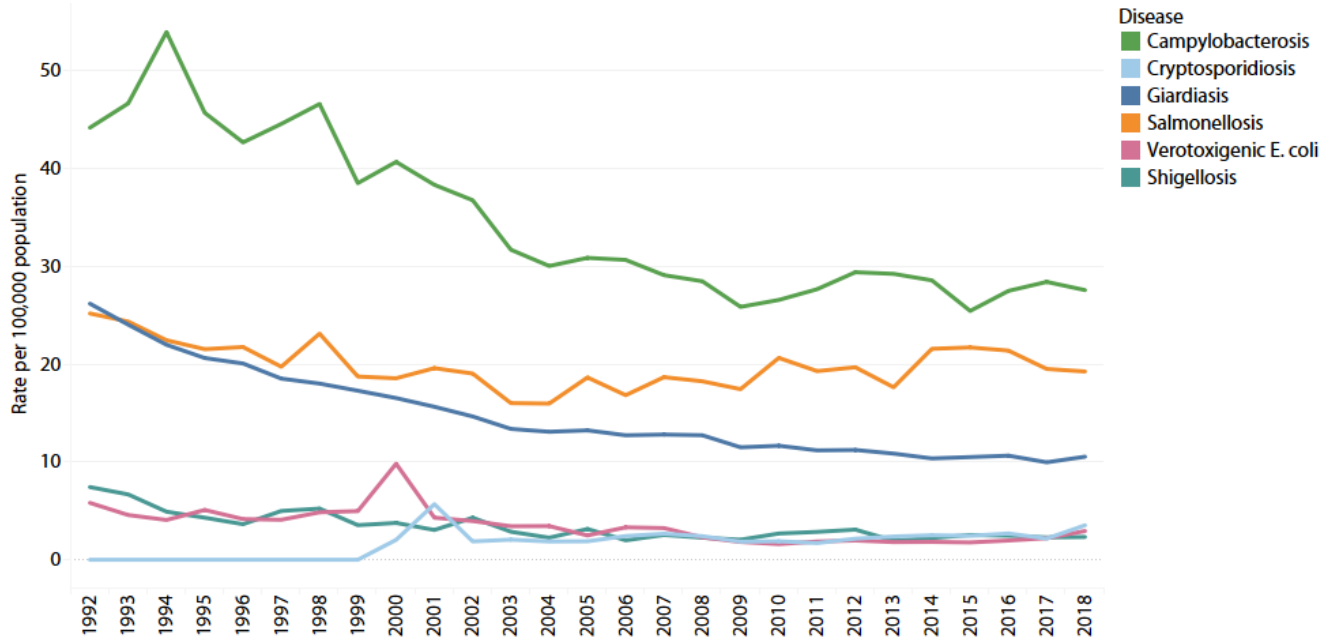
As shown in Figure 1, overall rates of reported enteric diseases (includes only reportable diseases listed in Table 1), declined in Canada between 1992 and 2009. Since then, rates have shown small year-to-year fluctuations but have been relatively stable. The 10-year annual median rate from 2009 to 2018 was 67.3 cases per 100,000 population, while the median annual rate for the 10-years previous (1999 to 2008) was 71.8 cases per 100,000 population. The most recent year for which data is available, 2018, had a rate of 69.0 cases per 100,000 population.

Figure 1. Annual Enteric, Food, and Waterborne Disease Case Counts and Rates in Canada, 1992-2018



The most frequently reported enteric disease in Canada is campylobacteriosis. The second most reported disease is salmonellosis, followed by giardiasis. Rates of campylobacteriosis and giardiasis have been declining since 1999. However, salmonellosis, which showed a similar trend of rate decline during the 1990s, has been trending upwards since 2004. See Figure 2 for long-term trends in the annual rates of the top 6 reported enteric diseases in Canada.

Figure 2. Annual Rates of Selected Enteric Diseases in Canada, 1992-2018



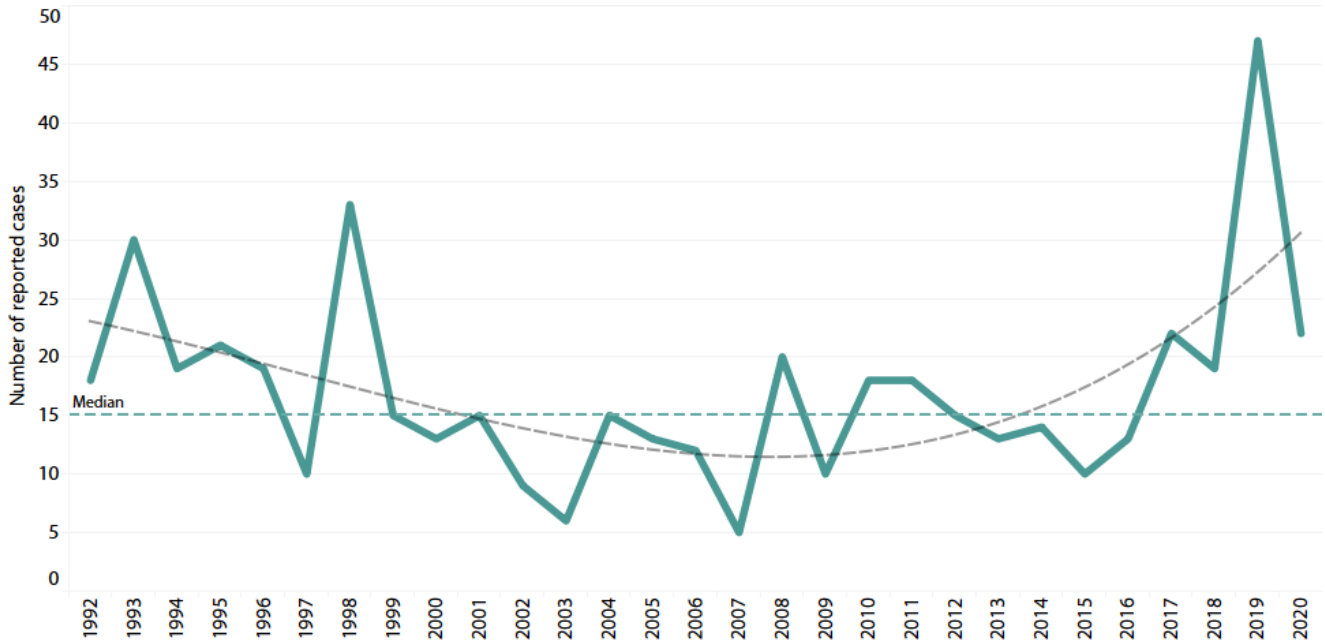
There is a notable gender gap in both the number and rate of reported enteric cases in Canada. From 1992 to 2018, 53.0% of all reported cases were male and rates of enteric infection among males were consistently higher than among females. Between 2009 and 2018, the 10-year median annual rate of reported infection in males was 72.1 cases per 100,000, while the rate in females was 62.5 cases per 100,000.

Epidemiology of Enteric, Food, & Waterborne Disease in the LGH Region

In the LGH region, overall counts of enteric disease cases (includes all reportable diseases listed in Table 1) declined between 1992 and 2007 with a median annual count of 15 cases. However, from 2008 onwards, counts trended upwards with a median annual count of 18 cases. This trend of decline and then increase is illustrated by the grey trend line in figure 3.

The highest case count occurred in 2019, with a record 47 cases of enteric disease reported in the LGH region. So far in 2020, the number of reported cases stands at 22, which is lower than the previous year, but higher than the median annual count for the previous five years (2015-2019) of 19 cases.

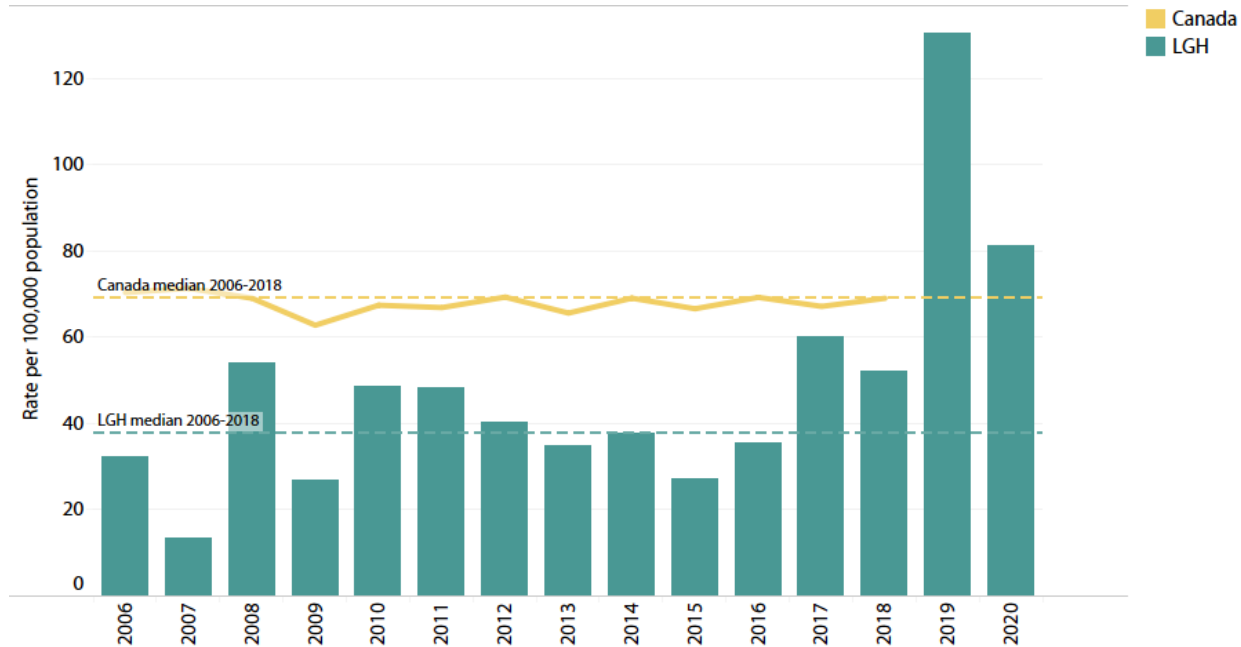
Figure 3. Annual Enteric Disease Counts in the LGH region with Trendline, 1992 - 2020 (YTD)



An analysis of rates of all enteric diseases over the past 15 years, shown in Figure 4, reveals that, from 2006 to 2018, annual rates of enteric disease in the LGH region were consistently lower than the corresponding Canadian annual rate, as well as the overall Canadian annual median rate. In both 2019 and 2020 (YTD), rates of enteric disease in the LGH region exceeded the Canadian annual median rate.

Also, rates of enteric disease in the LGH region have been trending upwards since 2016, reaching a peak of 130.3 cases per 100,000 in 2019. So far in 2020, the annual case rate is lower, standing at 81.3 cases per 100,000. The median annual case rate for the five-year period from 2016 to 2020 (YTD) is 60.0 cases per 100,000, compared to 37.6 cases per 100,000 during the previous five years (2011-2015).

Figure 4. Annual Rates of Enteric Disease in LGH Compared to Canada, 2006 - 2020 (YTD)



Over the period between 1992 to 2020 (YTD), there were no reported cases of amoebiasis, botulism, listeriosis, or typhoid/paratyphoid in the LGH region. There have also been no reported cases of yersiniosis since the year 2000 and no previously reported cases of cyclosporiasis prior to the current year. The other enteric diseases, which include campylobacteriosis, cryptosporidiosis, cytomegalovirus, giardiasis, hepatitis A, salmonellosis, shigellosis, and verotoxigenic *E. coli*, have been reported at varying levels since 1992, but some distinct patterns are evident.

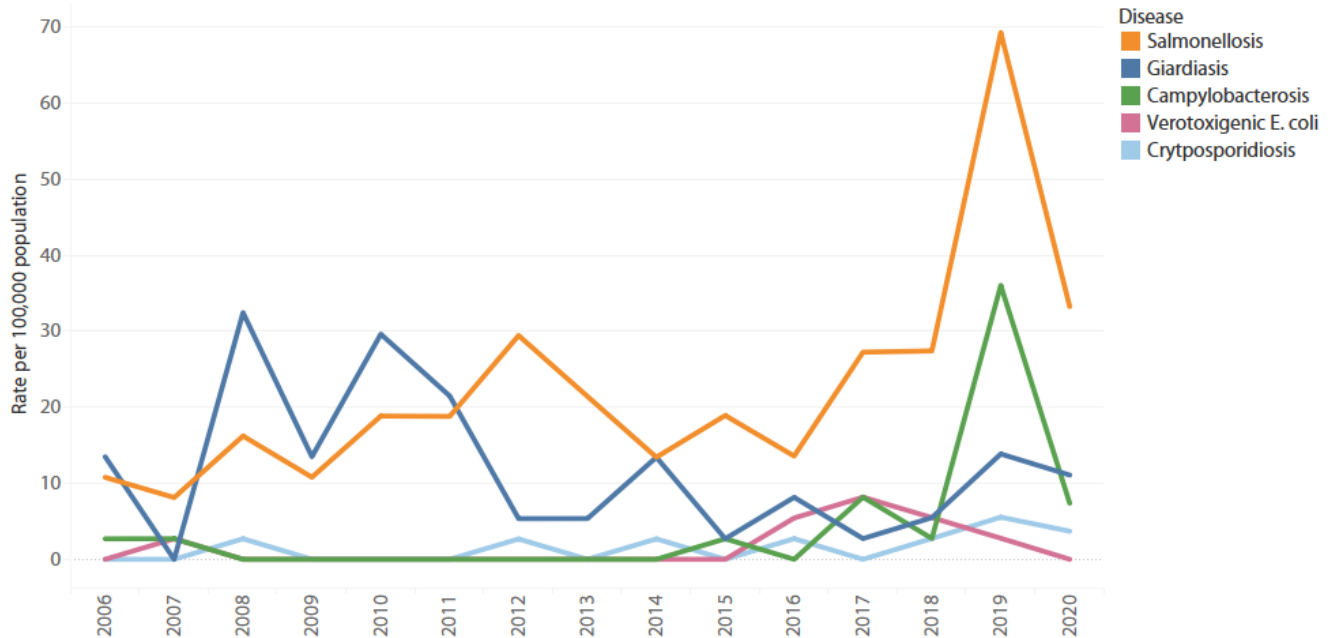
From 1992 to 2011, giardiasis was the most frequently reported enteric disease in the LGH region, with a median count of 6 cases per year. The second most frequently reported infection during that period was salmonellosis, which had a median annual count of 5 cases. However, since 2012, salmonellosis has been the most frequently reported enteric disease with a median case count of 9 cases per year, while the number of reported giardiasis infections declined to an annual median of 2 cases. The upward trend in salmonellosis has also been reflected in the increase from a median annual rate of 18.8 cases per 100,000 between 2010 and 2014 to 27.3 cases per 100,000 between 2015 and 2019. Conversely, the median annual rate of giardiasis has declined from 13.4 cases per 100,000 between 2010 and 2014 to 5.5 cases per 100,000 between 2015 and 2019. These trends are consistent with trends observed at the national level.

As Figure 5 demonstrates, rates of salmonellosis have been trending upwards over the past decade, reaching a peak of 69.3 cases per 100,000 in 2019. Campylobacteriosis rates also peaked in 2019 at 36.0 cases per 100,000. While rates of both diseases are lower so far this year than in 2019, they remain above pre-2016 levels.

The overall increased rates of reported enteric disease since 2016 appear to be largely driven by increases in salmonellosis and campylobacteriosis, although there was also a small uptick in the rate of giardiasis in 2019 and 2020 (YTD) which has contributed to this overall increase.



Figure 5: Annual Rates of Selected Enteric Diseases in the LGH region, 2006 – 2020 (YTD)

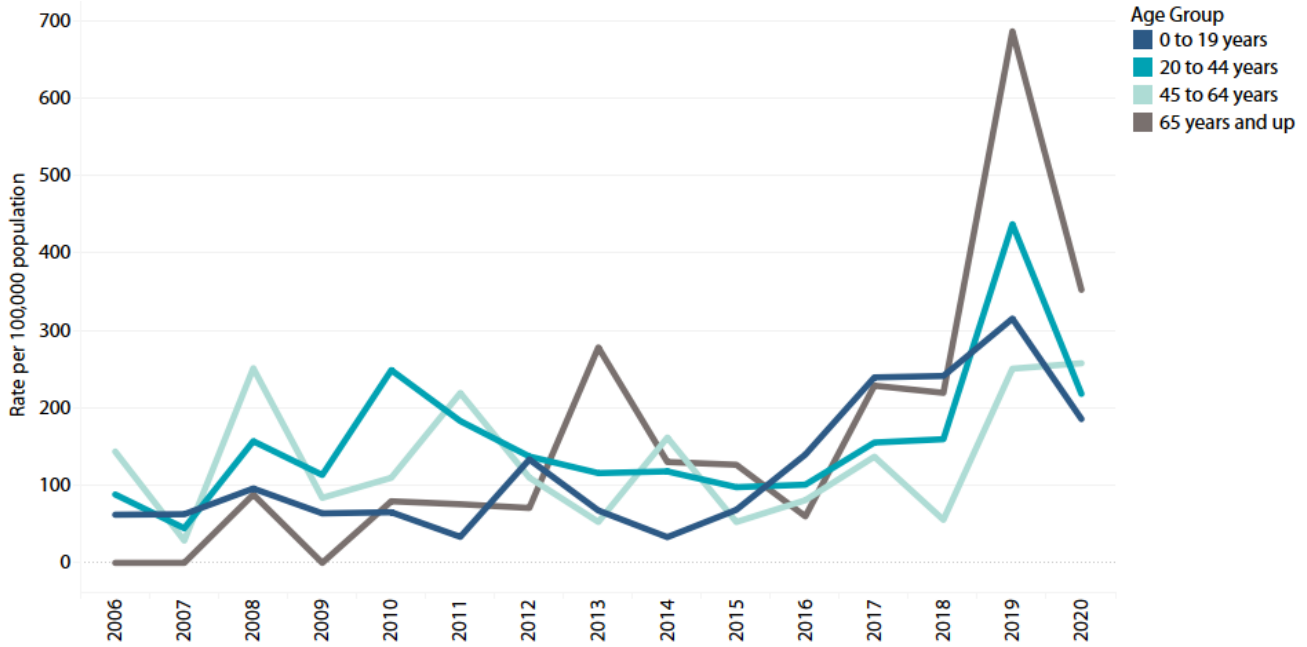


Although there is considerable year-to-year variation in the gender of reported counts of enteric disease in the LGH region, since 1992 52.9% of enteric cases have been female, while 47.1% have been male. Overall, females also tend to have higher annual rates of enteric disease than males. This is converse to the consistent gender gap at the national level, which shows higher rates of enteric disease in males than females.

There is considerable year-to-year variation in the rates of enteric infection in discrete age groups; however, as Figure 6 demonstrates, there has been an overall trend of increasing rates across all age groups over the past five years. This increase has been highest in the 65 years and up age group.

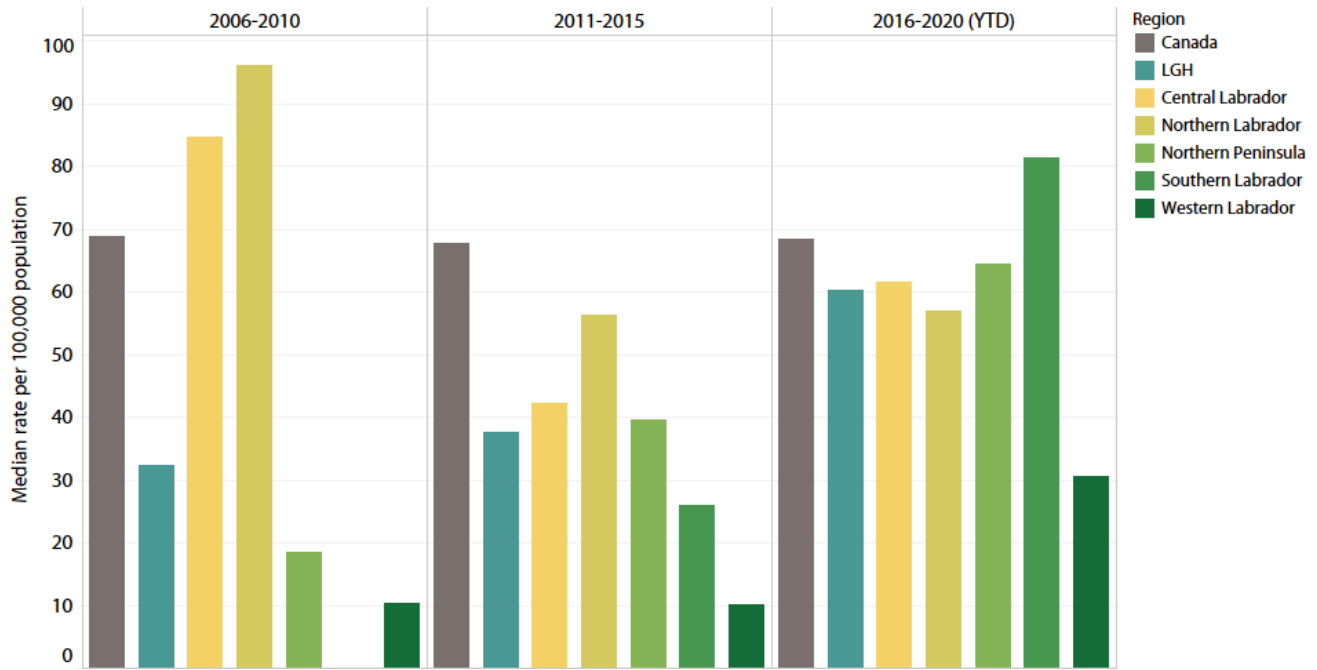
From 2006 to 2020 (YTD), the highest median annual rate of enteric infection was in the 20 to 44 year age group (46.4 cases per 100,000) and the second highest median rate of enteric infection was among those 65 years and up (46.1 cases per 100,000).

Figure 6. Annual Rate of Enteric Disease in the LGH region, by Age Group, 2006 – 2020 (YTD)



A comparison of the geographical distribution of cases within the LGH region over the past fifteen years highlights the disparity of enteric disease burden amongst communities (see Figure 7). From 2006-2010 and 2011-2016, the highest median enteric disease rates in the LGH region were in Central Labrador and Northern Labrador. From 2006-2010, the median rates of both these regions were higher than the national median rate, but from 2011-2015, they were below the national median rate. From 2016-2020 (YTD), the highest median rates were observed in Southern Labrador (81.5 cases per 100,000) and on the Northern Peninsula (64.6 cases per 100,000). The median rate in Southern Labrador also exceeded the national median rate during this period. Western Labrador consistently had the lowest median rate across all three five-year time periods of the comparison.

Figure 7. Comparison of 5-year Median Annual Enteric Disease Rates between LGH, LGH Sub-regions, & Canada



Note: Enteric disease counts are only available for Canada up to 2018; therefore, the 2016-2020 annual median for Canada is a median of 3 years (2016, 2017, 2018)

In summary, after a period of decline from 1992 to 2007, enteric disease numbers have been on the rise in the LGH region since 2008, with a peak rate of infection occurring in 2019, largely spurred by a surge in salmonellosis and campylobacteriosis. The most common reported enteric infection in the LGH region since 2012 has been salmonellosis, whereas previously it had been giardiasis. Most cases of reported enteric disease in the LGH region are female and the most affected age group is 20 to 44 years old, although the 65+ year age group has had the highest rates since 2018. There is also considerable intra-regional variation in enteric disease rates that has varied over time. From 2006 to 2015, the highest median annual rates were observed in Northern and Central Labrador, while the highest median annual rates from 2016 to the present have been observed in Southern Labrador and on the Northern Peninsula.

## Technical Notes

### Data Sources

Communicable Disease Control Reporting System, LGH terminal. Happy Valley-Goose Bay: Labrador-Grenfell Health [cited 2020 October 23].

Government of Newfoundland and Labrador. Communicable Disease Control Reporting System, Department of Health and Community Services terminal. St. John's, NL: Department of Health and Community Services [cited 2020 October 8].

Public Health Agency of Canada, Notifiable Diseases Online. Reported Cases in Canada, 1991-2018 [Data file]. Ottawa: Public Health Agency of Canada [cited 2020 September 28]. Available from: <https://diseases.canada.ca/notifiable/charts?c=pd#d=2%2C13%2C16%2C21%2C176%2C179%2C170%2C157%2C43%2C48%2C61%2C66%2C220%2C221%2C83%2C108%2C111%2C123%2C129%2C161%2C147&a=1%2C2%2C3%2C4%2C5%2C6%2C7%2C8%2C9%2C10%2C11%2C12&s=1%2C2%2C3%2C4&y=1991%2C2018>

Statistics Canada. Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X201600 [Internet]. Ottawa: Statistics Canada; November 2017 [cited 2019 December 10]. Available from: <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E>

Statistics Canada. Census Profile. 2011 Census. Statistics Canada Catalogue no. 98-316-XWE [Internet]. Ottawa: Statistics Canada; June 2012 [cited 2019 December 10]. Available from: <http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E>

Statistics Canada. 2006 Community Profiles. 2006 Census. Statistics Canada Catalogue no. 92-591-XWE [Internet]. Ottawa: Statistics Canada; March 2007 [cited 2019 December 10]. Available from: <https://www12.statcan.gc.ca/census-recensement/2006/dp-pd/prof/92-591/index.cfm?Lang=E>

Statistics Canada. Table 17-10-0134-01 Estimates of population (2016 Census and administrative data), by age group and sex for July 1st, Canada, provinces, territories, health regions (2018 boundaries) and peer groups [Internet]. Ottawa: Statistics Canada [cited 2020 October 20]. Available from: <https://doi.org/10.25318/1710013401-eng>

### Definitions

YTD: Year-to-Date

5-Year Historical Median: Middle value of quarterly counts over the previous 5 calendar years

Upper threshold: Calculated using the 3<sup>rd</sup> quartile + 1.5 \* interquartile range for each quarter, over the previous 5 calendar years

Central Labrador: Region located in the Lake Melville area, which includes Happy Valley-Goose Bay, Sheshatshiu, North West River, and Mud Lake

Western Labrador: Region located in the western region of Labrador, which includes Labrador City, Wabush, and Churchill Falls

Northern Labrador: Region spanning the northern coast of Labrador, which includes Rigolet, Postville, Makkovik, Hopedale, Nain, and Natuashish

Southern Labrador: Region spanning the southern coast and straits of Labrador, which includes all communities from Cartwright to L'anse-au-Clair

Northern Peninsula: Region stretching north from Bartlett's Harbour on the western side and Englee on the eastern side, up to the northernmost reaches of the Northern Peninsula of Newfoundland, which includes communities such as St. Anthony, Roddickton, and Flower's Cove

### Note

This report was prepared by Krista Baker, Public Health Information Management Analyst

Any questions about this report should be directed to [CDCintake@lghealth.ca](mailto:CDCintake@lghealth.ca)

### References

1. Department of Health and Community Services. Section 2: Enteric/Food and Waterborne Diseases. In: Newfoundland and Labrador Disease Control Manual [Internet]. St. John's: Government of Newfoundland and Labrador; March 2016 [cited 2020 October 2]. Available from: <https://www.gov.nl.ca/hcs/files/publications-diseasecontrol-s2-enteric-food-and-waterborne-diseases.pdf>
2. Morris S. Sexually Transmitted Enteric Infections. In: Merck Manual, Professional Version [Internet]. Kenilworth, NJ, USA; July 2019 [cited 2020 October 29]. Available from: <https://www.merckmanuals.com/professional/infectious-diseases/sexually-transmitted-diseases-stds/sexually-transmitted-enteric-infections>
3. Murray R, Tataryn J, Pintar K, Thomas M. Estimates of the Burden of Illness for Eight Enteric Pathogens Associated with Animal Contact in Canada. *Epidemiol Infect* [Internet]. 2017 [cited 2020 October 2]; 145: 3413-3423. Available from <https://www.cambridge.org/core/journals/epidemiology-and-infection/article/estimates-of-the-burden-of-illness-for-eight-enteric-pathogens-associated-with-animal-contact-in-canada/0311E09B06CF79680D68E8D8C16321A4>
4. Government of Canada. Yearly Foodborne-Illness Estimates for Canada [Internet]. Ottawa: Government of Canada; Jul 2016 [cited 2020 October 29]. Available from: <https://www.canada.ca/en/public-health/services/food-borne-illness-canada/yearly-food-borne-illness-estimates-canada.html>
5. Thomas M, Murray R, Flockhart L, Pintar K, Pollari F, Fazil A, Nesbitt A, Marshall B. Estimates of the Burden of Foodborne Illness in Canada for 30 Specified Pathogens and Unspecified Agents, Circa 2006. *Foodborne Pathogens and Disease* [Internet]. Jul 2013 [cited 2020 October 2]: 639-648. Available from: <http://doi.org/10.1089/fpd.2012.1389>
6. FoodNet Canada. Enteric Disease: A Major Health Concern in Canada [Internet]. Ottawa: Public Health Agency of Canada; Nov 2013 [cited 2020 October 2]. Available from: <https://www.canada.ca/en/public-health/services/surveillance/foodnet-canada/enteric-disease-a-major-health-concern-canada.html>