2024 Trends in Diseases of Public Health Significance in Wellington-Dufferin-Guelph

To:	Chair and Members of the Board of Health
Meeting Date:	February 5, 2025
Report No.	**BH.01.FEB0525.R03**, Pages: 12
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Recommendations

It is recommended that the Board of Health receive this report for information.

Key Points

- The Infectious Diseases program at Wellington-Dufferin-Guelph Public Health (WDGPH) receives reports of all laboratory-confirmed cases of diseases of public health significance (DoPHS) for residents of Wellington Couty, Dufferin County, and the City of Guelph.
- In 2024, increases in incidence were observed in several DoPHS. However, five diseases: salmonella, pertussis, giardia, Lyme, and shigella, have had significant increases from previous years. The epidemiological trends for these diseases are described in this report.

Background

Under the Health Protection and Promotion Act (HPPA), infectious diseases are to be reported to public health for investigation. O. Reg. 135/18: Designation of Diseases, under HPPA, identifies 72 Diseases of Public Health Significance (DoPHS), which are required to be reported to the local Medical Officer of Health. Management and control of these infectious diseases are a program standard under the Ontario Public Health Standards with the goal of reducing the burden of DoPHs in the province.

Public Health staff investigate and collect important information from individuals with these diseases such as symptoms, onset, potential acquisition and transmission, health status, and risk factors. Analysis of this information then informs decisions and guides public health interventions and actions. Depending on the infectious disease reported, public health may recommend a variety of interventions. Working with community and healthcare partners, public health actions prevent and reduce the spread of disease within our communities.

Appendix A summarizes the numbers and trends of laboratory-confirmed cases of DoPHs reported to WDGPH (excluding sexually transmitted infections) by year over the past five years (2019 to 2023, inclusive) in comparison to the case numbers reported in 2024.

Discussion

Five reportable diseases showed marked increases in 2024 when compared to the previous five years. These organisms, in descending order of frequency reported, are:

- Salmonella
- Pertussis
- Giardia
- Lyme disease
- Shigella

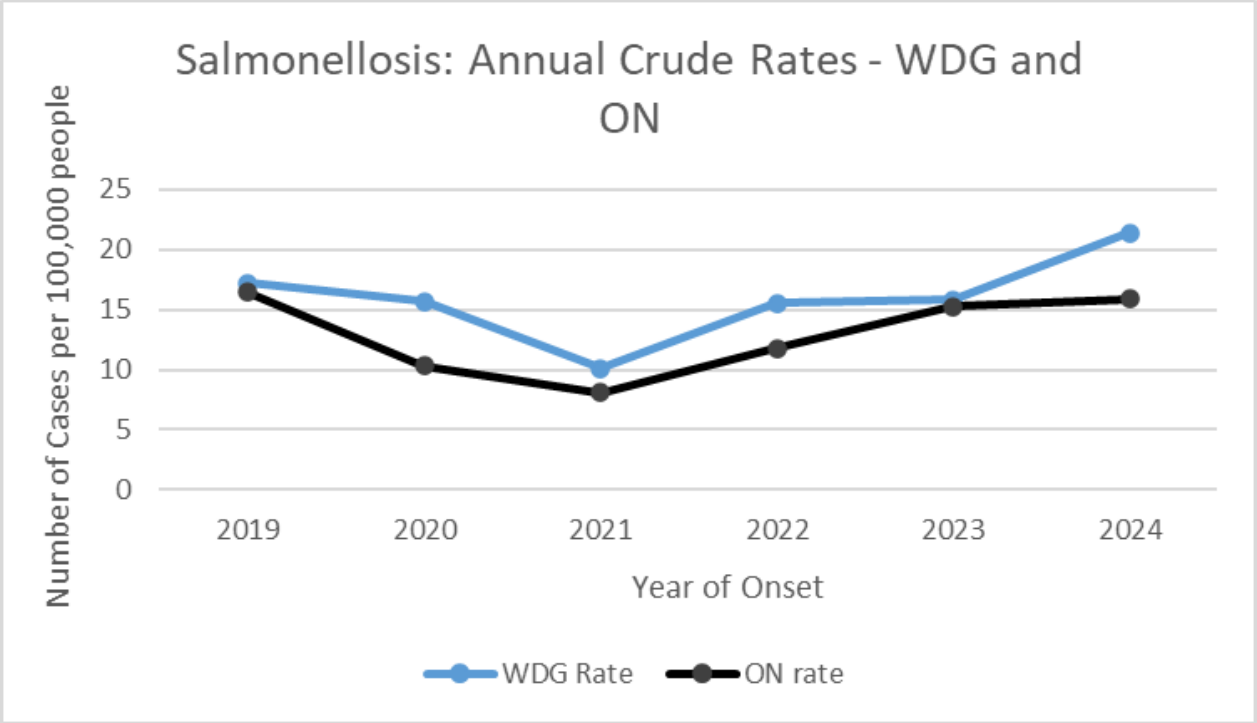
The five-year trends for these diseases are discussed below.

Salmonella

Salmonella are bacteria that can make people sick with diarrhea (salmonellosis). Salmonella bacteria live in the intestines of many animals and infected people. The illness is predominately spread by eating contaminated foods, such as undercooked poultry and meat, raw and undercooked eggs, raw milk or milk products, or ingesting water contaminated with infected animal feces. Anyone can get ill when they ingest the bacteria, however, infants, the elderly, and immunocompromised persons are more at risk of suffering from dehydration and complications.

WDG case numbers were stable from 2019 to 2023 (Figure 1). However, there was a noticeable increase in 2024 from 2023. WDG rates are higher than the provincial rate in most years.

Figure 1.



Giardia

Giardia is a parasite that causes diarrhea (giardiasis). Giardia can live in the intestines of people and animals and is passed in the stool. A hard outer shell (cyst) allows the organism to live in the environment for weeks or months. Giardia may be found in water, food, soil, or on surfaces and hands contaminated with feces. It is primarily spread by ingesting contaminated water, such as lake or river water. It can also be spread by touching contaminated objects or surfaces and through anal-oral contact during sex with an infected person. Once ingested, the cyst transforms to cause infection in the intestinal tract.

WDG has had higher rates of cases of giardiasis than the province since 2019 (Figure 2). There were twice as many local cases in 2024 than in 2023, with an increase over the summer months, including a spike in cases in July (Figure 3). There is no known reason for the observed increase.

Figure 2.

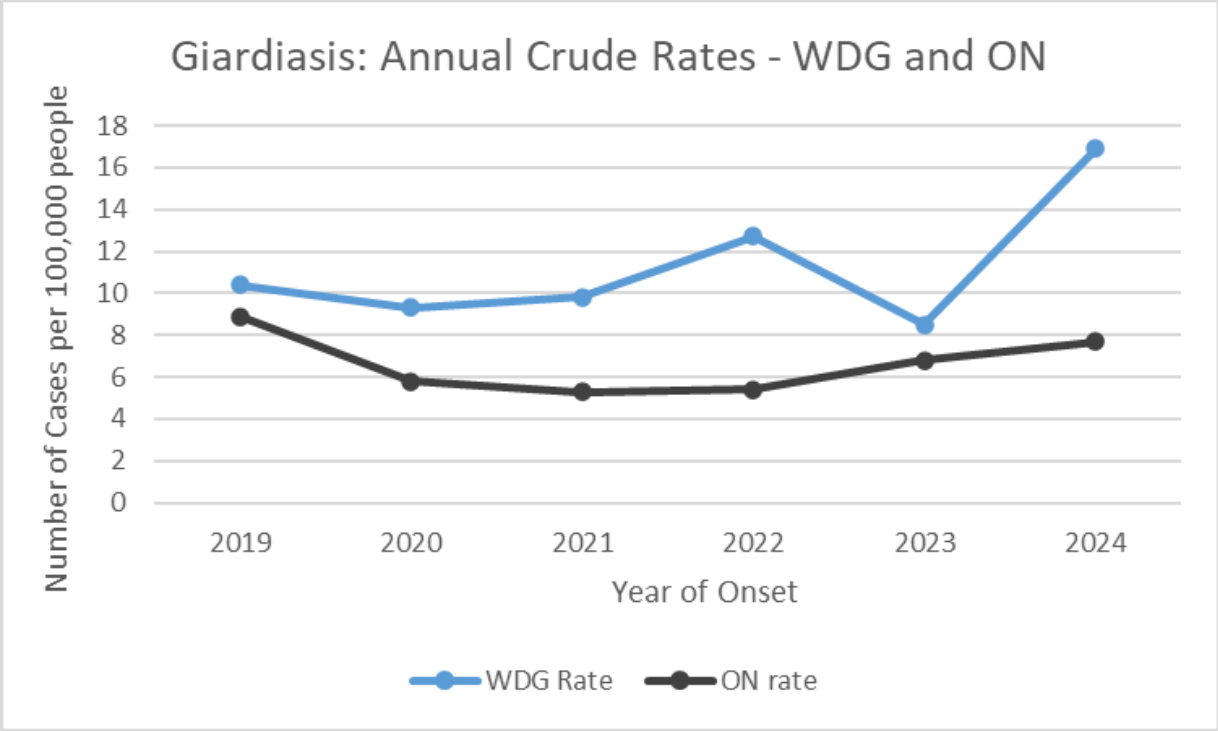
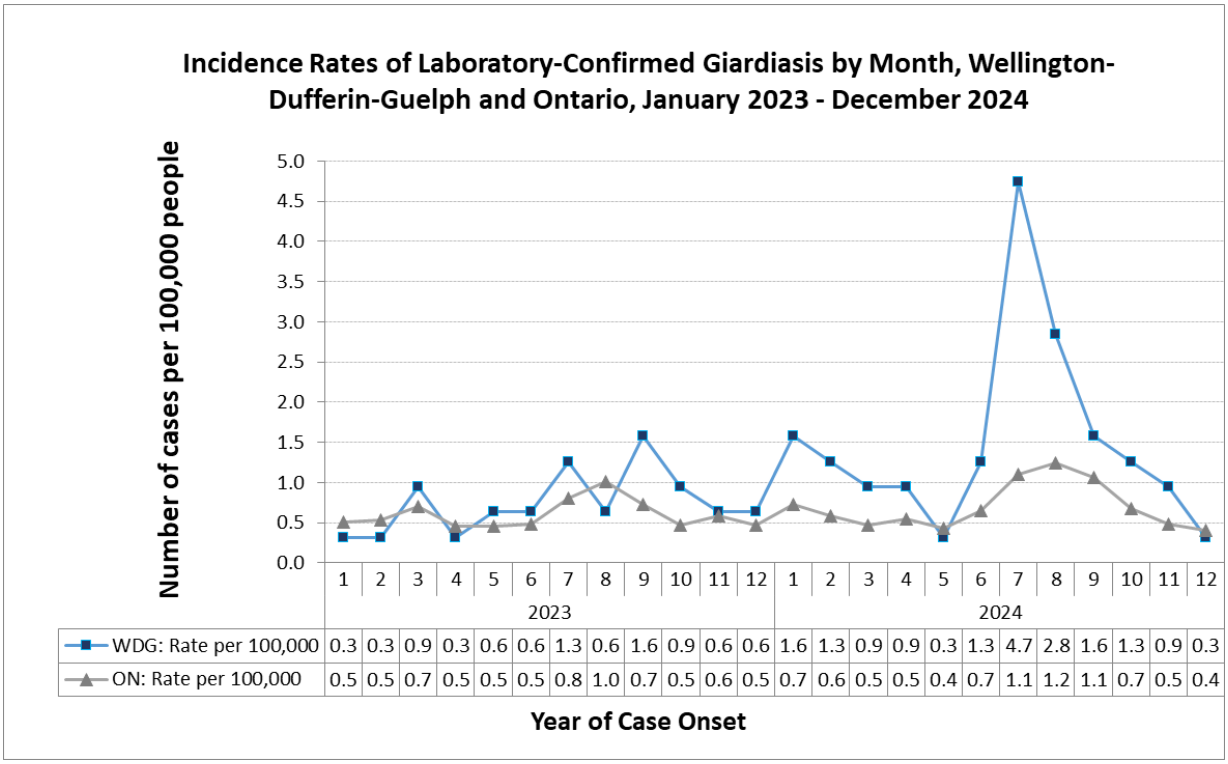


Figure 3.



Pertussis (Whooping Cough)

In 2023, the province and WDG saw an increase in cases of Pertussis often called “whooping cough”. In 2024 this trend continued with a doubling of pertussis cases in WDG (Figure 4), with 51 cases reported in 2024, up from 23 cases in the previous year. [1] Over 82% of the cases were under 20 years, with the largest group (39%) between 10-14 years of age (Figure 5).

In Ontario, pertussis illness circulates at a low level of activity within communities, however, increases occur cyclically every 2-5 years. [2] Pertussis is a highly infectious bacterial illness, especially in households with young infants where parents and siblings are an important source of transmission. [2] Pertussis can affect individuals of any age, however infants, under the age of one are the most at risk of severity and complications. Despite these cyclical increases, the number of pertussis cases has declined due to effective vaccination programs. [3]

Figure 4.

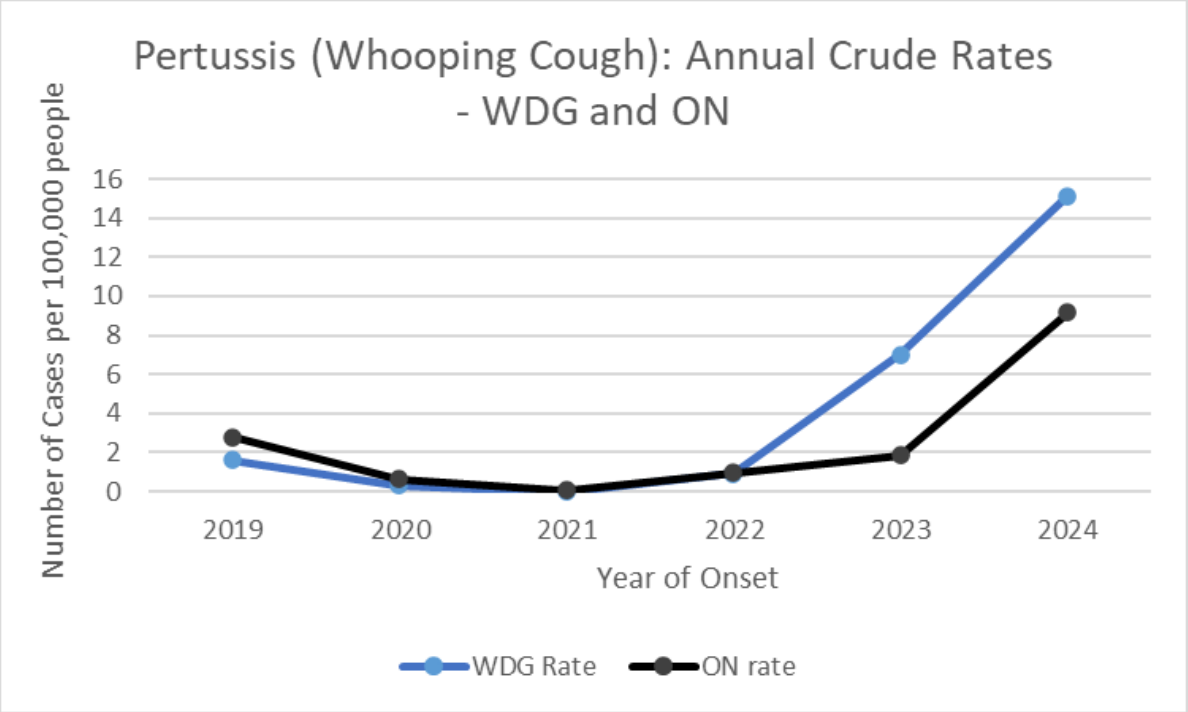
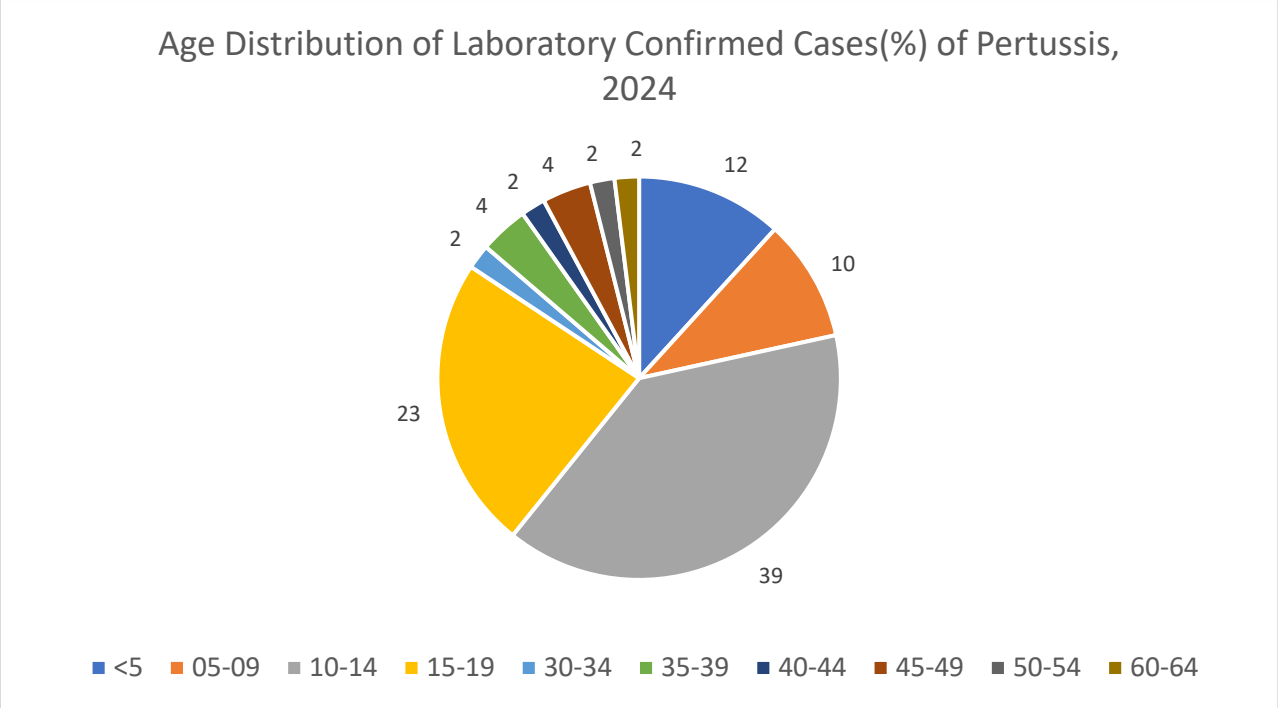


Figure 5.



Lyme Disease

Lyme disease (LD) is caused by the bacterium *Borrelia burgdorferi* and spreads to people through the bite of infected blacklegged ticks (deer ticks). Symptoms vary but some common signs of infection are fever, headache, fatigue, and rash. Infection can spread to the heart, joints, and nervous system if left untreated.

In WDG, LD case numbers have been increasing over the last several years (Figure 6). Most cases occur during the seasonal warmer months (Figure 7). Climate change has increased the geographic distribution of black-legged ticks. Warmer winters also contribute to increased activity of the ticks resulting in more tick-human interactions which contribute to the increased number of Lyme disease cases.[4] This year-by-year increasing trend is occurring both locally and provincially.

Figure 6.

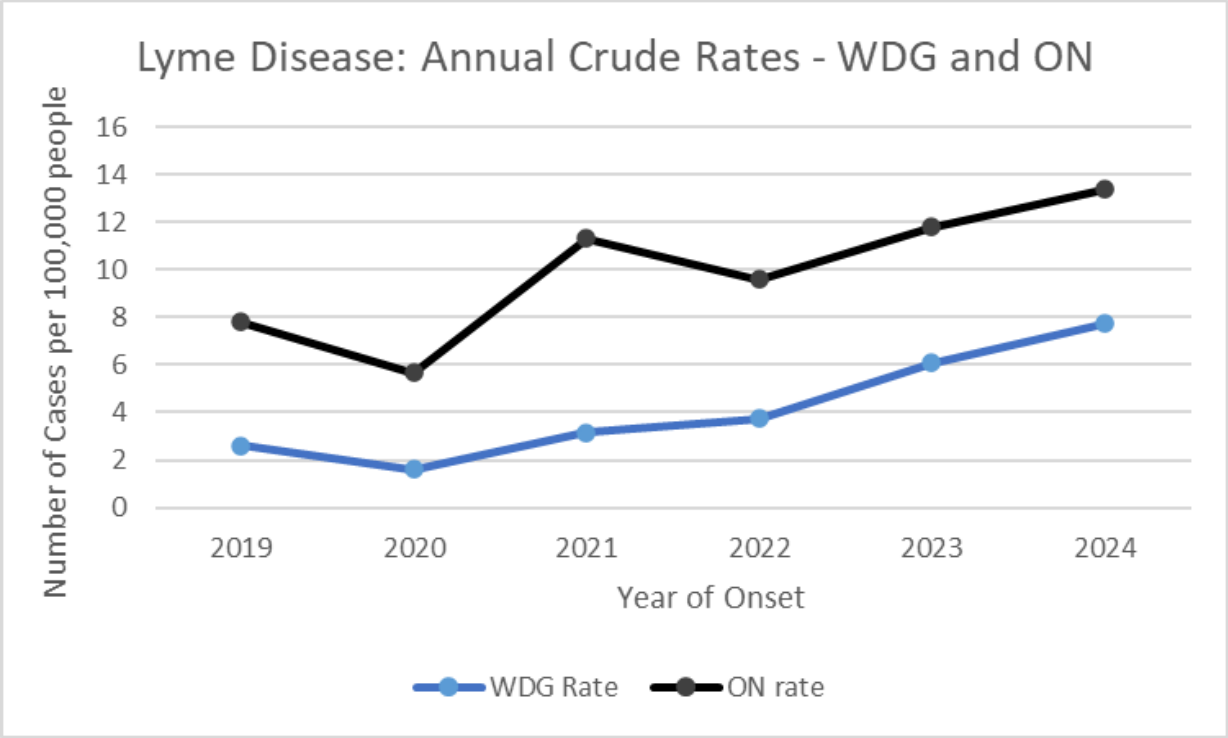
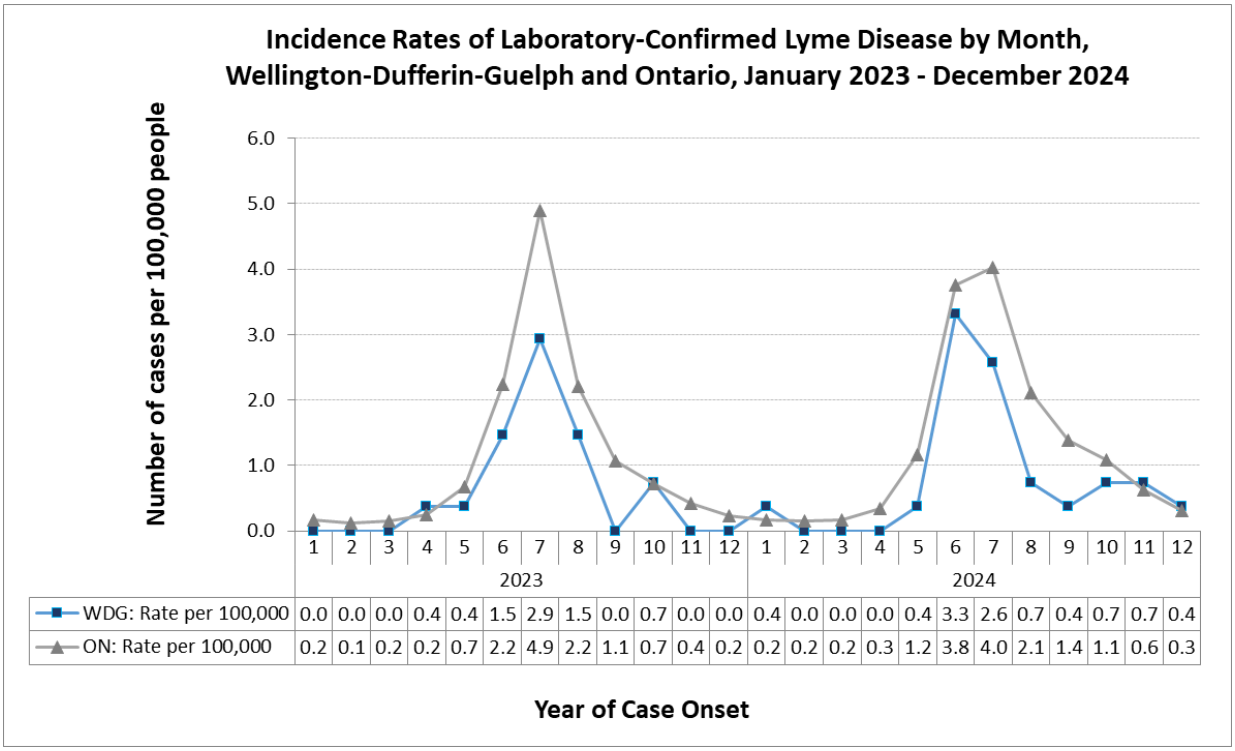


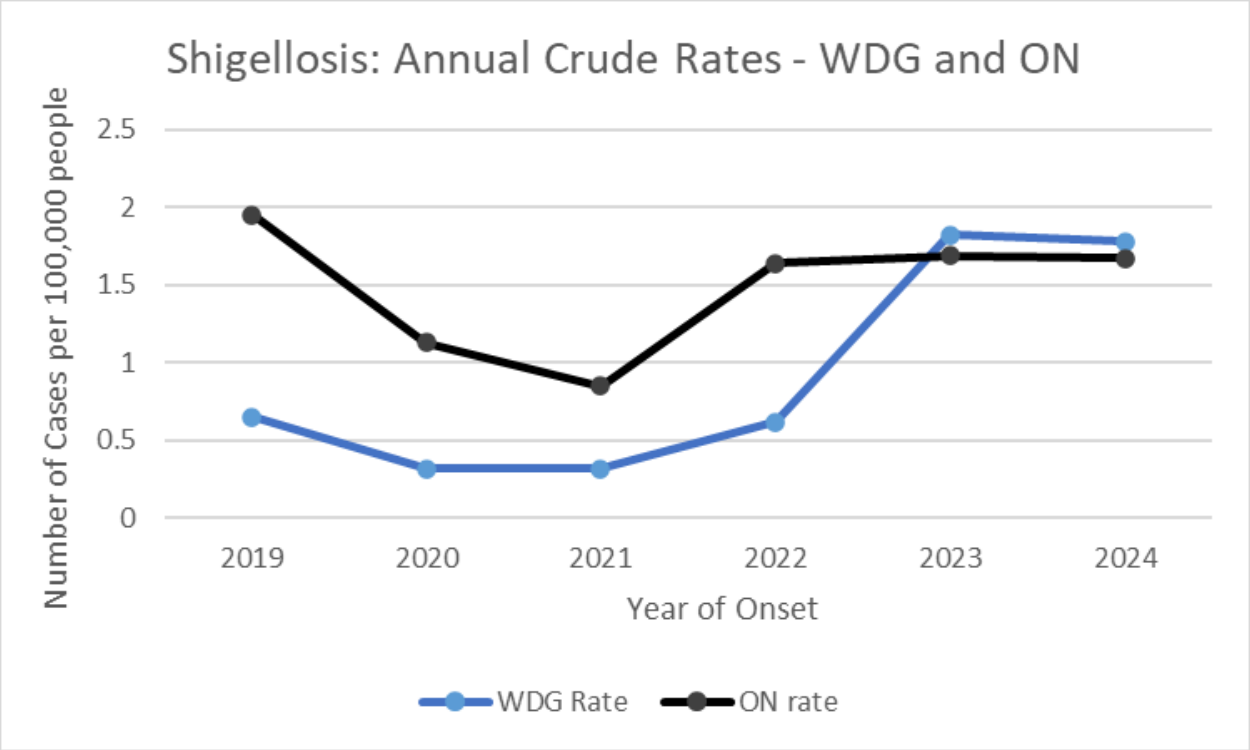
Figure 7.



Shigellosis

Shigella is a bacterium that causes prolonged or bloody diarrhea and is commonly transmitted by ingesting contaminated food or water. It is also spread by touching contaminated surfaces and sexual activity. Young children, travelers, men having sex with men (MSM), the under-housed, and individuals with weakened immune systems are most at risk of infection. [6] The 2023 and 2024 increase in WDG shigellosis cases brought WDG to the provincial average. No noticeable increase in shigellosis incidence was apparent in 2024 in Ontario overall (Figure 8).

Figure 8.



Health Equity Implications

Health inequities create conditions for infectious disease transmission that can contribute to the unequal burden of illness in communities.[6] Social determinants of health such as poverty, isolation, limited education, and language barriers can create significant barriers to accessing healthcare.[6] Stigma and discrimination can further alienate groups from seeking out health care for diagnosis and treatment and disrupt public health efforts in the management of infectious diseases leading to poorer health outcomes for individuals and communities. For example, when conducting case and contact follow-up, WDGPH uses a trauma-informed approach and professional translation services to remove language barriers enhancing client understandability of case management and infectious disease prevention.

Conclusion

A review of the data on DoPHS over the past five years indicated increases in 2024 of the diseases discussed in this report. These increases are seen for some DoPHS, namely salmonella, giardia, pertussis, Lyme disease, and shigella. The reasons for higher rates of salmonella, giardia, and shigella, are currently unknown.

Ontario Public Health Standards

Foundational Standards

- ☒ Population Health Assessment
- ☐ Health Equity
- ☒ Effective Public Health Practice
- ☐ Emergency Management

Program Standards

- ☐ Chronic Disease Prevention and Well-Being
- ☐ Food Safety
- ☐ Healthy Environments
- ☐ Healthy Growth and Development
- ☐ Immunization
- ☒ Infectious and Communicable Diseases Prevention and Control
- ☐ Safe Water
- ☐ School Health
- ☐ Substance Use and Injury Prevention

2024-2028 WDGPH Strategic Goals

More details about these strategic goals can be found in WDGPH's 2024-2028 Strategic Plan.

- ☒ Improve health outcomes
- ☒ Focus on children's health
- ☒ Build strong partnerships
- ☐ Innovate our programs and services
- ☐ Lead the way toward a sustainable Public Health system

References

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2. Public Health Agency of Canada (PHAC). 2023. Pertussis (whooping cough) vaccines: Canadian Immunization Guide. Retrieved December 5, 2024. https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-15-pertussis-vaccine.html#p4c14a2

3. Smith T, Rotondo J, Desai S, Deehan H. Pertussis surveillance in Canada: trends to 2012. Canadian Communicable Disease Report. 2014;40(3):21-30. Available from: doi: 10.14745/ccdr.v40i03a0

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6. Quinn SC, Kumar S. Health inequalities and infectious disease epidemics: a challenge for global health security. Biosecurity and Bioterrorism. 2014 Sep-Oct;12(5):263-73. doi: 10.1089/bsp.2014.0032 (Accessed January 20, 2025).

Appendices

Appendix A - Reported laboratory-confirmed cases of diseases of public health significance in WDG in alphabetical order from 2019 to 2024.

Disease of Public Health Significance	Number of Cases per year 2019-2023					2024 Cases
	Minimum	Maximum	Average	Median	Upper Expected Number*	
Amebiasis	0	4	1.6	1	3.5	3
Anaplasmosis	0	0	0	0	0	1
Blastomycosis	0	2	0.8	2.5	2.5	1
Botulism	0	1	0	0.2	0	0
Campylobacteriosis	73	115	154	92	154	84
Carbapenemase-producing enterobacteraciae (CPE)	1	5	2.6	2	8.5	6
Chickenpox	5	9	7.6	8	12	12
Creutzfeldt-Jakob Disease	0	2	0.4	0	0	0
Clostridium difficile public hospital outbreaks	0	0	0	0	0	0
Cryptosporidiosis	33	70	49.2	45	93	66
Cyclosporiasis	2	14	8.6	10	26.5	9
Encephalitis/Meningitis	0	3	1.4	1	7.5	0
Giardiasis	**28**	**42**	**32.6**	**32**	**36.5**	**57**
Group A Streptococcal Disease**	8	31	16.4	14	32.5	11
Haemophilus influenzae disease**	2	9	6.6	7	9.5	8
Hepatitis A	0	4	1.8	1	6	6
Hepatitis B (including carriers)	20	37	28.2	26	41	2
Hepatitis C	41	90	59.6	52	123.5	46
Human Immunodeficiency Virus/AIDS (including carriers)	5	11	7.8	8	9.5	**21**
Influenza	1	253	186.6	211	374.5	453
Legionellosis	6	12	9.6	10	14	12
Listeriosis	0	3	1.2	1	1	3
Lyme	**6**	**20**	**11.4**	**10**	**20.5**	**28**
Measles	0	0	0	0	0	0
Meningitis (bacterial)	0	4	2	2	2	3
Meningitis (viral)	0	11	3.2	1	6	5
Meningitis (other)	0	1	0.2	0	0	1
Mpox	0	6	1.2	0	0	2
Mumps	0	1	0.2	0	0	0
Paratyphoid	0	2	1	1	5	2
Pertussis	**3**	**23**	**6.4**	**3**	**11**	**51**

Disease of Public Health Significance	Number of Cases per year 2019-2023					2024 Cases
	Minimum	Maximum	Average	Median	Upper Expected Number*	
Q fever	0	1	0.4	0	2.5	0
Rubella	0	1	0.2	0	0	0
Salmonellosis	**32**	**53**	**47.6**	**50**	**57.5**	**74**
Shigellosis	**1**	**7**	**2.6**	**2**	**3.5**	**6**
*Streptococcus pneumoniae***	10	36	22.2	18	45.5	43
Typhoid	0	1	0.2	0	0	3
Verotoxin-producing *E. coli*	2	18	11.8	14	18.5	15
West Nile Virus Disease	0	0	0	0	0	1
Yersiniosis	1	9	5	4	11.5	6

**Upper Expected Threshold= 75th percentile + (1.5*inter-quartile range) for the previous 5 years*

*** Invasive disease*