



# Communicable Disease Control Report

Annual report for health care providers on diseases of public health significance

December 2018

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## New Diseases of Public Health Significance

The list of Diseases of Public Health Significance (formerly Ontario Reportable Diseases) was amended on May 1, 2018 to include three new diseases:

**Blastomycosis** is primarily an acute infection of the lungs caused by inhalation of fungal spores found in moist soils. Cases have been found across Ontario, with higher rates in the Northwestern regions. A subset of cases will develop acute respiratory distress syndrome.<sup>1</sup>

**Carbapenemase-producing *Enterobacteriaceae* (CPE)** are resistant to many antibiotics that are considered the last line of defense. Cases are most commonly found in healthcare settings with transmission occurring through the hands of healthcare workers or equipment.<sup>2</sup>

***Echinococcus multilocularis*** is a tapeworm infection with signs and symptoms consistent with hepatic disease; untreated it can be fatal. Domestic and wild canids can spread infection to humans and have been found infected in Ontario.<sup>3</sup>

## Meningitis

In 2017, nine cases of meningitis were reported within the NBPSDHU region, the highest annual count since 2009 and an incidence rate that was significantly higher than the Ontario rate. Just over half of all cases (55.6%) occurring in 2017 were male, and the median age was 49 years.

Figure 1: Number and Crude Rate per 100,000 Population of Confirmed and Probable Meningitis Cases, by Region, 2008-2017

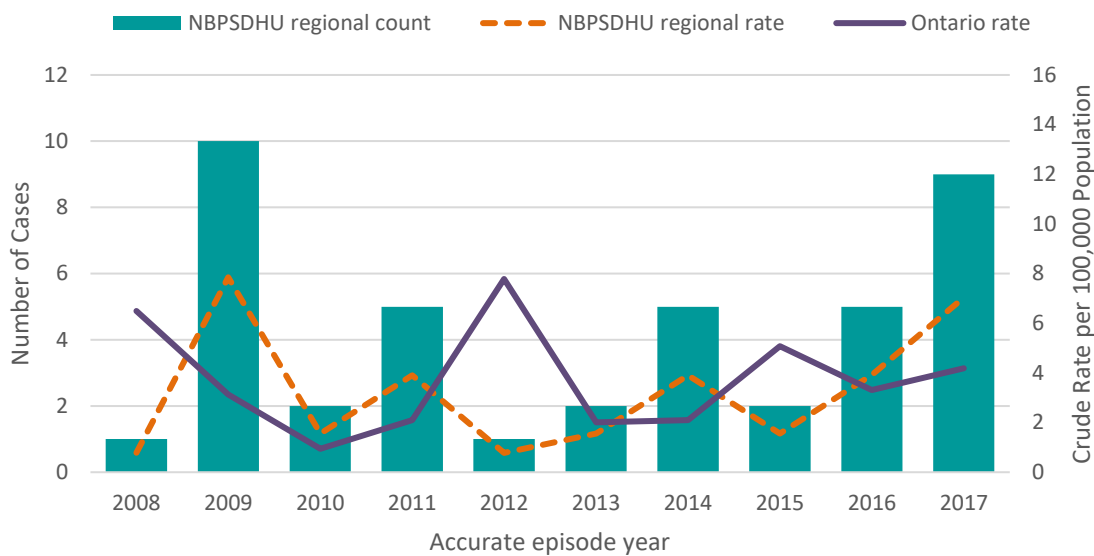


Table 1: Number and Crude Rate per 100,000 Population of Confirmed and Probable Meningitis Cases, by Region, 2008-2017

| Accurate episode year | NBPSDHU Region: Number of Cases | NBPSDHU Region: Rate per 100,000 Population | Ontario: Rate per 100,000 Population |
|-----------------------|---------------------------------|---|--------------------------------------|
| 2008                  | 1                               | 0.8   | 6.5                                  |
| 2009                  | 10                              | 7.9   | 3.1                                  |
| 2010                  | 2                               | 1.6   | 0.9                                  |
| 2011                  | 5                               | 3.9   | 2.1                                  |
| 2012                  | 1                               | 0.8   | 7.8                                  |
| 2013                  | 2                               | 1.6   | 2.0                                  |
| 2014                  | 5                               | 3.9   | 2.1                                  |
| 2015                  | 2                               | 1.6   | 5.1                                  |
| 2016                  | 5                               | 3.9   | 3.3                                  |
| 2017                  | 9                               | 7.0   | 4.2                                  |

The majority of meningitis cases reported (77.8%) had no organism isolated in clinical specimens (Table 1). Viral meningitis was the most commonly reported type of meningitis (55.6%) and there were no confirmed cases of bacterial meningitis. Enteroviruses are a common cause of viral meningitis, for which there is no vaccine. *Streptococcus pneumoniae*, *Haemophilus influenzae* type b (Hib) and *Neisseria meningitidis* are common causes of bacterial meningitis.<sup>4</sup>

Table 2: Number and percent of meningitis cases by classification and agent type in the NBPSDHU, 2017

| Meningitis Type | Confirmed Cases  | Probable Cases   | Total             |
|-----------------|------------------|------------------|-------------------|
| Fungal          | 1 (11.1%)        | 0 (0.0%)         | 1 (11.1%)         |
| Viral           | 1 (11.1%)        | 4 (44.4%)        | 5 (55.6%)         |
| Bacterial       | 0 (0.0%)         | 3 (33.3%)        | 3 (33.3%)         |
| <b>Total</b>    | <b>2 (22.2%)</b> | <b>7 (77.8%)</b> | <b>9 (100.0%)</b> |

## Vaccination

Vaccines are available for a number of agents that can cause meningitis:<sup>5</sup>

- Measles
- Mumps
- Influenza
- Varicella zoster
- *Streptococcus pneumoniae*
- *Neisseria meningitidis* (A, B, C, Y, W-135)
- *Haemophilus influenzae* type b

In addition to vaccination, antibiotic post-exposure prophylaxis is recommended for close contacts of cases of bacterial meningitis caused by:

- *Neisseria meningitidis*
- *Haemophilus influenzae* type b

Contact the CDC Program at 705-474-1400 ext. 5229 (after-hours: press 0) for recommendations regarding who requires prophylaxis, drugs and doses.

## Tuberculosis Medical Surveillance

Between 2008 and 2017, thirteen individuals were reported to the NBPSDHU for tuberculosis medical surveillance from Immigration, Refugees and Citizenship Canada (IRCC). IRCC is mandated to assess applicants for residency in Canada on the basis of health grounds for inadmissibility. Individuals applying for a Canadian visa/permanent residency/refugee status/citizenship have an Immigration Medical Exam (IME), in part, to rule out active pulmonary tuberculosis (TB) disease.<sup>6</sup>

If active TB disease is ruled out but there is evidence of inactive pulmonary TB, the individual receives medical clearance to come to Canada with a formal condition that they must contact their local board of health upon entry for medical surveillance.<sup>6</sup> The individual is first interviewed and counseled by a public health nurse. If no symptoms of active TB are present, the individual is permitted to wait to apply for the Ontario Health Insurance Plan (OHIP) prior to having a formal medical assessment completed by a primary health care provider.<sup>6</sup>

## Medical Assessment

All individuals referred for medical surveillance should undergo at least one complete medical assessment consisting of:<sup>7</sup>

- Health history
- Physical examination with a TB-specific symptom inquiry
- Record of co-morbidity, including immunodeficiency status
- Chest x-ray
- Tuberculin skin test (TST) if no documented result and no active disease detected
- Other tests can include sputum smears/cultures, as appropriate

Once the formal medical assessment is completed, a public health nurse will advise the IRCC that the individual has met the requirements for medical surveillance. The need for closer or longer follow-up (up to five years) may be judged prudent by the examining health care provider, based on risk factors for reactivation and likelihood of compliance with follow-up. For foreign-born individuals, the incidence of active TB is highest in the first five years after arrival to Canada.<sup>7</sup>

### Burden of Hepatitis C

In Ontario, hepatitis C virus was the highest-ranked pathogen in terms of disease burden (years of life lost due to premature mortality), followed by *S. pneumoniae* and human papillomavirus (HPV).<sup>8</sup> Since 2011, the number of cases of hepatitis C reported to the NBPSDHU has increased and the rate has been statistically significantly higher than the provincial rate (Figure 2).

Figure 2: Number and Crude Rate per 100,000 Population of Confirmed Hepatitis C Cases, 2008-2017

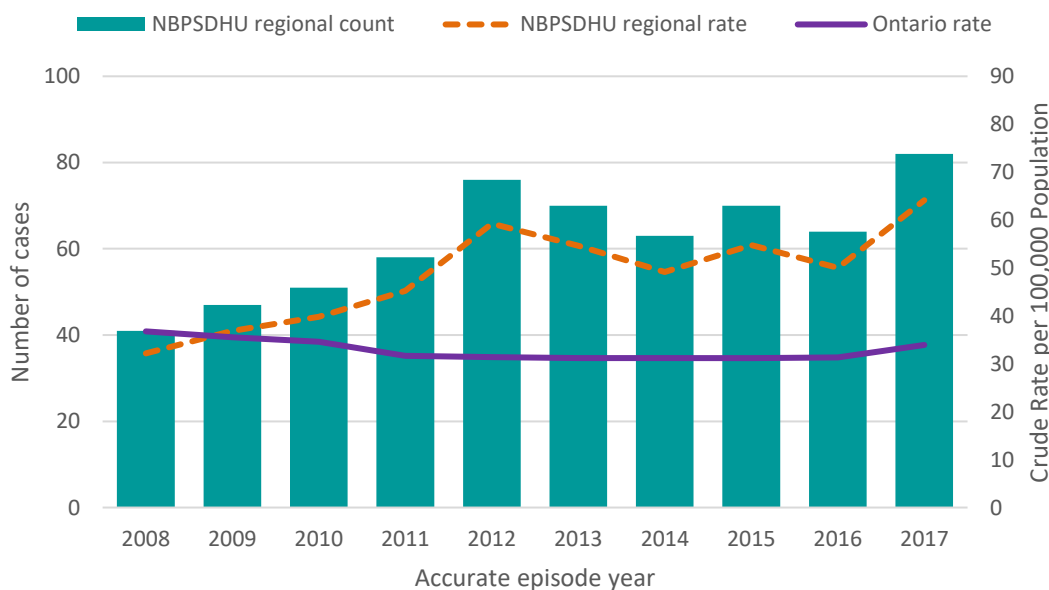


Table 3: Number and Crude Rate per 100,000 Population of Confirmed Hepatitis C Cases, 2008-2017

| Accurate episode year | NBPSDHU Region: Number of Cases | NBPSDHU Region: Rate per 100,000 Population | Ontario: Rate per 100,000 Population |
|-----------------------|---------------------------------|---|--------------------------------------|
| 2008                  | 41                              | 32.2  | 36.8                                 |
| 2009                  | 47                              | 36.9  | 35.6                                 |
| 2010                  | 51                              | 39.8  | 34.6                                 |
| 2011                  | 58                              | 45.2  | 31.7                                 |

| Accurate episode year | NBPSDHU Region:<br>Number of Cases | NBPSDHU Region: Rate<br>per 100,000 Population | Ontario: Rate per<br>100,000 Population |
|-----------------------|------------------------------------|--|---|
| 2012                  | 76                                 | 59.2   | 31.4                                    |
| 2013                  | 70                                 | 54.6   | 31.2                                    |
| 2014                  | 63                                 | 49.2   | 31.2                                    |
| 2015                  | 70                                 | 54.7   | 31.2                                    |
| 2016                  | 64                                 | 50.0   | 31.3                                    |
| 2017                  | 82                                 | 64.1   | 34.0                                    |

### Young Women

In the last five years, females aged 25 to 29 years had the highest hepatitis C rates in the NBPSDHU region of all sex-age group combinations. Compared to Ontario, the hepatitis C rate among females aged 25 to 29 years is more than four times higher in the NBPSDHU region. Injection drug use was the most commonly reported risk factor for infection (58.6% of cases).

### Harm Reduction Services

Safer drug injection supplies, safer crack and crystal meth inhalation kits, safer sex supplies and sharps disposal are available at these locations:

#### North Bay Parry Sound District Health Unit

Naloxone kits are also available.

345 Oak Street West, North Bay, 705-474-1400

302-70 Joseph Street, Parry Sound, 705-746-5801

#### AIDS Committee of North Bay & Area

Safer snorting kits and naloxone kits are also available.

201-269 Main Street West, North Bay, 705-497-3560

Street Outreach Team, North Bay, 705-471-4044

#### Ontario Addictions Treatment Centre

456 Ferguson Street, North Bay, 705-497-1620

32 James Street, Parry Sound, 705-774-9669

#### Alliance Centre

172 Ethel Street, Sturgeon Falls, 705-753-2271

### *E. coli* O157

In 2017, there were five cases of verotoxin-producing *Escherichia coli* (*E. coli*) reported in the NBPSDHU region and the incidence rate was statistically significantly higher than the Ontario rate (Figure 3). All five cases were *E. coli* O157, and two cases (40%) had matching pulse-field gel electrophoresis (PFGE) patterns that were linked to a national outbreak investigation with romaine lettuce identified as the source of the outbreak.<sup>9</sup>

Figure 3. Number and Crude Rate per 100,000 Population of Confirmed and Probable Verotoxin-producing *E. Coli* cases, by Region, 2008-2017

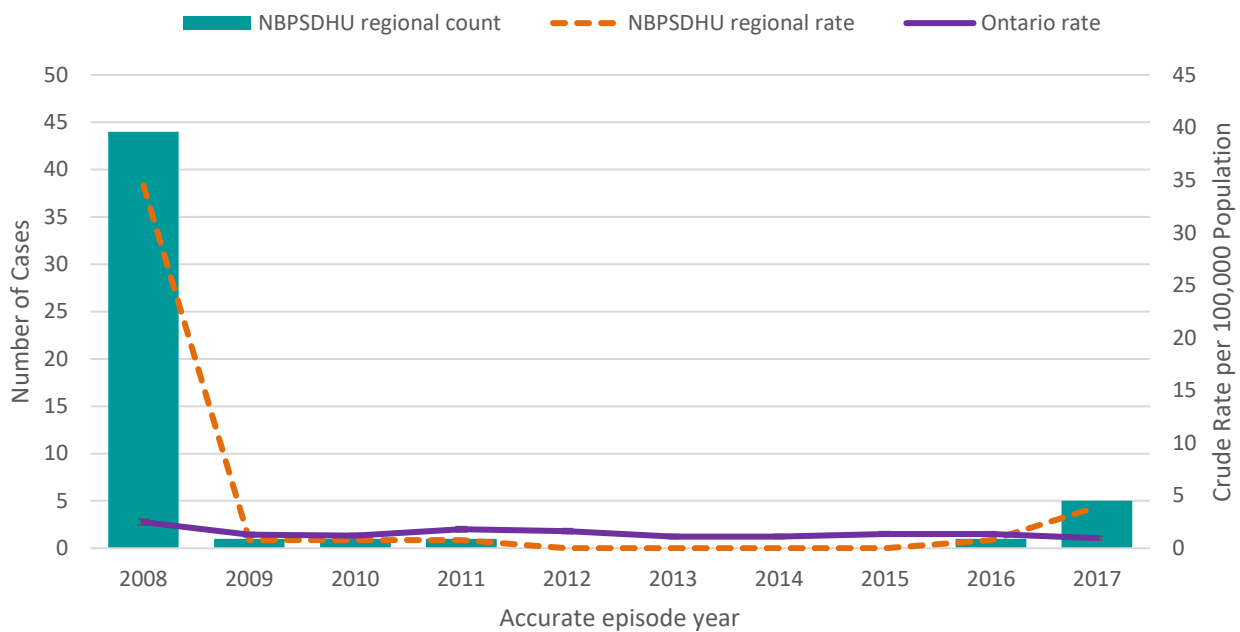


Table 4: Number and Crude Rate per 100,000 Population of Confirmed and Probable Verotoxin-producing *E. Coli* cases, by Region, 2008-2017

| Accurate episode year | NBPSDHU Region: Number of Cases | NBPSDHU Region: Rate per 100,000 Population | Ontario: Rate per 100,000 Population |
|-----------------------|---------------------------------|---|--------------------------------------|
| 2008                  | 44                              | 34.5  | 2.5                                  |
| 2009                  | 1                               | 0.8   | 1.3                                  |
| 2010                  | 1                               | 0.8   | 1.2                                  |
| 2011                  | 1                               | 0.8   | 1.8                                  |
| 2012                  | 0                               | 0.0   | 1.6                                  |
| 2013                  | 0                               | 0.0   | 1.1                                  |
| 2014                  | 0                               | 0.0   | 1.1                                  |
| 2015                  | 0                               | 0.0   | 1.3                                  |
| 2016                  | 1                               | 0.8   | 1.3                                  |
| 2017                  | 5                               | 3.9   | 1.0                                  |

Antimicrobial and antidiarrheal medications are not recommended for people with diarrhea caused by verotoxin/shiga toxin-producing *E. coli* infections, including *E. coli* O157, as this may increase the risk for hemolytic uremic syndrome (HUS).<sup>10,11</sup> Features of HUS include hemolytic anemia, thrombocytopenia and acute renal dysfunction.<sup>11</sup>

## Counts and Incidence Rates of Diseases of Public Health Significance

Table 5. Number of Cases and Incidence Rates of Diseases of Public Health Significance†, NBPSDHU Region and Ontario, 2017

| Disease  | NBPSDHU Region: Number of Cases | NBPSDHU Region: Rate per 100,000 Population | Ontario: Number of Cases | Ontario Region: Rate per 100,000 Population |
|--|---------------------------------|---|--------------------------|---|
| AIDS   | 2                               | 1.6   | 70                       | 0.5   |
| Campylobacter <sup>Δ</sup>                           | 23                              | 18.0  | 3474                     | 24.8  |
| Chlamydia  | 391                             | 305.8                                       | 44660                    | 319.4                                       |
| Cryptosporidiosis <sup>Δ</sup>                       | 3                               | 2.3   | 391                      | 2.8   |
| Cyclosporiasis <sup>Δ</sup>                          | 2                               | 1.6   | 292                      | 2.1   |
| Food poisoning <sup>Δ</sup>                          | 1                               | 0.8   | 74                       | 0.5   |
| Giardiasis <sup>Δ</sup>                              | 15                              | 11.7  | 1416                     | 10.1  |
| Gonorrhoea   | 33                              | 25.8(↓)                                     | 7843                     | 56.1  |
| Group A Streptococcal Disease, invasive <sup>Δ</sup> | 5                               | 3.9   | 933                      | 6.7   |
| Hepatitis A <sup>Δ</sup>                             | 1                               | 0.8   | 126                      | 0.9   |
| Hepatitis C  | 84                              | 65.7(↑)                                     | 4784                     | 34.2  |
| HIV  | 2                               | 1.6   | 844                      | 6.0   |
| Influenza  | 198                             | 154.8(↑)                                    | 11911                    | 85.2  |
| Lyme disease <sup>Δ</sup>                            | 2                               | 1.6(↓)                                      | 1017                     | 7.3   |
| Meningitis <sup>Δ</sup>                              | 9                               | 7.0(↑)                                      | 341                      | 2.4   |
| Mumps <sup>Δ</sup>                                   | 2                               | 1.6   | 260                      | 1.9   |
| Pertussis <sup>Δ</sup>                               | 21                              | 16.4(↑)                                     | 585                      | 4.2   |
| Salmonellosis <sup>Δ</sup>                           | 36                              | 28.2  | 2752                     | 19.7  |
| Shigellosis <sup>Δ</sup>                             | 1                               | 0.8   | 313                      | 2.2   |
| <i>Streptococcus pneumoniae</i>                      | 14                              | 10.9  | 1142                     | 8.2   |
| Syphilis, infectious                                 | 3                               | 2.3(↓)                                      | 1600                     | 11.4  |
| Syphilis, other                                      | 3                               | 2.3   | 748                      | 5.3   |
| Tuberculosis   | 1                               | 0.8(↓)                                      | 677                      | 4.8   |
| Tuberculosis, Latent Infection (LTBI)*               | 38                              | 29.7  | -                        | -   |
| Verotoxin-producing <i>E. Coli</i> <sup>Δ</sup>      | 5                               | 3.9(↑)                                      | 134                      | 1.0   |
| Yersiniosis <sup>Δ</sup>                             | 5                               | 3.9   | 281                      | 2.0   |

† Counts and rates for diseases of public health significance were excluded from the table if there were no confirmed cases reported in 2017

Δ Counts include confirmed and probable cases to facilitate analyses of trends over time due to changes in provincial case definitions

\* Counts based on reported date, rather than accurate episode (symptom onset) date

(↑) Rate is significantly higher compared to the Ontario rate

(↓) Rate is significantly lower compared to the Ontario rate

## Data Sources

1. NBPSDHU LTBI counts: Integrated Public Information System (iPHIS), extracted on 2018 August 16.
2. NBPSDHU & Ontario counts: Public Health Ontario. Query: Case counts and Crude rates of diseases by disease, year, age group, and gender. Toronto, ON: Ontario Agency for Health Protection and Promotion; extracted on 2018 August 16.

## References

1. Ministry of Health and Long-Term Care. [Infectious Diseases Protocol Appendix A: Blastomycosis](#). 2018.
2. Ministry of Health and Long-Term Care. [Infectious Diseases Protocol Appendix A: Carbapenemase-producing Enterobacteriaceae \(CPE\) infection or colonization](#). 2018.
3. Ministry of Health and Long-Term Care. [Infectious Diseases Protocol Appendix A: Echinococcus Multilocularis](#). 2018.
4. Heymann, DL. *Control of Communicable Diseases Manual, 20<sup>th</sup> ed.* Washington, DC: American Public Health Association. 2015.
5. [Meningitis: Resources for health care professionals](#). Centers for Disease Control and Prevention. Updated: April 15, 2016
6. Ministry of Health and Long-Term Care. [Tuberculosis Program Guideline](#). 2018.
7. Canadian Thoracic Society of the Canadian Lung Association; Public Health Agency of Canada. [Canadian Tuberculosis Standards \(7<sup>th</sup> ed.\)](#). 2014.
8. Kwong JC, et al. [Ontario Burden of Infectious Disease Study](#). 2010.
9. Public Health Agency of Canada. [Public Health Notice – Outbreak of E. coli infections linked to romaine lettuce](#). Updated February 9, 2018.
10. Shane et al. Infectious Diseases Society of America clinical practice guidelines for the diagnosis and management of infectious diarrhea. *Clinical Infectious Diseases*. 2017; 65(12).
11. [E. Coli \(Escherichia coli\): Resources for clinicians and laboratories](#). Centers for Disease Control and Prevention. Updated: March 9, 2018.