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Tick-Borne Diseases in Ontario: An Update

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PHO Rounds: May 5, 2026

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Disclosure: Nothing to disclose.

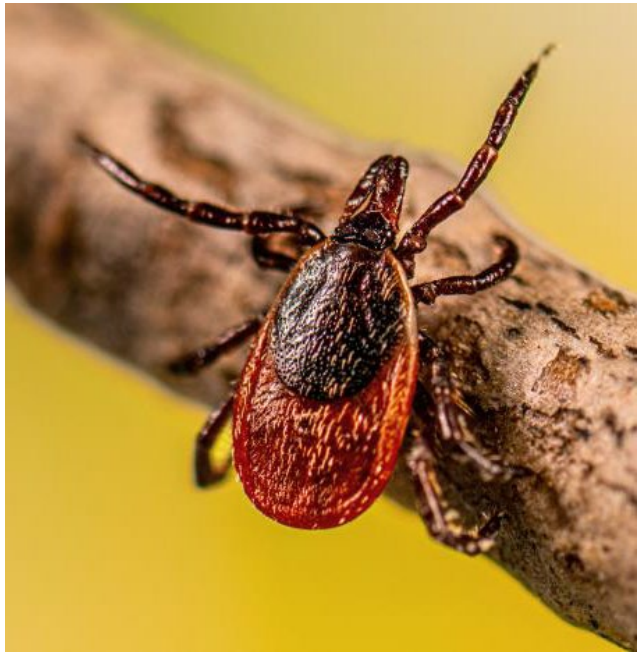
Learning Objectives

- Describe the clinical presentation and current epidemiology of Lyme disease, anaplasmosis, babesiosis and Powassan virus disease in Ontario.
- Identify the main laboratory testing methods and testing indications for Lyme disease, anaplasmosis, babesiosis, and Powassan virus disease in Ontario.
- Utilize the Ontario Vector-Borne Disease Tool to identify tick borne disease trends and geographic risk relevant to support evidence-based public health practice.

Clinical Presentation of Tick-Borne Diseases of Public Health Significance

Background

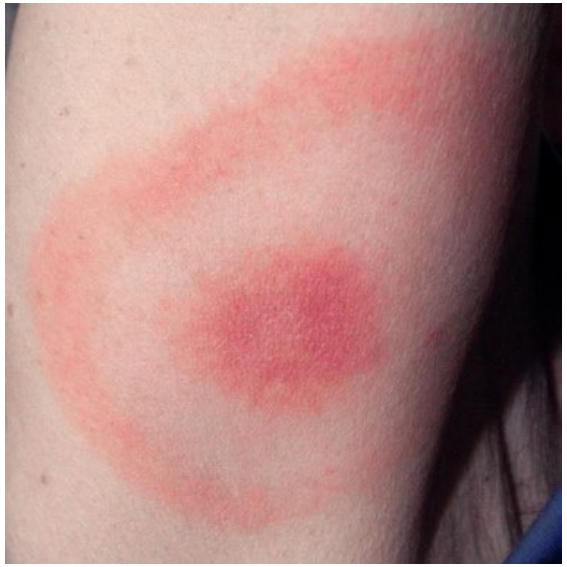
- Lyme disease has been a reportable disease of public health significance (DoPHS) in Ontario since 1991.
- Anaplasmosis, Babesiosis and Powassan virus infection were designated as DoPHS as of July 1, 2023.
- All four tick-borne DoPHS are transmitted by blacklegged ticks (*Ixodes scapularis)* in Ontario.
- It has been anticipated that the prevalence of tick-borne diseases will increase in Ontario due to warming temperatures and land use changes.



Source: Bishop L. CDC #28371. CDC/ Division of Vector-Borne Diseases Rickettsial Zoonoses Branch. Available from: https://wwwn.cdc.gov/phil/Details.aspx?pid=28371

Lyme Disease

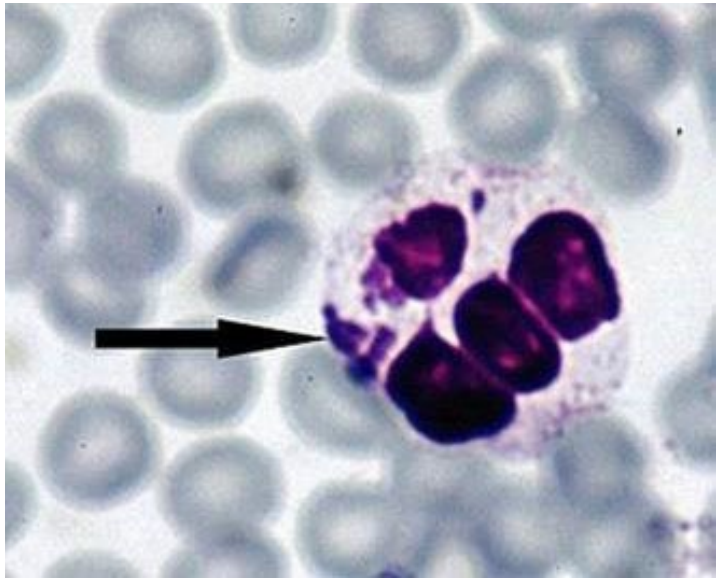
- **Etiologic agent:** helical bacterium *Borrelia burgdorferi sensu lato*[1]
- **Transmission:** Infected tick must be attached ≥ 24-36 hours
- **Early localized disease (3 to 30 days after bite) :**
  - Fever, generalized arthralgia and myalgia, headache, lymphadenopathy
  - Erythema migrans rash - Expanding rash >5 cm in 70-80% of those infected[2]
- **Early disseminated disease (less than 3 months):**
  - Fatigue, general weakness, multiple erythema migrans lesions
  - Peripheral/central nervous system involvement, cardiac symptoms
- **Late disseminated Lyme disease (more than 3 months):**
  - Musculoskeletal, cardiac, neurological manifestations



Source: Gathany J. CDC #9875. CDC/ James Gathany. Available from: https://wwwn.cdc.gov/phil/Details.aspx?pid=9875

Anaplasmosis

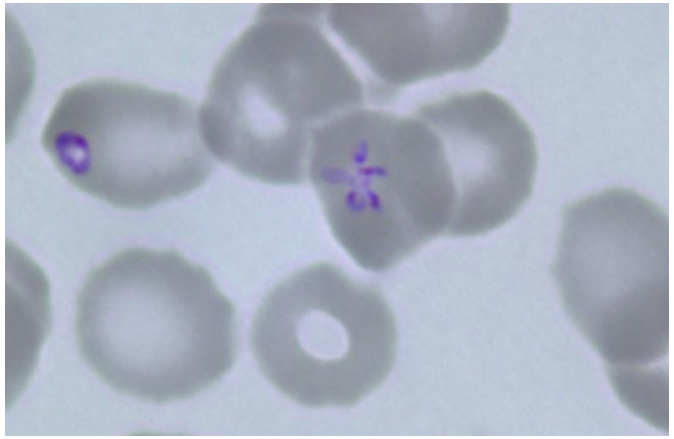
- **Etiologic agent:** intracellular bacterium *Anaplasma phagocytophilum*[3]
- **Transmission:** Infected tick attached for ≥ 12-24 hours
- **Incubation period:** typically 1-2 weeks (range 5-21 days)
- **Acute febrile illness (duration usually ≤ 2 weeks):**
  - Fever, fatigue, chills, severe headache, myalgia, abdominal pain, nausea, vomiting, diarrhea, and/or loss of appetite[4]
- **Severe or more prolonged illness** if delayed treatment, advanced age, co-infection, or impaired immune system
  - Can include respiratory failure, bleeding problems, organ failure, and/or death



Source: Walker AR. Anaplasma phagocytophilum. WikiMedia Commons; 2012. Available from: https://commons.wikimedia.org/wiki/File:Anaplasma-phagocytophilum-sheep.jpg. License: CC BY-SA 3.0

Babesiosis

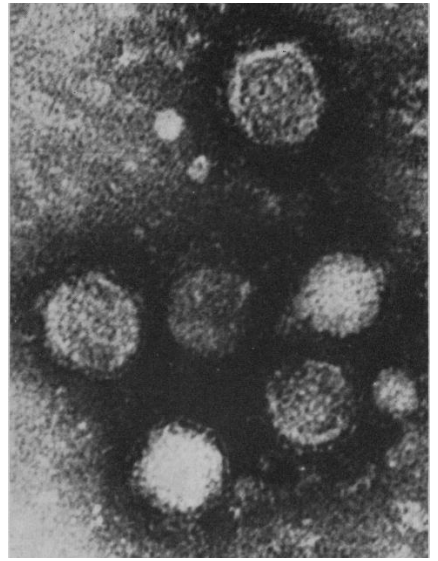
- **Etiologic Agent:** intracellular eukaryotic parasite *Babesia*[5]
- **Transmission:** Infected tick must be attached ≥ 36-48 hours
- **Incubation period:** 1-4 weeks after infected tick bite
- Many (20-50%) infections remain asymptomatic
- **Acute/subacute febrile illness** (duration usually ≤ 2-4 weeks)
  - Symptoms can include fever, chills, sweats, body aches, loss of appetite, or fatigue
  - Hemolytic anemia, jaundice and dark urine (haemoglobinuria)[6]
- **Severe, prolonged, or relapsing illness** if delayed treatment, older age, impaired immunity, or impaired splenic function
  - Can include, bleeding problems, organ failure, and/or death



Source: Ontario Agency For Health Protection and Promotion (Public Health Ontario), Laboratory Services.

Powassan Virus Disease

- **Etiologic Agent:** Powassan virus (*Orthoflavivirus powassanense*)[7]
- **Transmission:** may occur in as little as 15 minutes
- **Incubation period:** 1-5 weeks after infected tick bite
- **Acute prodromal phase** (duration usually 1-3 days)
  - Asymptomatic or mild to severe symptoms may occur such as fever, headache, vomiting, or weakness[8]
- **Neuroinvasive disease** (duration usually weeks)
  - May cause meningitis and/or encephalitis, as well as confusion, loss of coordination, difficulty speaking, paralysis or seizures
  - In severe disease, case fatality rate is 5-10% and of those that survive, ~50% may have long-term health problems



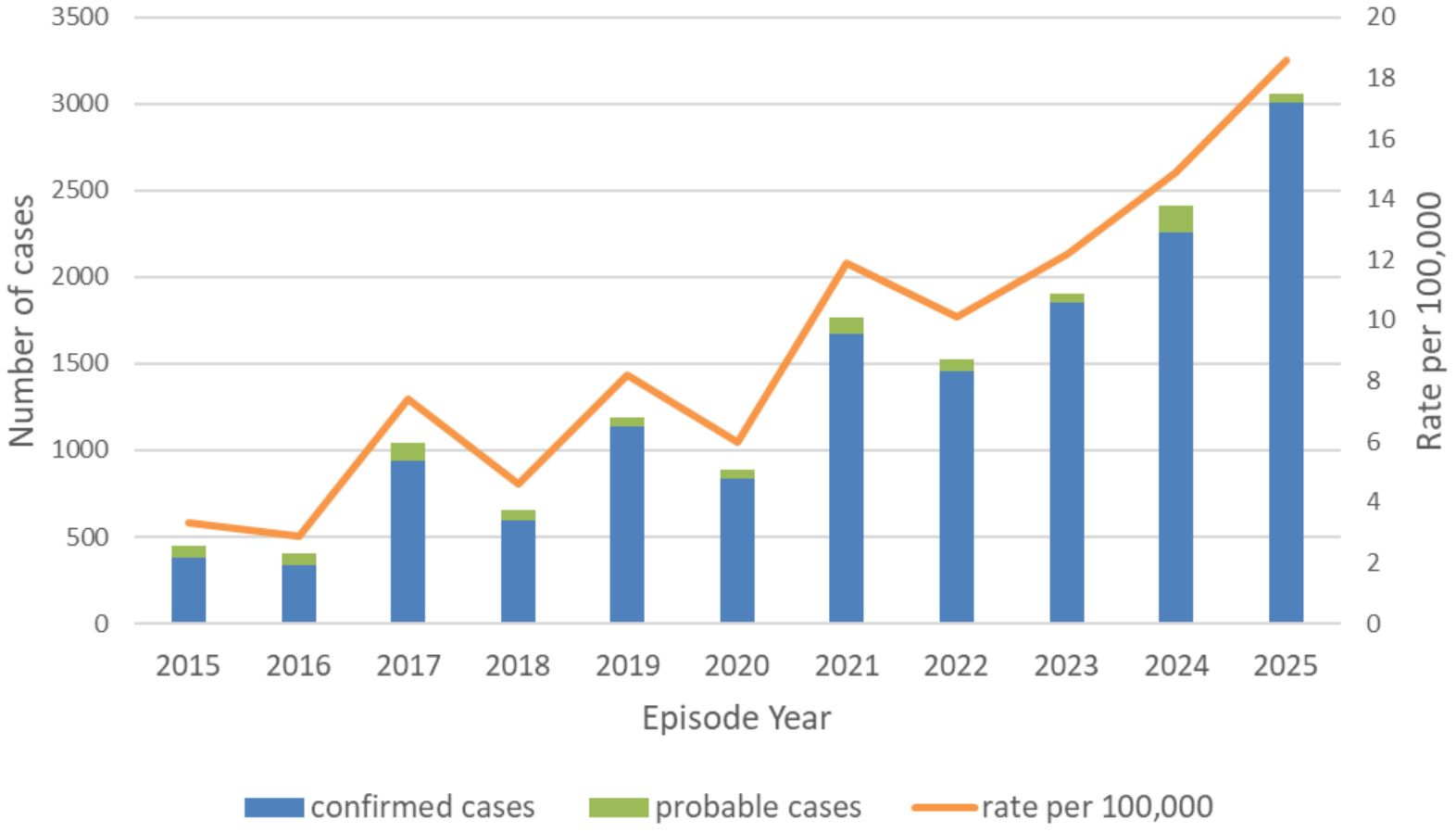
Source: Abdelwahab KS, Almeida JD, Doane FW, Mclean DM. Powassan virus: morphology and cytopathology. Can Med Assoc J. 1964;90(18):1068-72. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC1922667/figure/F5/ License: PMC Open Access Subset

Table 1: Summary of Tick-borne Diseases of Public Health Significance[9-15]

Consideration	Lyme Disease	Anaplasmosis	Babesiosis	Powassan Virus Disease
Tick Bite Risk	**≥ 24-36 hours**	≥ 12 to 24 hours	**≥ 36-48 hours**	≤ 15 minutes
Incubation	3 to 30 days	5 to 21 days	1 to 4 weeks (tick bite) or 1 to 24 weeks (transfusion)	1 to 5 weeks
Skin Lesions	**Erythema migrans** (70%)	Maculopapular (≤ 10%)	Petechiae (rare, if severe)	Morbiliform (rare)
Other Differential Symptoms	Arthralgia, headache, **lymphadenopathy, subacute or late manifestations**	Arthralgia, headache, rarely severe (e.g. multi-organ failure)	High fever, dark urine, severe if low immunity or low splenic function	**Encephalitis** after short prodrome (1-3 days) and 50% have sequelae
Routine Bloodwork	Usually normal in early localized cases	**Leukopenia** (> 45%), **thrombocytopenia** (>70%), **high transaminases** (>50%)	**Hemolytic anemia** (> 90%) **thrombocytopenia** (> 60%), **high transaminases** (> 70%)	Usually normal (< 15% thrombocytopenia)

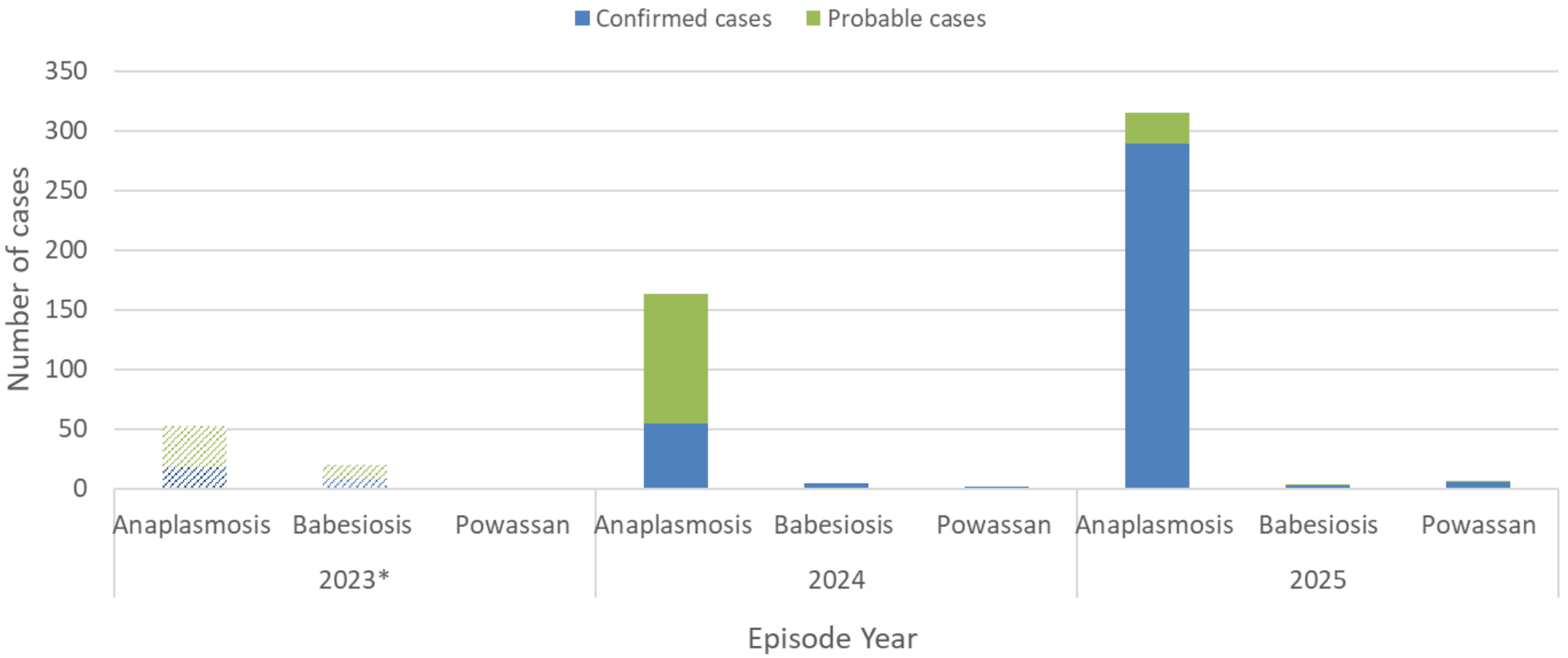
Epidemiology of Tick-Borne Diseases of Public Health Significance in Ontario

Figure 1: Number and Rate of Reported Cases of Lyme Disease in Ontario by Classification and Year (January 1, 2015 – December 31, 2025)



Source: iPHIS data as extracted by Ontario Agency for Health Protection and Promotion (Public Health Ontario). Number and rate of reported cases of Lyme disease in Ontario by classification and year (January 1, 2015 – December 31, 2025) [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [cited 2026 Apr 24].

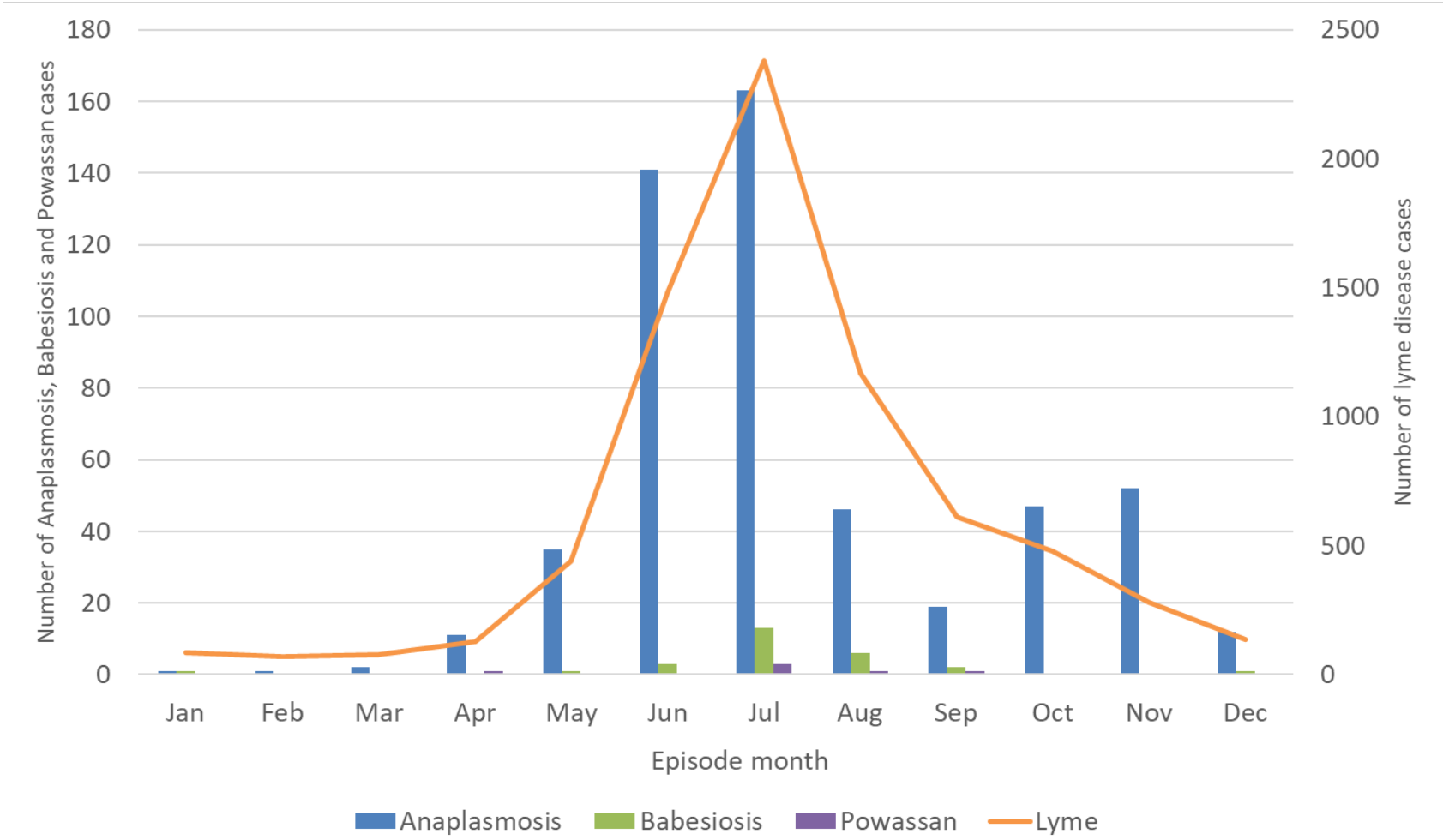
Figure 2: Number of Reported Cases of Anaplasmosis, Babesiosis and Powassan Virus in Ontario by Classification and Year (July 1, 2023 – December 31, 2025)



*2023 partial year

Source: iPHIS data as extracted by Ontario Agency for Health Protection and Promotion (Public Health Ontario). Number of reported cases of anaplasmosis, babesiosis and Powassan virus in Ontario by classification and year (July 1, 2023 – December 31, 2025) [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [cited 2026 Apr 24].

Figure 3: Seasonal Trends of Reportable Tick-borne Diseases in Ontario (July 1, 2023 – December 31 ,2025)

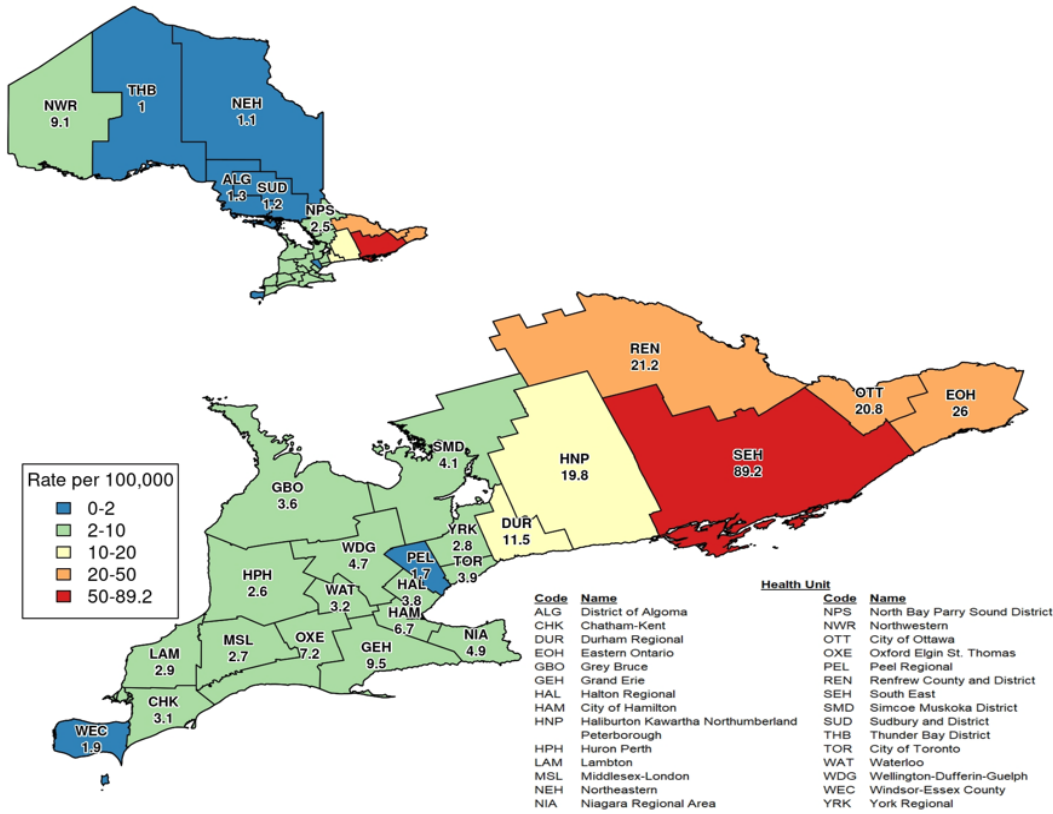


Source: iPHIS data as extracted by Ontario Agency for Health Protection and Promotion (Public Health Ontario). Seasonal trends of reportable tick-borne diseases in Ontario (July 1, 2023 – December 31, 2025) [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [cited 2026 Apr 24].

Figure 4: Rate of Cases per 100,000 Persons by Reporting Ontario Public Health Unit

Lyme Disease

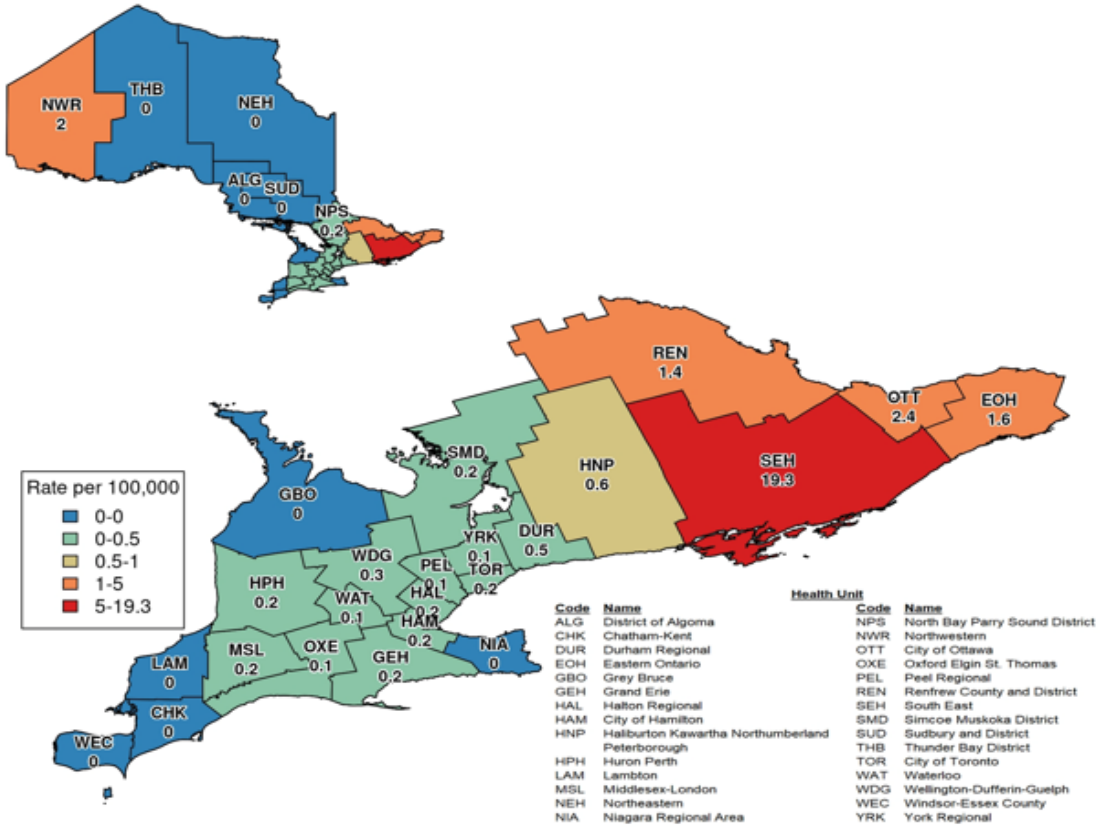
(January 1, 2015 – December 31, 2025)



Code	Name	Code	Name
ALG	District of Algoma	NPS	North Bay Parry Sound District
CHK	Chatham-Kent	NWR	Northwestern
DUR	Durham Regional	OTT	City of Ottawa
EOH	Eastern Ontario	OXE	Oxford Elgin St. Thomas
GBO	Grey Bruce	PEL	Peel Regional
GEH	Grand Erie	REN	Renfrew County and District
HAL	Halton Regional	SEH	South East
HAM	City of Hamilton	SMD	Simcoe Muskoka District
HNP	Haliburton Kawartha Northumberland Peterborough	SUD	Sudbury and District
		THB	Thunder Bay District
HPH	Huron Perth	TOR	City of Toronto
LAM	Lambton	WAT	Waterloo
MSL	Middlesex-London	WDG	Wellington-Dufferin-Guelph
NEH	Northeastern	WEC	Windsor-Essex County
NIA	Niagara Regional Area	YRK	York Regional

Anaplasmosis

(July 1, 2023 – December 31, 2025)



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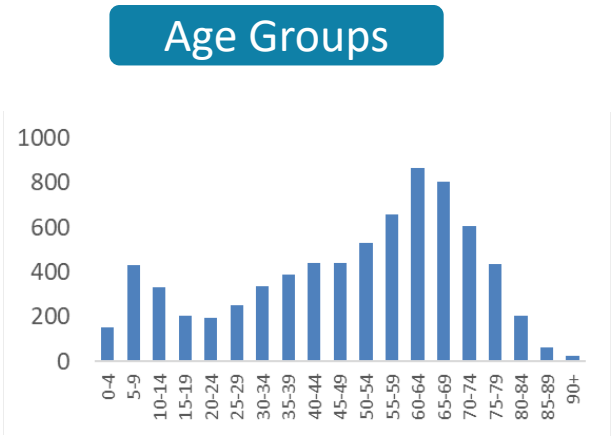
GBO	Grey Bruce	PEL	Peel Regional
GEH	Grand Erie	REN	Renfrew County and District
HAL	Halton Regional	SEH	South East
HAM	City of Hamilton	SMD	Simcoe Muskoka District
HNP	Haliburton Kawartha Northumberland Peterborough	SUD	Sudbury and District
		THB	Thunder Bay District
HPH	Huron Perth	TOR	City of Toronto
LAM	Lambton	WAT	Waterloo
MSL	Middlesex-London	WDG	Wellington-Dufferin-Guelph
NEH	Northeastern	WEC	Windsor-Essex County
NIA	Niagara Regional Area	YRK	York Regional

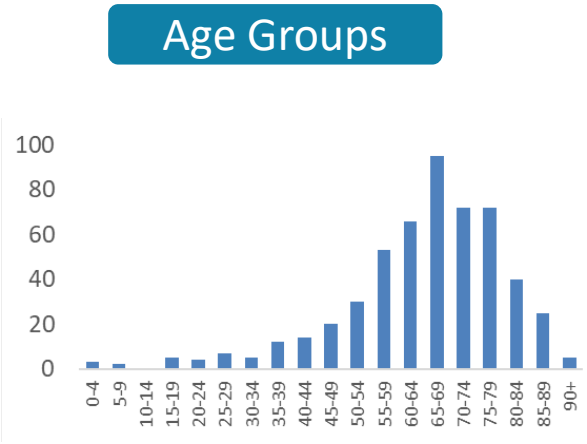
Source: iPHIS data as extracted by Ontario Agency for Health Protection and Promotion (Public Health Ontario). Rate of cases per 100,000 persons by reporting Ontario public health unit [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [cited 2026 Apr 24].

Figure 5: Characteristics of Reported Confirmed and Probable Tick-borne Disease Cases in Ontario (January 1, 2023 - December 31, 2025)

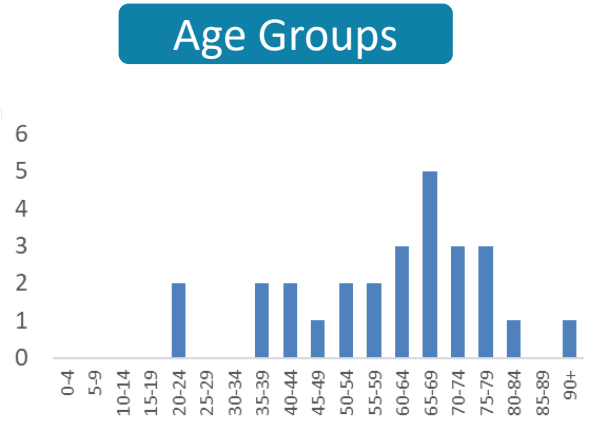
Lyme disease cases



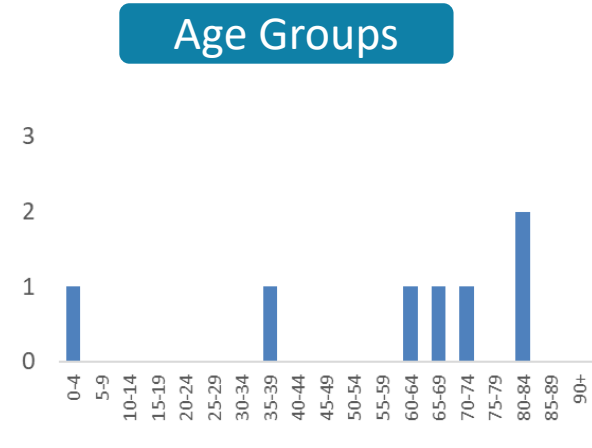
Anaplasmosis cases



Babesiosis cases



Powassan virus cases



Source: iPHIS data as extracted by Ontario Agency for Health Protection and Promotion (Public Health Ontario). Characteristics of reported confirmed and probable tick-borne disease cases in Ontario (January 1, 2023 - December 31, 2025) [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [cited 2026 Apr 24].

Figure 6: Characteristics of Reported Confirmed and Probable Tick-borne Disease Cases in Ontario (January 1, 2023 - December 31, 2025)

Lyme Disease

Babesiosis

Anaplasmosis

Powassan

Source: iPHIS data as extracted by Ontario Agency for Health Protection and Promotion (Public Health Ontario). Characteristics of reported confirmed and probable tick-borne disease cases in Ontario (January 1, 2023 - December 31, 2025) [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [cited 2026 Apr 24].

Epidemiology - Summary

- The incidence of Lyme disease in Ontario continues to increase.
- Since becoming reportable three years ago, the incidence of anaplasmosis has increased.
- Tick-borne diseases in Ontario show strong seasonality, with more than 80% of all four reportable tick-borne disease cases have onset dates between May and October.
- The highest rates of Lyme disease, anaplasmosis and babesiosis have been reported in the Southeast Public Health Unit compared with other regions. This coincides with areas of established blacklegged tick populations.

Laboratory Testing for Tick-Borne Diseases of Public Health Significance

Testing Recommendations[9-18]	Antibody (i.e., serology)	PCR (i.e., NAAT)	Microscopy (i.e., smears)
No signs/symptoms (asymptomatic)	None	None	None

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No signs/symptoms (asymptomatic)	None	None	None
Early localized Lyme disease (single typical erythema migrans lesion)	None	None	None

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No signs/symptoms (asymptomatic)	None	None	None
Early localized Lyme disease (single typical erythema migrans lesion)	None	None	None
Early disseminated or late Lyme disease (e.g., multiple erythema migrans lesions, meningitis, palsies, radiculopathies, neuropathies, carditis, heart block, conjunctivitis, retinal vasculitis, uveitis, lymphocytoma, arthritis, encephalomyelitis, acrodermatitis chronica atrophicans)	**All cases:** **serum** (repeat 2-4 weeks later if negative) **If meningitis or encephalomyelitis**: **serum** and **CSF**	**If arthritis:** **synovial fluid**	None

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No signs/symptoms (asymptomatic)	None	None	None
Early localized Lyme disease (single typical erythema migrans lesion)	None	None	None
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Anaplasmosis (acute febrile illness with cytopenias and/or high transaminases)	**If PCR negative:** **acute and convalescent sera** (2-4 weeks later)	**All cases**: **whole blood (EDTA)**	**If offered by lab:** **whole blood (EDTA)**

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No signs/symptoms (asymptomatic)	None	None	None
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Anaplasmosis (acute febrile illness with cytopenias and/or high transaminases)	**If PCR negative:** **acute and convalescent sera** (2-4 weeks later)	**All cases**: **whole blood (EDTA)**	**If offered by lab:** **whole blood (EDTA)**
Babesiosis (acute febrile illness with hemolytic anemia, cytopenias, and/or high transaminases)	None	**If microscopy repeatedly negative**: **whole blood (EDTA)**	**All cases**: **whole blood (EDTA)** (repeat 1-2 days later if negative)

Testing Recommendations[9-18]	Antibody (i.e., serology)	PCR (i.e., NAAT)	Microscopy (i.e., smears)
No signs/symptoms (asymptomatic)	None	None	None
Early localized Lyme disease (single typical erythema migrans lesion)	None	None	None
Early disseminated or late Lyme disease (e.g., multiple erythema migrans lesions, meningitis, palsies, radiculopathies, neuropathies, carditis, heart block, conjunctivitis, retinal vasculitis, uveitis, lymphocytoma, arthritis, encephalomyelitis, acrodermatitis chronica atrophicans)	**All cases:** serum (repeat 2-4 weeks later if negative) **If meningitis or encephalomyelitis**: serum and CSF	**If arthritis:** synovial fluid	None
Anaplasmosis (acute febrile illness with cytopenias and/or high transaminases)	**If PCR negative:** acute and convalescent sera (2-4 weeks later)	**All cases:** whole blood (EDTA)	**If offered by lab:** whole blood (EDTA)
Babesiosis (acute febrile illness with hemolytic anemia, cytopenias, and/or high transaminases)	None	**If microscopy repeatedly negative**: whole blood (EDTA)	**All cases**: whole blood (EDTA) (repeat 1-2 days later if negative)
Powassan virus disease (acute prodromal febrile illness followed by meningoencephalitis)	**All cases:** acute and convalescent sera (2-4 weeks later)	**If impaired immune system**: whole blood and CSF	None

General Considerations for Tick-Borne Disease Testing[9-18]

- Testing is not needed if the patient has no signs/symptoms.
- Testing is not needed if the patient has a typical erythema migrans lesion (clinical diagnosis and management should be considered).
- Abnormal routine blood work (e.g., complete blood count, liver function tests) can help raise the index of suspicion for diseases other than Lyme.
- Serology is often negative during the acute phase of illness.
- Serology may cross-react with other infections or non-specific antibodies.
- Serology may remain positive for years after the infection has resolved.
- Empiric management should be considered pending test results.

Table 2: Summary of Tick-borne Diseases of Public Health Significance[9-18]

Consideration	Lyme Disease	Anaplasmosis	Babesiosis	Powassan Virus Disease
Tick Bite Risk	**≥ 24-36 hours**	≥ 12 to 24 hours	**≥ 36-48 hours**	≤ 15 minutes
Incubation	3 to 30 days	5 to 21 days	1 to 4 weeks (tick bite) or 1 to 24 weeks (transfusion)	1 to 5 weeks
Skin Lesions	**Erythema migrans** (70%)	Maculopapular (≤ 10%)	Petechiae (rare, if severe)	Morbiliform (rare)
Other Differential Symptoms	Arthralgia, headache, **lymphadenopathy, subacute or late manifestations**	Arthralgia, headache, rarely severe (e.g. multi-organ failure)	High fever, dark urine, severe if low immunity or low splenic function	**Encephalitis** after short prodrome (1-3 days) and 50% have sequelae
Routine Bloodwork	Usually normal in early localized cases	**Leukopenia** (> 45%), **thrombocytopenia** (>70%), **high transaminases** (>50%)	**Hemolytic anemia** (> 90%) **thrombocytopenia** (> 60%), **high transaminases** (> 70%)	Usually normal (< 15% thrombocytopenia)
Microbiological Tests	**Early localized:** none **Other presentations:** **serology**	**Acute illness:** **PCR** +/- **serology** (paired)	**Acute or relapsing illness:** **microscopy** +/- **PCR**	**Encephalitic stage:** **serology** (paired) **Impaired immune system**: **serology** (paired) + **PCR**
Main Treatment Options	Doxycycline, amoxicillin, cefuroxime, or ceftriaxone	Doxycycline	Atovaquone + azithromycin, or clindamycin + quinine	None (supportive)

Figure 7: *Anaplasma* Test Positivity from Symptom Onset[9-18]

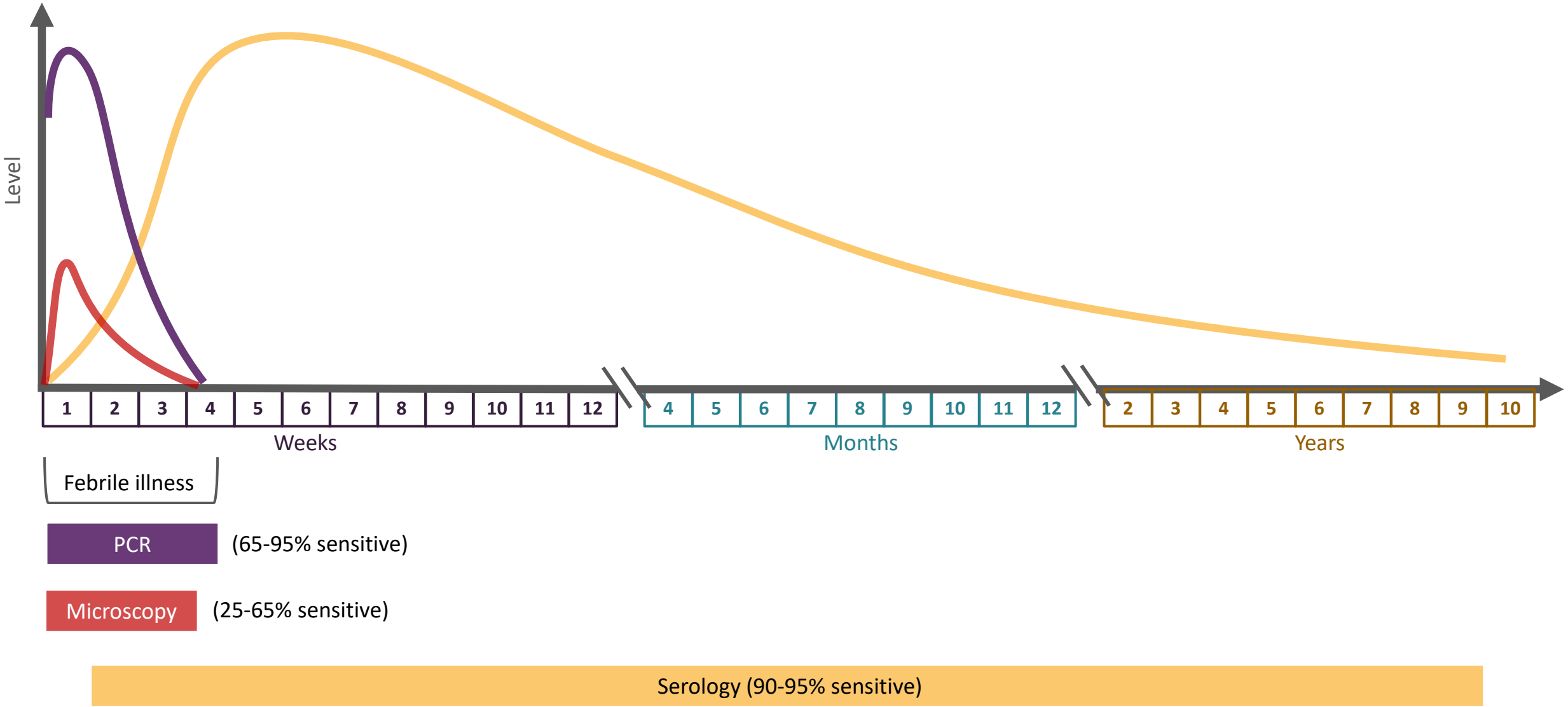


Figure 8: More than 75% of *Anaplasma* Samples Received at PHO were Collected within 2 weeks of Symptom Onset

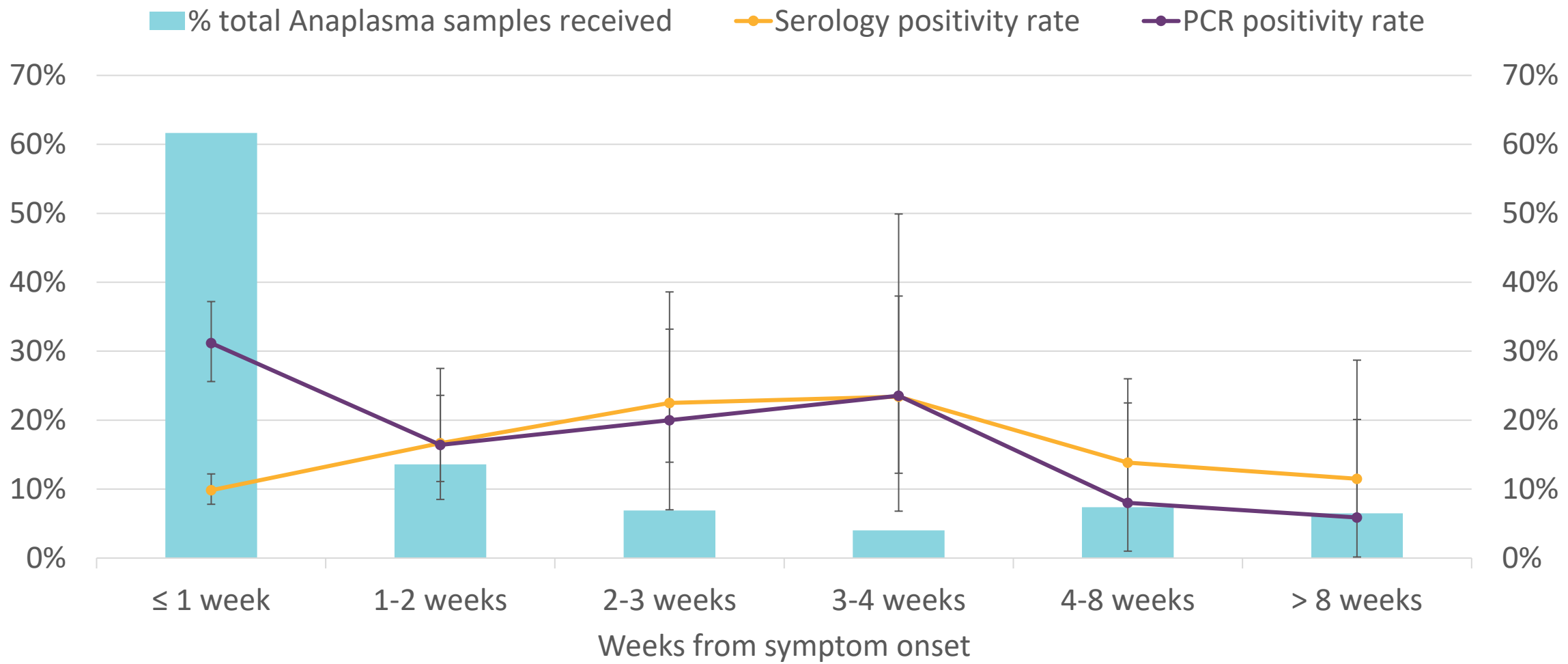
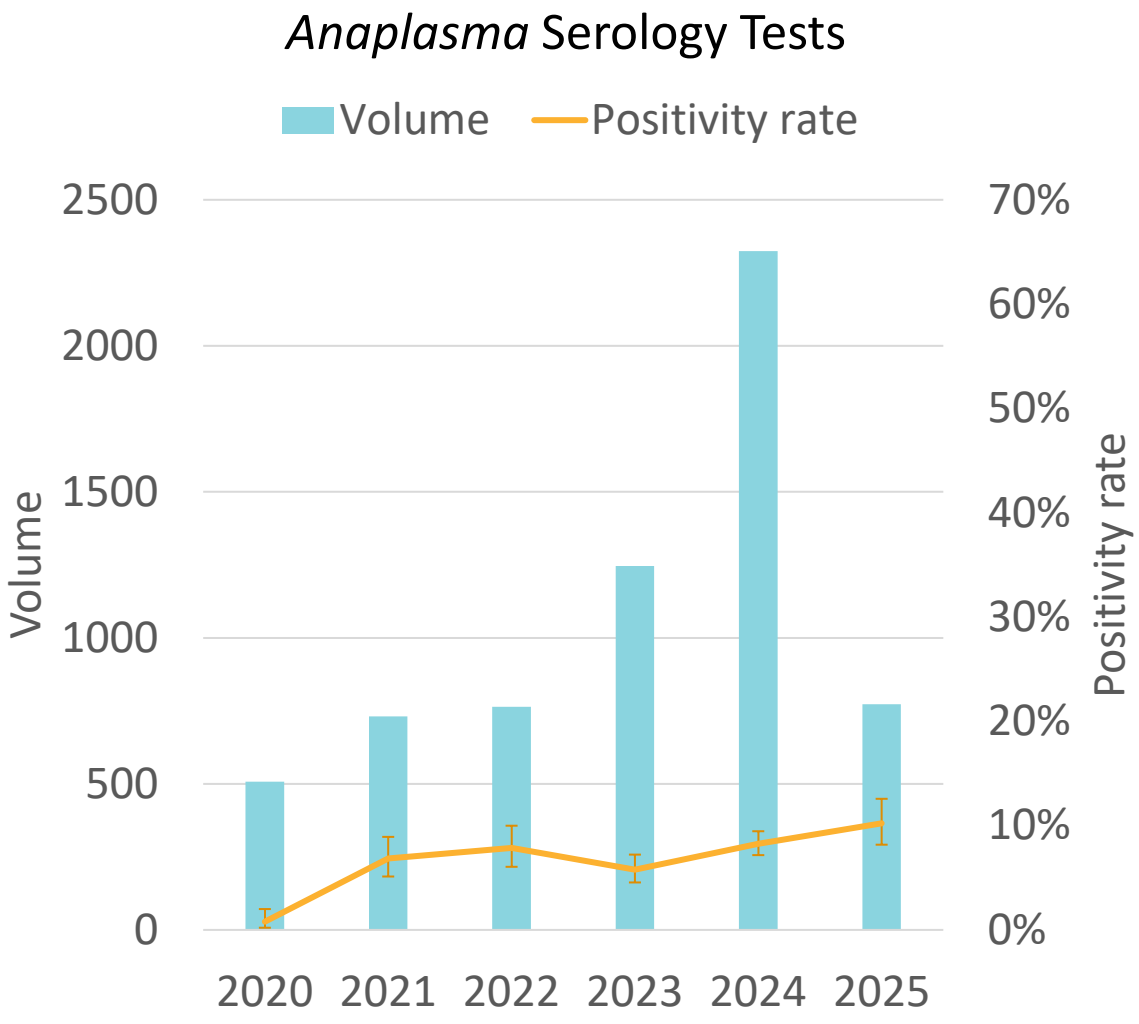


Figure 9: After the inclusion of Anaplasmosis as a reportable disease in 2023, serology requests at PHO doubled but PCR requests remained comparatively very low



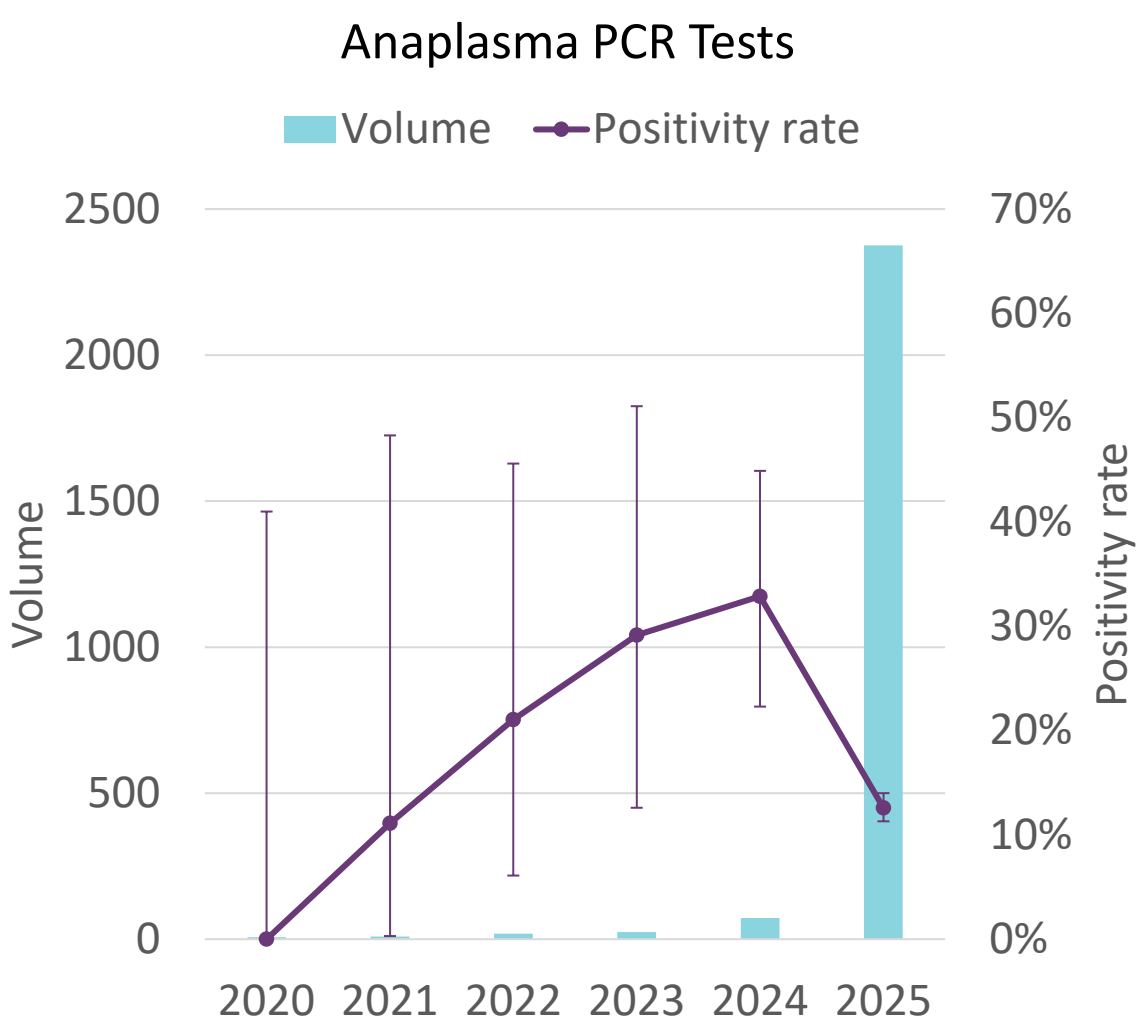
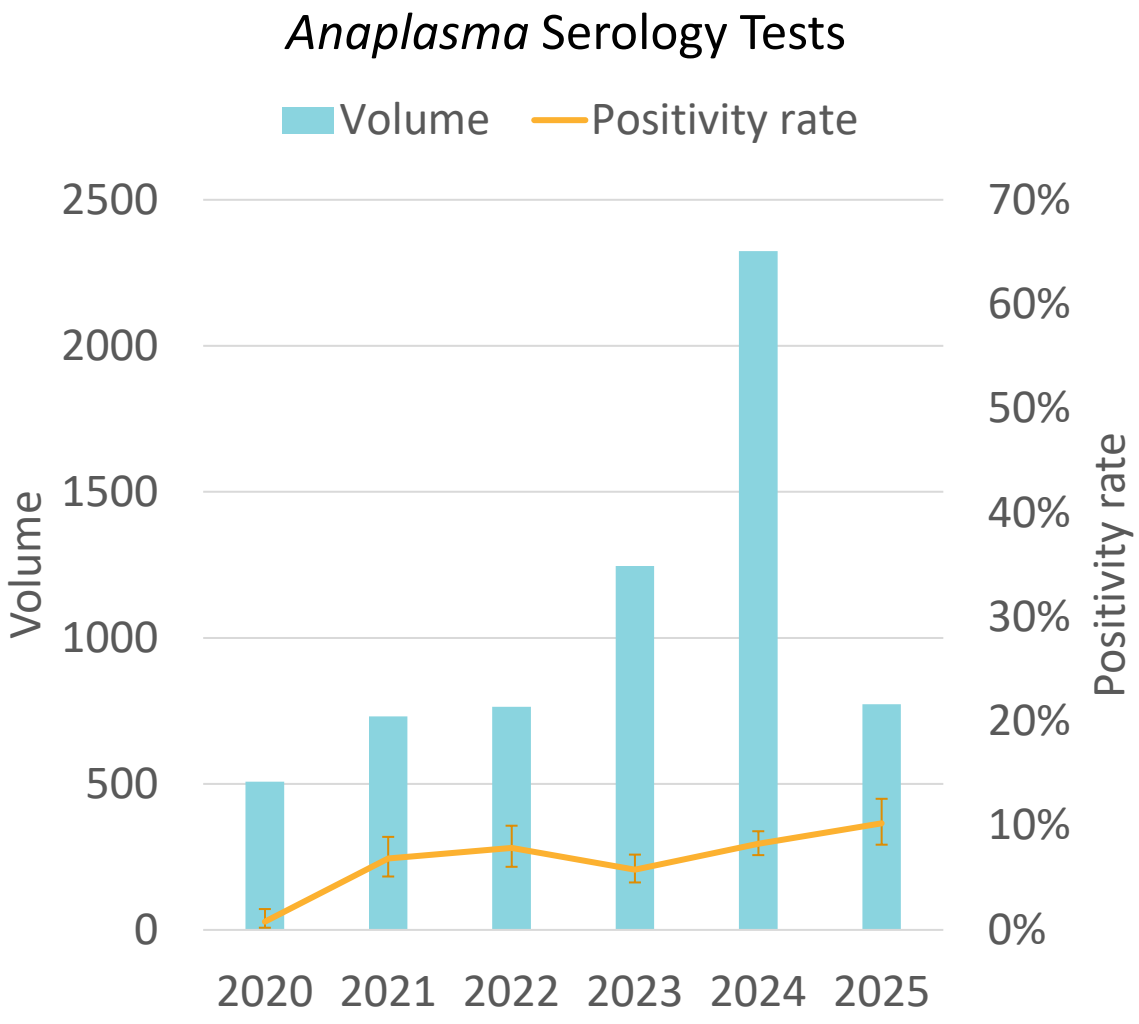
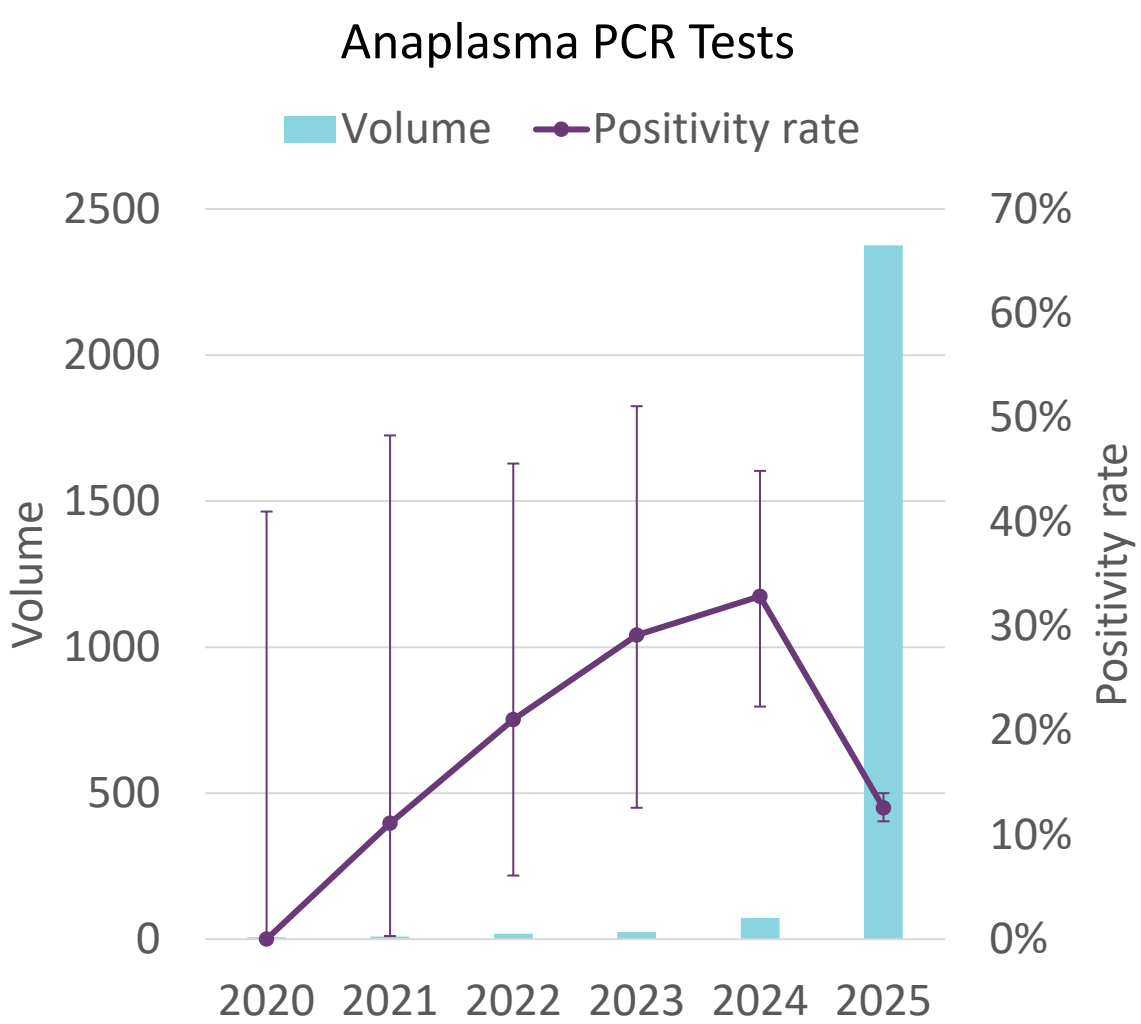


Figure 10: Since July 2025, all first-time *Anaplasma* requests, including one-off serology samples, have been automatically converted to PCR instead of serology





One-off Serology Submissions are Not Useful for *Anaplasma*[9-18]

- Serology sensitivity is low during the first week of symptom onset.
- Serology specificity is variable and may indicate remote exposure of no clinical significance unrelated to the patient's current illness.
- A significant (≥4-fold) change in antibody titres between two samples collected 2-4 weeks apart is the most useful way to interpret serology.
- At PHO, more than 90% of *Anaplasma* serology sample submissions are one-off submissions without any follow-up convalescent serum.
- Therefore, since 2025, serology is only performed if **both** acute **and convalescent (2-4 weeks later)** serum samples are submitted to PHO.
  - One-off serum samples are cancelled until receipt of a convalescent serum sample.

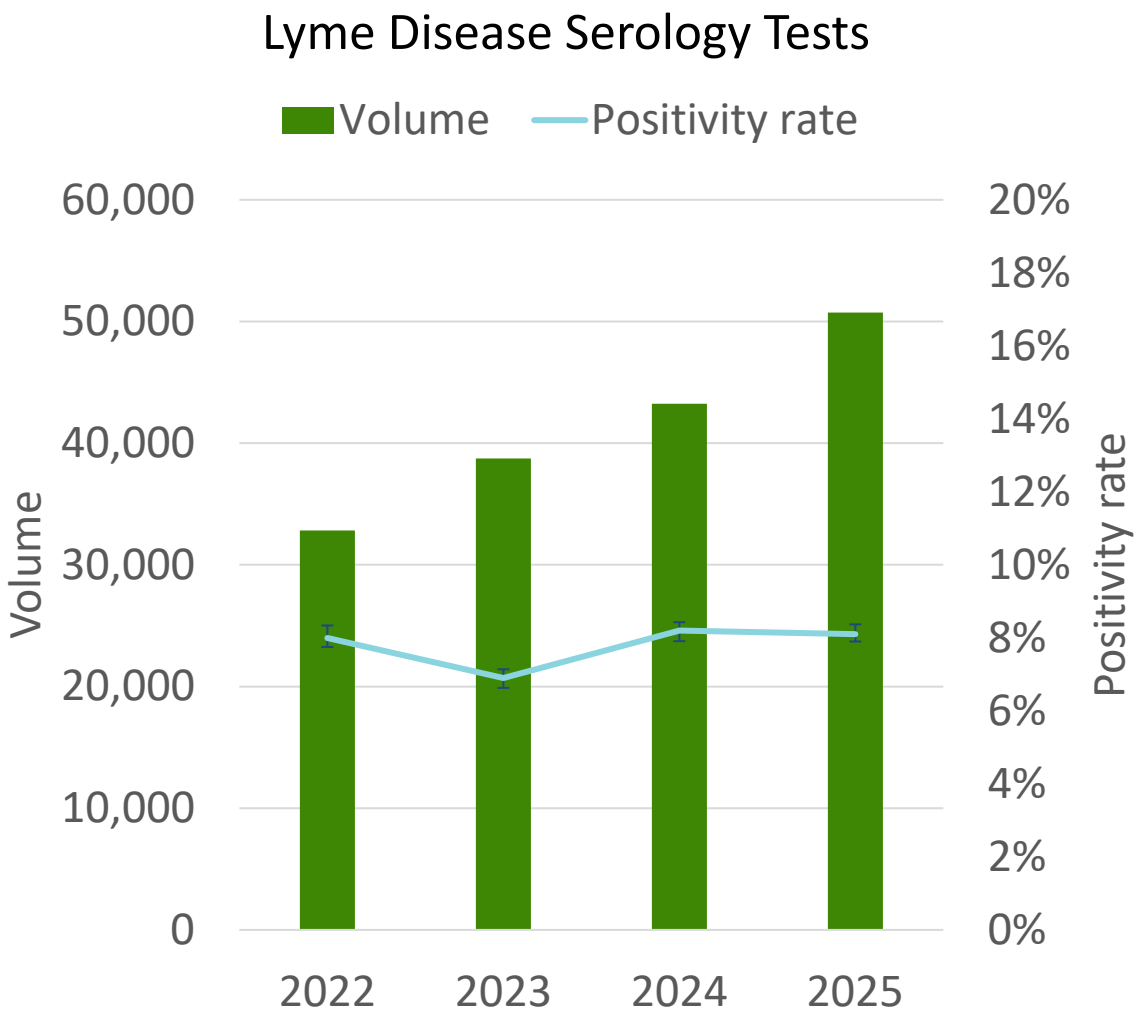
For PCR, Collection of Whole Blood is Preferred over Serum[9-18]

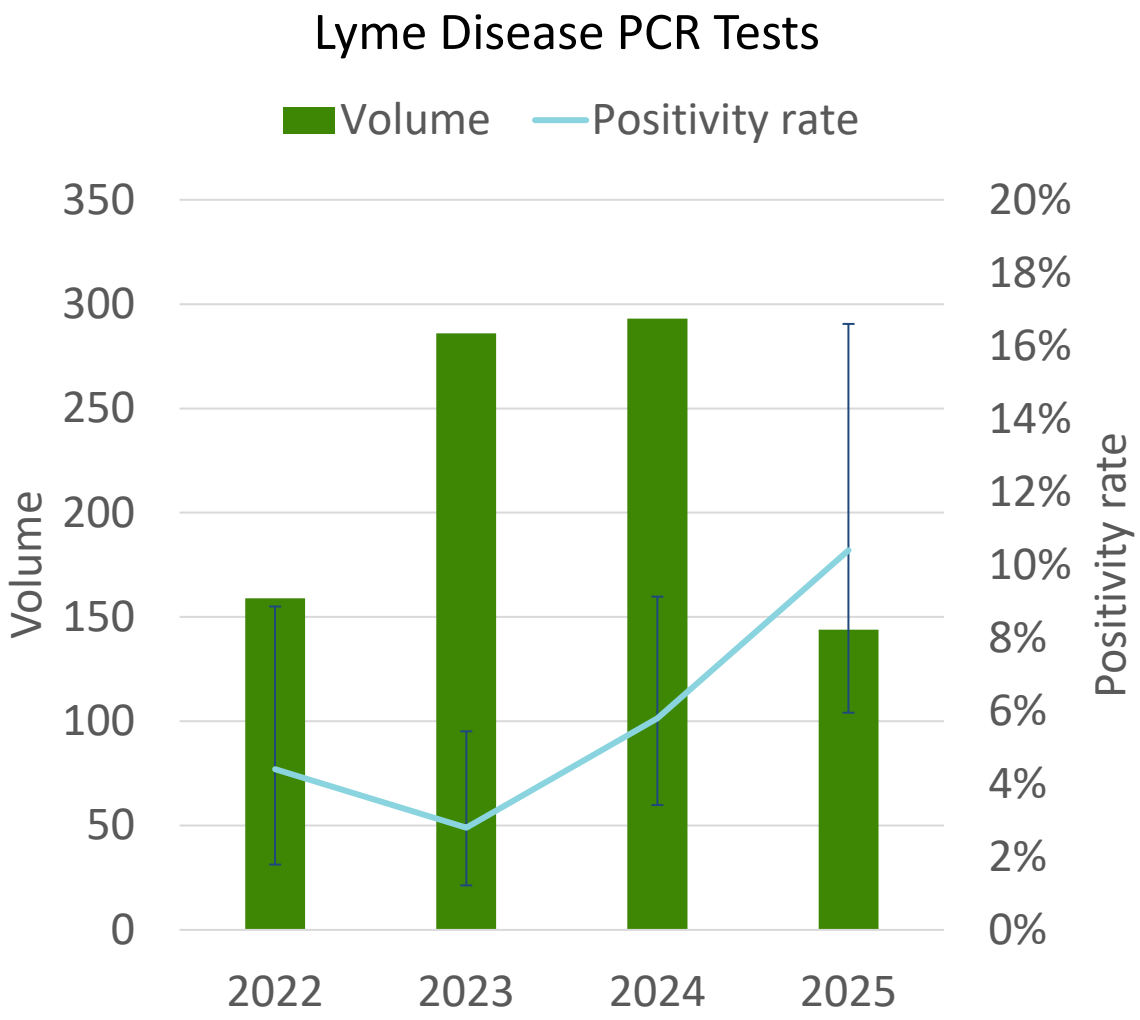
- *Anaplasma* is an intracellular bacteria primarily found in neutrophils.
- Serum contains 10 to 1,000-fold lower amount of *Anaplasma* DNA than whole blood.
- Can amount to a 5% to 15% reduction in clinical sensitivity when collecting serum for PCR as opposed to whole blood.
- While serum was previously accepted as a specimen type for PCR, **whole blood** (EDTA tube) is now required for PCR at PHO.
  - Serum samples will not be tested for PCR starting in the summer of 2026.

Summary of *Anaplasma* Testing Recommendations

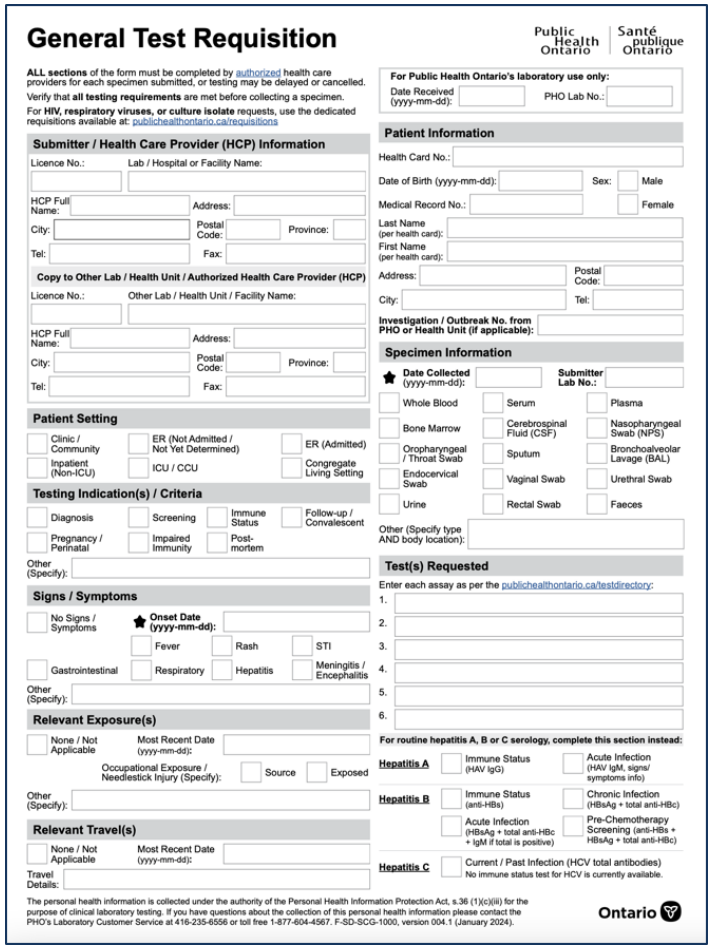
- During the acute febrile illness phase:
  - Collect EDTA whole blood for ***Anaplasma* PCR**
  - Collect 1st serum for ***Anaplasma* serology**
    (will not be tested for *Anaplasma* but will be stored for future use)
- During the convalescence phase, i.e., 2 to 4 weeks later:
  - If PCR was previously positive, do not perform additional testing
  - If PCR was previously negative, collect 2nd serum for ***Anaplasma* serology**
    (will be tested alongside the 1st serum sample)
- Check with your local lab if *Anaplasma* microscopy might also be available.

Figure 11: As opposed to *Anaplasma*, serology remains the main testing method for Lyme Disease





Complete All Requisition Fields Otherwise Testing May Be Cancelled



General Test Requisition

Public Health Ontario | Santé publique Ontario

ALL sections of the form must be completed by authorized health care providers for each specimen submitted, or testing may be delayed or cancelled.
Verify that **all testing requirements** are met before collecting a specimen.
For **HIV, respiratory viruses, or culture isolate** requests, use the dedicated requisitions available at: publichealthontario.ca/requisitions

For Public Health Ontario's laboratory use only:
Date Received (yyyy-mm-dd): | PHO Lab No.:

Submitter / Health Care Provider (HCP) Information
Licence No.: | Lab / Hospital or Facility Name:
HCP Full Name: | Address:
City: | Postal Code: | Province:
Tel: | Fax:

Copy to Other Lab / Health Unit / Authorized Health Care Provider (HCP)
Licence No.: | Other Lab / Health Unit / Facility Name:
HCP Full Name: | Address:
City: | Postal Code: | Province:
Tel: | Fax:

Patient Setting
Clinic / Community | ER (Not Admitted / Not Yet Determined) | ER (Admitted)
Inpatient (Non-ICU) | ICU / CCU | Congregate Living Setting

Testing Indication(s) / Criteria
Diagnosis | Screening | Immune Status | Follow-up / Convalescent
Pregnancy / Perinatal | Impaired Immunity | Post-mortem
Other (Specify):

Signs / Symptoms
No Signs / Symptoms | **Onset Date (yyyy-mm-dd):**
Fever | Rash | STI
Gastrointestinal | Respiratory | Hepatitis | Meningitis / Encephalitis
Other (Specify):

Relevant Exposure(s)
None / Not Applicable | Most Recent Date (yyyy-mm-dd):
Occupational Exposure / Needlestick Injury (Specify): | Source | Exposed
Other (Specify):

Relevant Travel(s)
None / Not Applicable | Most Recent Date (yyyy-mm-dd):
Travel Details:

Patient Information
Health Card No.:
Date of Birth (yyyy-mm-dd): | Sex: Male | Female
Medical Record No.:
Last Name (per health card):
First Name (per health card):
Address: | Postal Code:
City: | Tel:
Investigation / Outbreak No. from PHO or Health Unit (if applicable):

Specimen Information
Date Collected (yyyy-mm-dd): | **Submitter Lab No.:**
Whole Blood | Serum | Plasma
Bone Marrow | Cerebrospinal Fluid (CSF) | Nasopharyngeal Swab (NPS)
Oropharyngeal / Throat Swab | Sputum | Bronchoalveolar Lavage (BAL)
Endocervical Swab | Vaginal Swab | Urethral Swab
Urine | Rectal Swab | Faeces
Other (Specify type AND body location):

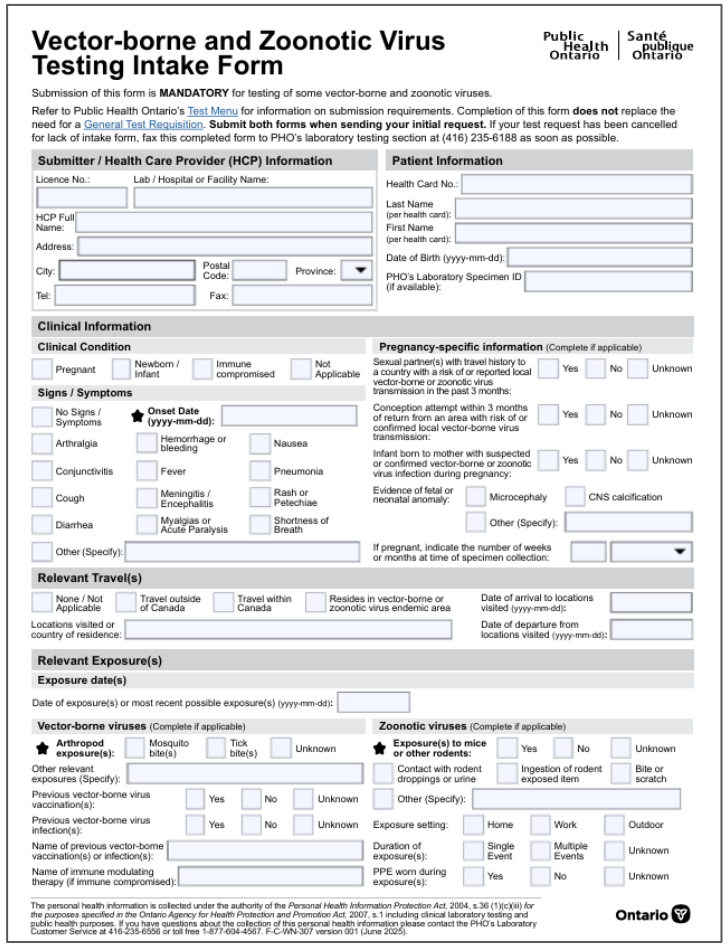
Test(s) Requested
Enter each assay as per the publichealthontario.ca/testdirectory:
1.
2.
3.
4.
5.
6.

For routine hepatitis A, B or C serology, complete this section instead:
Hepatitis A | Immune Status (HAV IgG) | Acute Infection (HAV IgM, signs/symptoms info)
Hepatitis B | Immune Status (anti-HBs) | Chronic Infection (HBsAg + total anti-HBc)
Acute Infection (HBsAg + total anti-HBc + IgM if total is positive) | Pre-Chemotherapy Screening (anti-HBs + HBsAg + total anti-HBc)
Hepatitis C | Current / Past Infection (HCV total antibodies) No immune status test for HCV is currently available.

The personal health information is collected under the authority of the Personal Health Information Protection Act, s.36 (1)(c)(iii) for the purpose of clinical laboratory testing. If you have questions about the collection of this personal health information please contact the PHO's Laboratory Customer Service at 416-235-6556 or toll free 1-877-604-4567. F-SD-SCG-1000, version 004.1 (January 2024).

Ontario

Always provide **exposure/travel** history and **symptom onset** date



Vector-borne and Zoonotic Virus Testing Intake Form

Public Health Ontario | Santé publique Ontario

Submission of this form is **MANDATORY** for testing of some vector-borne and zoonotic viruses.
Refer to Public Health Ontario's Test Menu for information on submission requirements. Completion of this form **does not** replace the need for a General Test Requisition. **Submit both forms when sending your initial request.** If your test request has been cancelled for lack of intake form, fax this completed form to PHO's laboratory testing section at (416) 235-6188 as soon as possible.

Submitter / Health Care Provider (HCP) Information
Licence No.: | Lab / Hospital or Facility Name:
HCP Full Name:
Address:
City: | Postal Code: | Province:
Tel: | Fax:

Patient Information
Health Card No.:
Last Name (per health card):
First Name (per health card):
Date of Birth (yyyy-mm-dd):
PHO's Laboratory Specimen ID (if available):

Clinical Information

Clinical Condition
Pregnant | Newborn / Infant | Immune compromised | Not Applicable

Signs / Symptoms
No Signs / Symptoms | **Onset Date (yyyy-mm-dd):**
Arthralgia | Hemorrhage or bleeding | Nausea
Conjunctivitis | Fever | Pneumonia
Cough | Meningitis / Encephalitis | Rash or Petechiae
Diarrhea | Myalgias or Acute Paralysis | Shortness of Breath
Other (Specify):

Pregnancy-specific information (Complete if applicable)
Sexual partner(s) with travel history to a country with a risk of or reported local vector-borne or zoonotic virus transmission in the past 3 months: Yes | No | Unknown
Conception attempt within 3 months of return from an area with risk of or confirmed local vector-borne virus transmission: Yes | No | Unknown
Infant born to mother with suspected or confirmed vector-borne or zoonotic virus infection during pregnancy: Yes | No | Unknown
Evidence of fetal or neonatal anomaly: Microcephaly | CNS calcification
Other (Specify):
If pregnant, indicate the number of weeks or months at time of specimen collection:

Relevant Travel(s)
None / Not Applicable | Travel outside of Canada | Travel within Canada | Resides in vector-borne or zoonotic virus endemic area
Locations visited or country of residence:
Date of arrival to locations visited (yyyy-mm-dd):
Date of departure from locations visited (yyyy-mm-dd):

Relevant Exposure(s)

Exposure date(s)
Date of exposure(s) or most recent possible exposure(s) (yyyy-mm-dd):

Vector-borne viruses (Complete if applicable)
Arthropod exposure(s): Mosquito bite(s) | Tick bite(s) | Unknown
Other relevant exposures (Specify):
Previous vector-borne virus vaccination(s): Yes | No | Unknown
Previous vector-borne virus infection(s): Yes | No | Unknown
Name of previous vector-borne vaccination(s) or infection(s):
Name of immune modulating therapy (if immune compromised):

Zoonotic viruses (Complete if applicable)
Exposure(s) to mice or other rodents: Yes | No | Unknown
Contact with rodent droppings or urine | Ingestion of rodent exposed item | Bite or scratch
Other (Specify):
Exposure setting: Home | Work | Outdoor
Duration of exposure(s): Single Event | Multiple Events | Unknown
PPE worn during exposure(s): Yes | No | Unknown

The personal health information is collected under the authority of the *Personal Health Information Protection Act*, 2004, s.36 (1)(c)(iii) *for the purposes specified in the Ontario Agency for Health Protection and Promotion Act*, 2007, s.1 including clinical laboratory testing and public health purposes. If you have questions about the collection of this personal health information please contact the PHO's Laboratory Customer Service at 416-235-6556 or toll free 1-877-604-4567. F-C-WN-307 version 001 (June 2025).

Ontario

If **Powassan virus disease** testing is requested, **also** complete the arbovirus intake form

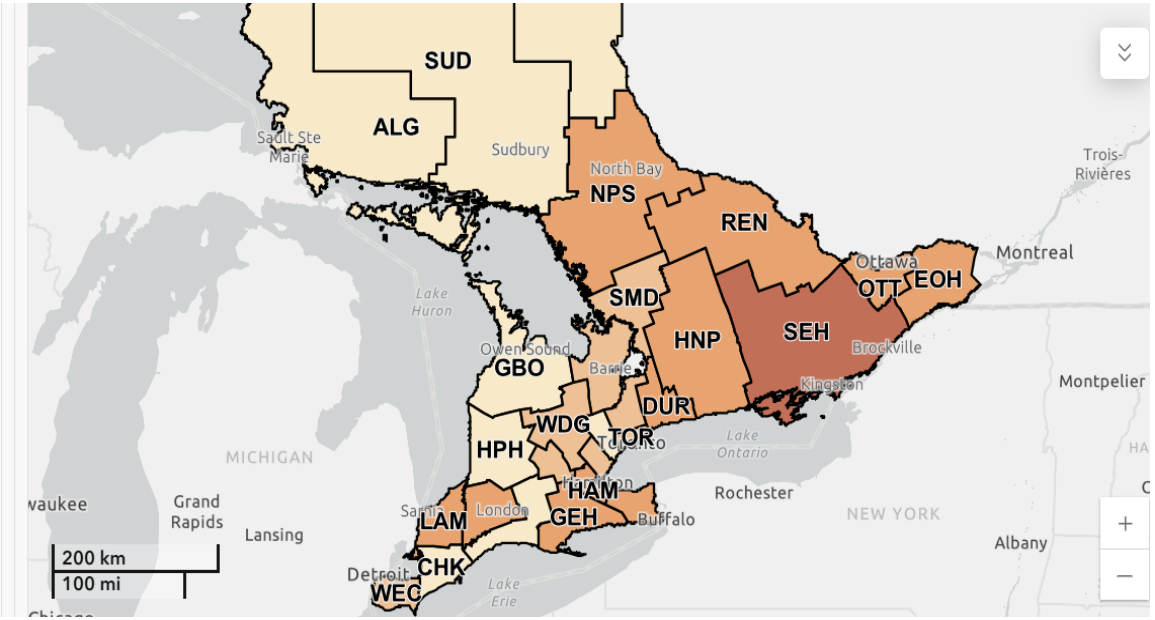
Source: Ontario Agency for Health Protection and Promotion (Public Health Ontario). General test requisition [Internet]. Toronto, ON: King's Printer for Ontario; 2025 [cited 2026 Apr 15]. Available from: https://www.publichealthontario.ca/-/media/Documents/Lab/general-test-requisition.pdf

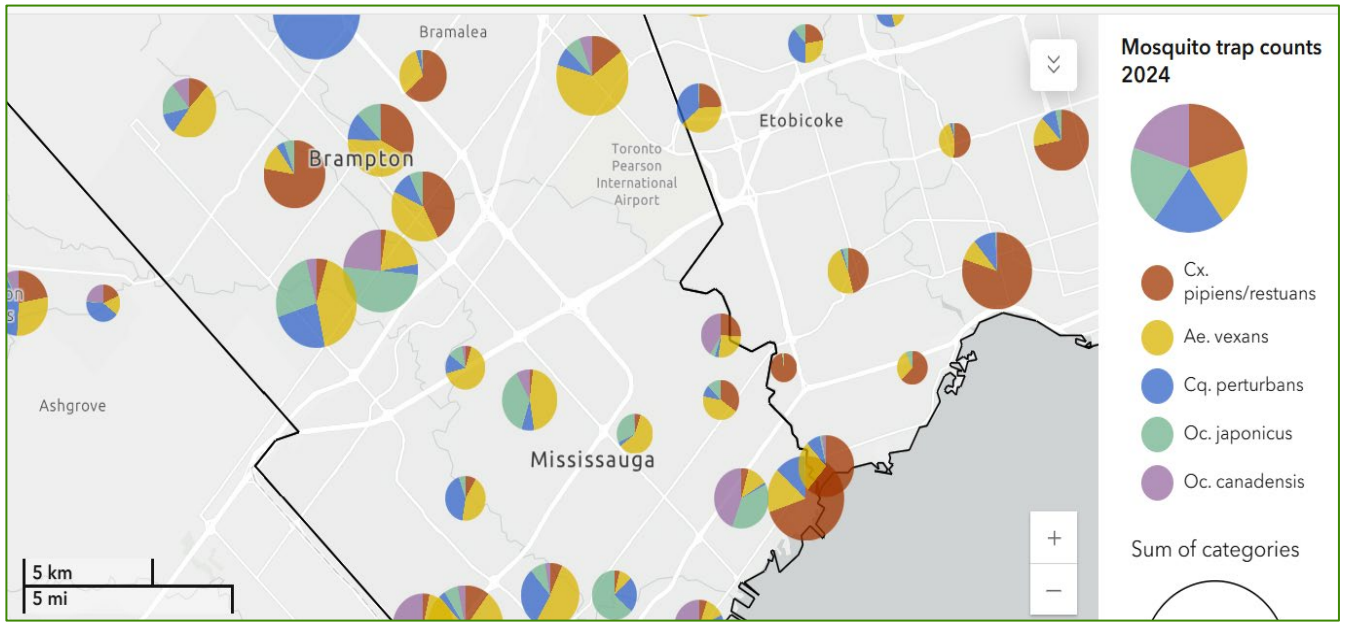
Source: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Vector-borne and zoonotic virus testing intake form [Internet]. Toronto, ON: King's Printer for Ontario; 2025 [cited 2026 Apr 15]. Available from: https://www.publichealthontario.ca/-/media/Documents/Lab/vector-borne-zoonotic-virus-testing-intake-form.pdf

Ontario Vector-borne Disease Tool and Prevention

Ontario Vector-Borne Disease Tool

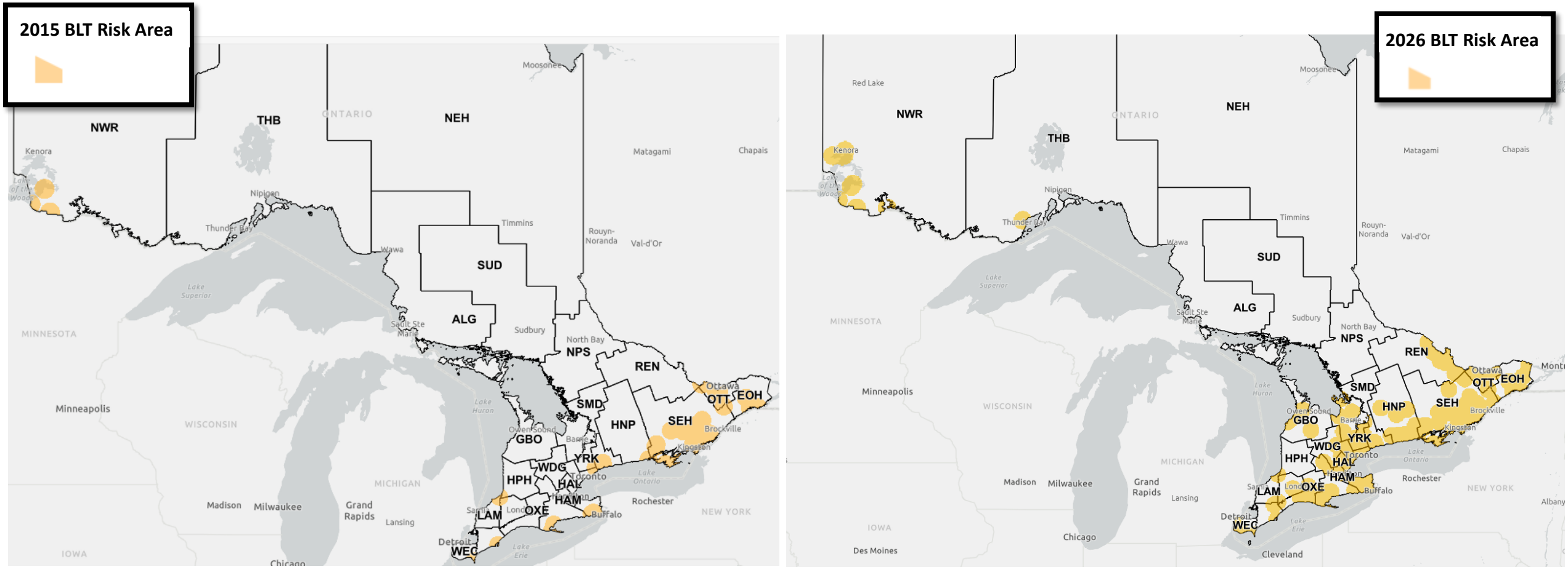
The Ontario Vector-Borne Disease (VBD) Tool is an interactive resource to explore trends in human cases for DoPHS, as well as surveillance data for mosquitoes, and blacklegged tick established risk areas.





Source: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Ontario vector-borne disease tool [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [cited 2026 May 5]. Available from: https://www.publichealthontario.ca/en/Data-and-Analysis/Infectious-Disease/VBD-Tool

Figure 12: Blacklegged Tick (Ixodes scapularis) Risk Areas in Ontario



Source: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Ontario vector-borne disease tool >> Figure 12: blacklegged tick (Ixodes scapularis) risk areas in Ontario [Internet]. Toronto, ON: King's Printer for Ontario; 2026 [modified 2026 Apr 26; cited 2026 May 5]. Available from: https://oahpp.maps.arcgis.com/apps/dashboards/bb2f1ae3ae754de5801142e3569f11bb

Prevention

- Preventing tick bites:
  - Cover up - wear light-coloured, long-sleeved shirts and pants to spot ticks more easily, tuck your shirt into your pants, and pull your socks over your pant legs.
  - Use insect repellent - containing DEET or icaridin to clothing and exposed skin .
  - Check for ticks after outdoor activity.
  - Reduce ticks around your home - mow the lawn often, remove leaf litter, brush and weeds, move children’s playground equipment away from wooded areas.
- Remove ticks carefully.
- Post-exposure prophylaxis available for Lyme disease.

Data Caveats

- Epidemiological data are based on information entered in the Ontario Ministry of Health (MOH) integrated Public Health Information System (iPHIS) database as of **April 24, 2026**
- While anaplasmosis, babesiosis and Powassan virus became reportable on July 1, 2023, this report includes cases from January 1, 2023 as illness onset occurred prior to July 1 for some cases.
- iPHIS is a dynamic disease reporting system that allows ongoing updates to previously entered data. As a result, data extracted from iPHIS represent a snapshot at the time of extraction and may differ from previous or subsequent reports
- These data only represent cases and case details reported to public health and recorded in iPHIS. As a result, all case counts are subject to varying degrees of underreporting due to a variety of factors, such as disease awareness and medical care seeking behaviours that may depend on severity of illness, clinical practices, and changes in laboratory testing and reporting behaviours.
- Cases are reported based on the Episode Date, which is an estimate of the onset date of disease for a case. In order to determine this date, the following hierarchy exists in iPHIS: Onset Date > Specimen Collection Date > Lab Test Date > Reported Date.
- Hospitalized cases were defined as those where an admission date was reported
- Fatal cases were determined based on a case outcome description of “Fatal” and the type of death not being reported as “Reportable disease was unrelated to cause of death.”

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2. Public Health Agency of Canada. Lyme disease: for health professionals [Internet]. Ottawa, ON: Government of Canada; 2025 [cited 2026 Apr 15]. Available from: https://www.canada.ca/en/public-health/services/diseases/lyme-disease/health-professionals-lyme-disease.html

3. Ontario. Ministry of Health. Ontario public health standards: requirements for programs, services and accountability: infectious diseases protocol [Internet]. Toronto, ON: King's Printer for Ontario; 2023 [cited 2026 Apr 15]. Appendix 1: case definitions and disease-specific information: disease: anaplasmosis. Available from: https://files.ontario.ca/moh-ophs-anaplasmosis-en-2023.pdf

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For More Information About This Presentation, Contact:

Contact communicable.diseasecontrol@oahpp.ca for more information.

For lab testing inquiries, contact customerservicecentre@oahpp.ca.

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