

<b>DATE:</b>	August 26, 2022
<b>TO:</b>	Health Alert Network
<b>FROM:</b>	Denise A. Johnson, M.D., FACOG, FACHE, Acting Secretary of Health
<b>SUBJECT:</b>	<b>Emerging Tickborne Disease Guidance in Pennsylvania</b>
<b>DISTRIBUTION:</b>	Statewide
<b>LOCATION:</b>	Statewide
<b>STREET ADDRESS:</b>	n/a
<b>COUNTY:</b>	n/a
<b>MUNICIPALITY:</b>	n/a
<b>ZIP CODE:</b>	n/a

**This transmission is a “Health Advisory” provides important information for a specific incident or situation; may not require immediate action.**

**HOSPITALS: PLEASE SHARE WITH ALL MEDICAL, PEDIATRIC, INFECTION CONTROL, NURSING AND LABORATORY STAFF IN YOUR HOSPITAL; EMS COUNCILS: PLEASE DISTRIBUTE AS APPROPRIATE; FQHCs: PLEASE DISTRIBUTE AS APPROPRIATE LOCAL HEALTH JURISDICTIONS: PLEASE DISTRIBUTE AS APPROPRIATE; PROFESSIONAL ORGANIZATIONS: PLEASE DISTRIBUTE TO YOUR MEMBERSHIP**

**Summary**

- *Borrelia miyamotoi* disease has been detected in multiple Pennsylvania residents. Healthcare providers (HCPs) should consider *Borrelia miyamotoi* disease in patients presenting with compatible symptoms.
- An *Amblyomma americanum* tick (lone star tick) in southeast Pennsylvania tested positive for Heartland virus. To date, no human cases of Heartland virus have been detected in Pennsylvania residents, but HCPs should consider Heartland virus in patients presenting with compatible symptoms, especially in those reporting a tick bite.
- *Amblyomma maculatum* ticks (Gulf coast ticks) have colonized areas of southeastern Pennsylvania. *Rickettsia parkeri* has been identified in at least one Pennsylvania Gulf coast tick.

**Background on emerging tick species and tickborne diseases in Pennsylvania**

*Ixodes scapularis* ticks (deer ticks) are the most common ticks in Pennsylvania, found in every county. Deer ticks transmit the pathogens that cause Lyme disease, anaplasmosis, babesiosis and Powassan virus. *Borrelia miyamotoi* disease is a bacterial disease also transmitted by deer ticks. The Pennsylvania Department of Environmental Protection’s active tick surveillance program has found a *Borrelia miyamotoi* infection rate in Pennsylvania adult deer ticks of just over 1%. Several cases have been reported in Pennsylvania residents. Although Lyme disease and *Borrelia miyamotoi* disease are both caused by *Borrelia* species, *Borrelia miyamotoi* has a similar clinical presentation to tickborne relapsing fever and cases may appear more severe than Lyme disease.

Heartland virus is an RNA virus in the genus *Phlebovirus*, family *Phenuiviridae* transmitted by the lone star tick (*Amblyomma americanum*). First discovered as a cause of human illness in 2009 in Missouri, more than 35 cases of Heartland virus disease have been reported from states in the midwestern and southern United States to date. Most people diagnosed with the disease become sick between May and September. Previously rare in Pennsylvania, lone star ticks are becoming more common in Pennsylvania. A lone star tick in the southeastern area of Pennsylvania has tested positive for Heartland virus.

Gulf coast ticks (*Amblyomma maculatum*) have established colonies in Pennsylvania identified for the first time in 2022. The northern migration of Gulf coast ticks is likely related to changes in the climate.

Gulf coast ticks may carry *Rickettsia parkeri* bacteria which causes spotted fever rickettsiosis, similar to Rocky Mountain spotted fever, but typically with less severe presentations. At least one Gulf coast tick in Pennsylvania has tested positive for *Rickettsia parkeri*.

### ***Borrelia miyamotoi* guidance for HCPs**

#### Tick

*Ixodes scapularis* (deer tick, black legged tick), most common tick in Pennsylvania found in high numbers in every county.

Deer ticks also transmit Lyme disease, anaplasmosis, babesiosis and Powassan virus.

#### Signs and symptoms

- Fever, may be recurring
- Chills
- Fatigue
- Severe headache
- Arthralgia/myalgia
- Dizziness, confusion, vertigo (uncommon)
- Rash (uncommon)
- Dyspnea (uncommon)
- Nausea, abdominal pain, diarrhea, and anorexia (uncommon)

#### General Laboratory Findings

- Leukopenia
- Thrombocytopenia
- Elevated hepatic transaminase values

#### Testing

- Polymerase chain reaction (PCR) tests that detect DNA from the bacteria; or
- Antibody-based tests

*Borrelia miyamotoi* tests are not included in tickborne disease panels available at some commercial labs and must be specifically ordered.

#### Treatment

The Centers for Disease Control and Prevention (CDC) recommend a 2-4 week course of doxycycline to treat *Borrelia miyamotoi* disease. Amoxicillin and ceftriaxone have also been successfully used.

### **Heartland virus guidance for HCPs**

#### Tick

*Amblyomma americanum* (lone star tick), becoming more common in Pennsylvania, mostly found in southern and eastern counties, but established colonies have been found in some northern counties.

Lone star ticks also transmit ehrlichiosis and have been associated with alpha gal allergy syndrome.

#### Signs and symptoms

- Fever
- Fatigue
- Decreased appetite
- Headache
- Arthralgia/myalgia
- Nausea, diarrhea

### General Laboratory Findings

- Leukopenia
- Thrombocytopenia
- Elevated hepatic transaminase values

### Testing

PCR and antibody testing are available at CDC. Contact the Pennsylvania Department of Health at 1-877-PA HEALTH (877-724-3258) to request Heartland virus testing.

### Treatment

Heartland virus treatment is supportive care. Most persons with Heartland virus recover, although outcomes may be poor for elderly or immunocompromised individuals.

### ***Rickettsia parkeri* guidance for HCPs**

#### Tick

*Amblyomma maculatum* (Gulf coast tick), newly discovered in southeastern Pennsylvania.

#### Signs and symptoms

*Rickettsia parkeri* infections are notably less severe than Rocky Mountain spotted fever infections.

- Inoculation eschar – almost always associated with *Rickettsia parkeri* infection
- Fever
- Headache
- Rash – sparse maculopapular or papulovesicular eruptions on the trunk and extremities
- Muscle aches

### General Laboratory Findings

- Mild leukopenia
- Mild thrombocytopenia, less common
- Mildly elevated hepatic transaminase values

### Testing

Spotted fever rickettsiosis testing, commonly RMSF, is available commercially. For species level testing for *R. parkeri*, specimens must be submitted to the CDC. Contact the Pennsylvania Department of Health at 1-877-PA HEALTH (877-724-3258) to request species level *R. parkeri* testing.

- Polymerase chain reaction (PCR) tests that detect DNA from the bacteria from eschar swabs, whole blood or skin biopsy; or
- Demonstration of a four-fold change (typically rise) in IgG-specific antibody titer by indirect immunofluorescence antibody (IFA) assay in paired serum samples. The first sample should be taken within the first week of illness and the second should be taken 2 to 4 weeks later.

**NOTE:** IgM antibodies are less specific than IgG antibodies and are more likely to generate false positives. IgM results alone should not be used for laboratory diagnosis.

**NOTE:** Acute antibody results cannot independently be relied upon for confirmation.

### Treatment

*Rickettsia parkeri* infections are treated with doxycycline according to the RMSF guidelines as seen below.

Age Category	Drug	Dosage	Maximum	Duration (Days)
Adults	Doxycycline	100 mg twice per day, orally or IV	100 mg/dose	Patients should be treated for at least 3 days after the fever subsides and until there is evidence of clinical improvement. Minimum course of treatment is 5-7 days.
Children weighing <100 lbs. (45.4 kg)	Doxycycline	2.2 mg/kg per dose twice per day, orally or IV	100 mg/dose	

**NOTE:** Use doxycycline as the first-line treatment for suspected RMSF in patients of all ages. The use of doxycycline to treat suspected RMSF in children is recommended by both the CDC and the American Academy of Pediatrics Committee on Infectious Diseases. Use of antibiotics other than doxycycline increases the risk of patient death. At the recommended dose and duration needed to treat RMSF, no evidence has been shown to cause staining of permanent teeth, even when multiple courses are given before the age of eight.

If you have any questions, please call PA DOH at 1-877-PA-HEALTH (1-877-724-3258) or your local health department.

### Testing forms and information

Any testing conducted by CDC must go through the Pennsylvania Department of Health Bureau of Laboratories (BOL).

The arbovirus testing form can be found here:

<https://www.health.pa.gov/topics/disease/Vectorborne%20Diseases/Pages/Providers.aspx>

The BOL submission form for other specimens can be found here:

<https://www.health.pa.gov/topics/Labs/Pages/Clinical-Microbiology.aspx>

### Additional information

CDC *Borrelia miyamotoi* website: <https://www.cdc.gov/ticks/tickbornediseases/borrelia-miyamotoi.html>

CDC Heartland virus website: <https://www.cdc.gov/heartland-virus/index.html>

CDC *Rickettsia parkeri* website: <https://www.cdc.gov/ticks/tickbornediseases/rickettsiosis.html>

Categories of Health Alert messages:

**Health Alert:** conveys the highest level of importance; warrants immediate action or attention.

**Health Advisory:** provides important information for a specific incident or situation; may not require immediate action.

**Health Update:** provides updated information regarding an incident or situation; unlikely to require immediate action.

This information is current as of August 26, 2022 but may be modified in the future.