



Ehrlichiosis caused by *Ehrlichia muris eauclairensis*: Information for Health Care Providers

- ▶ *E. muris eauclairensis* (EME), formerly called *Ehrlichia muris*-like agent, is an emerging bacterium spread to people through the bite of an infected deer tick (blacklegged tick).
- ▶ The tick that spreads EME also spreads *Borrelia burgdorferi* (Lyme disease), *Anaplasma phagocytophilum* (anaplasmosis), and *Babesia microti* (babesiosis).
- ▶ EME was first isolated in 2009 from a resident of Eau Claire, Wisconsin.

Epidemiology



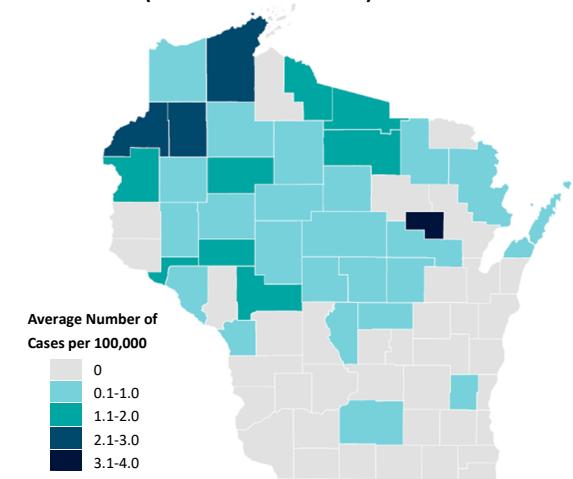
- ▶ While other species of *Ehrlichia* (*Ehrlichia chaffeensis* and *Ehrlichia ewingii*) occur primarily in the southeastern and eastern United States, cases of EME have been limited to people from Minnesota and Wisconsin or individuals who have travelled to these areas.
- ▶ Young deer ticks (called nymphs) are most active during the spring and summer, which corresponds with the peak of EME cases in June and July.

Clinical Presentation

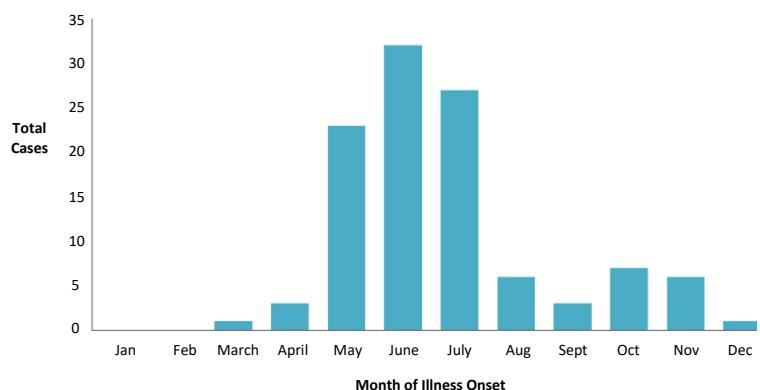


- ▶ Signs and symptoms of EME are similar to ehrlichiosis caused by other *Ehrlichiae*. Most patients experience an acute onset of:
 - ▶ Fever ▶ Malaise
 - ▶ Headache ▶ Anemia
 - ▶ Myalgia
- ▶ Laboratory findings:
 - ▶ Leukopenia ▶ Elevated hepatic transaminases
 - ▶ Thrombocytopenia
- ▶ No fatal cases of EME have been reported.
- ▶ Ehrlichiosis, including EME, is a Category II reportable disease in Wisconsin; refer to the Wisconsin Department of Health Services communicable disease reporting requirements for more details (<https://www.dhs.wisconsin.gov/disease/reporting.htm>).

Average Annual Incidence of Ehrlichiosis (*E. muris eauclairensis*) 2009-2021



Most cases of Ehrlichiosis (*E. muris eauclairensis*) are reported during May–July (Data from 2009-2021)



See page 2 for more information!



Treatment

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- ▶ Doxycycline is the treatment of choice for persons of all ages (100 mg/kg BID for adults, 2.2 mg/kg BID for children < 45 kg).
 - ▶ As with anaplasmosis, a 10–14-day course is recommended to cover for possible co-infection with *Borrelia burgdorferi* (Lyme disease).
 - ▶ Begin treatment as soon as EME is suspected, do not wait for confirmatory tests.

Laboratory Confirmation

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- ▶ Two types of tests are available to aid in the diagnosis of EME: PCR and serology.
 - ▶ **PCR** tests look for bacterial DNA in the blood during infection.
 - ▶ Some PCR tests are species-specific, allowing for a definitive diagnosis of EME.
 - ▶ PCR results are most reliable during the first week of disease.
 - ▶ The Mayo Clinic Labs and ARUP offer EME-specific PCR assays:
 - ▶ <https://www.mayocliniclabs.com/test-catalog/overview/84319#clinical-and-interpretive>
 - ▶ <https://ltd.aruplab.com/Tests/Pub/2007862>
 - ▶ **Serologic** testing looks for antibodies to an *Ehrlichia* infection. Serologic tests are not able to distinguish antibodies against EME from antibodies against other *Ehrlichia* species.
 - ▶ Indirect immunofluorescent antibody (IFA) assays for IgG antibodies are preferred. IFA is available at most commercial laboratories.
 - ▶ Serologic diagnosis of ehrlichiosis requires the demonstration of a 4-fold or higher rise in *Ehrlichia* antibodies in paired samples (an acute sample taken from the first week of illness and a convalescent taken 2–4 weeks later).
 - ▶ Serologic tests may be negative during the first week of illness and may remain positive for months to years following infection.

Prevention

There is no vaccine to prevent EME. Remind patients to prevent disease by preventing tick bites:

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- ▶ Use Environmental Protection Agency-registered insect repellants (e.g., DEET, Picaridin, IR3535).
 - ▶ Treat outdoor clothing and gear with 0.5% permethrin.
 - ▶ Avoid wooded, brushy areas, or areas with tall grass and leaf litter.
 - ▶ Check yourself for ticks daily.
 - ▶ Use veterinary-recommended tick preventatives such as topicals, oral preventatives, or tick collars on pets year-round.
 - ▶ Reduce deer ticks around homes:
 - ▶ Remove leaf litter, and clear tall grasses and brush from around homes.
 - ▶ Place a 3-ft wide barrier of wood chips or gravel between lawns and wooded areas to restrict tick movement into yard.
 - ▶ Discourage unwelcome animals (such as deer, raccoons, and stray dogs) from entering your yard by constructing fences and keeping trash in secured bins.

