

# PUBLIC HEALTH REFERENCE SHEET

## Babesiosis



<b>Name</b>	<i>Babesia</i> protozoan parasites
<b>Reservoir &amp; Transmission</b>	White-footed mice and other small mammals (e.g., voles) for <i>Babesia (B). microti</i> and <i>B. duncani</i> in the United States Cattle for <i>B. divergens</i> in Europe  Tickborne: <i>Ixodes scapulari</i> for <i>B. microti</i> in the U.S.; <i>Ixodes Ricinus</i> for <i>B. divergens</i> ; the EU 1 agent ( <i>B. venatorum</i> ) in Europe
<b>Incubation Period</b>	Variable; 1–3 weeks or longer for tickborne transmission, weeks to months for transfusion-associated transmission, more than 1 year in context of immunosuppression
<b>Common Symptoms</b>	Asymptomatic to life-threatening. Fever, chills, sweats, myalgia, fatigue, hemolytic anemia, thrombocytopenia
<b>Gold Standard Diagnostic Test</b>	Light-microscopic on Wright- or Giemsa-stained blood smears
<b>Risk Groups</b>	Asplenic, immunocompromised, elderly, born prematurely
<b>Geographic Significance</b>	U.S.: New England states including offshore islands, New York, New Jersey, Minnesota, Wisconsin

### What is babesiosis?

Babesiosis is a disease caused by microscopic parasites that are spread by certain ticks and infect red blood cells. Many different species of *Babesia* parasites have been found in animals, only a few of which have been found in people. *Babesia microti*, which usually infects white-footed mice and other small mammals, is the main species found in people in the United States. Occasional cases caused by other *Babesia* species have been detected.

### What is the occurrence of babesiosis?

In 2019, babesiosis was a reportable disease in 40 States and the District of Columbia. At that time, 25 (63%) of the 40 States notified the CDC of at least 1 case, and a total of 2,418 cases of babesiosis were reported in the U.S., which was an 11% increase from the 2,161 cases in 2018. In 2019, most of the reported cases (88%) were in residents of 7 States where tickborne transmission of *Babesia* parasites is well established (Connecticut, Massachusetts, Minnesota, New Jersey, New York, Rhode Island, and Wisconsin). Maine and Vermont reported case rates (10.3 and 5.4/100,000 population, respectively), similar to or higher than those reported by endemic states.

### How is babesiosis transmitted?

*Babesia microti* is spread by *Ixodes scapularis* ticks, which are commonly called blacklegged ticks or deer ticks. Although white-tailed deer are the most important food source for the adult stage of the tick, deer are not infected with *B. microti*. The parasite is typically spread by the young nymph stage of the tick, which are mostly found during warm months in areas with woods, brush, or grass. Usually, the tick must stay attached to a person for 36–48 hours to transmit the parasite, yet individuals may not see *I. scapularis* nymphs, which are about the size of a poppy seed.

Other possible ways of becoming infected with *Babesia* include:

- Receipt of a contaminated blood transfusion (no tests yet available for donor screening)
- Transmission from an infected mother to her baby during pregnancy or delivery

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### Who is at risk for babesiosis?

Babesiosis can be a severe, life-threatening disease, particularly in people who have—

- Asplenia;
- Impaired immune function (e.g., HIV, malignancy, corticosteroid therapy);
- Chronic health conditions (e.g., liver or kidney disease); or
- Advanced age.

### What are the signs and symptoms of babesiosis?

Many people who are infected with *Babesia microti* do not have any symptoms. Clinically manifest *Babesia* infection is characterized by the presence of hemolytic anemia and nonspecific flu-like symptoms, such as fever, chills, sweats, headache, body aches, loss of appetite, nausea, or fatigue. Because *Babesia* parasites infect red blood cells, babesiosis can cause hemolytic anemia, splenomegaly, hepatomegaly, or jaundice.

### What are potential complications of babesiosis?

Severe cases can be associated with marked thrombocytopenia, disseminated intravascular coagulation, hemodynamic instability, acute respiratory distress, myocardial infarction, renal failure, hepatic compromise, altered mental status, and death.

### How is babesiosis diagnosed?

In symptomatic patients with acute infection, *Babesia* parasites typically can be detected by light-microscopic examination of blood smears, although multiple smears may need to be examined. Species *B. microti* and *B. duncani* are morphologically indistinguishable. Sometimes it can be difficult to distinguish between *Babesia* and *Plasmodium* (especially *P. falciparum*) parasites and even between parasites and artifacts (such as stain or platelet debris). A reference laboratory should confirm the diagnosis by blood-smear examination and, if indicated, by molecular and/or serologic methods tailored to the setting and species.

### How is babesiosis treated?

Most asymptomatic persons do not require treatment.

Clinically ill patients can be treated for 7–10 days with a combination of either:

- Atovaquone and azithromycin, or
  - Clindamycin and quinine (the standard of care for severely ill patients).
- [https://www.cdc.gov/parasites/babesiosis/health\\_professionals/index.html](https://www.cdc.gov/parasites/babesiosis/health_professionals/index.html)

Supportive care may include antipyretics, vasopressors, blood transfusions, mechanical ventilation, or dialysis.

### How can babesiosis be prevented?

A vaccine is not available. Avoid areas infested with ticks. Use protective measures. Conduct tick checks.

MilTICK is a free tick testing and identification service available for ticks removed from Department of Defense personnel and their dependents. For more information about services provided, including identifying tick species, assessing for how long the tick has been attached, and testing the tick for human pathogens, and contact information, go to:

<https://ph.health.mil/topics/envirohealth/epm/Pages/HumanTickTestKitProgram.aspx>

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### What are some public health considerations?

- Document potential occupational/high risk exposure during the incubation period (1-3 weeks for tick-borne disease transmission and >1 year for transfusion-associated transmission cases). High exposure activities include but are not limited to outdoor activity, camping, hunting, field exercise, mission/duty related, etc.
- Document if the source is tick-borne or transfusion-associated.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

For information about babesiosis surveillance or assistance in completing the form, call the Parasitic Diseases Branch at 404-718-4745 or email [parasites@cdc.gov](mailto:parasites@cdc.gov).

[CDC - Parasites - Features - Babesiosis Case Report Form](https://www.cdc.gov/parasites/features/babesiosis_case_report_form)

[https://www.cdc.gov/parasites/features/babesia\\_form\\_11-1-11.html](https://www.cdc.gov/parasites/features/babesia_form_11-1-11.html)

### References:

“Babesiosis,” Centers for Disease Control and Prevention (CDC), last reviewed March 31, 2021.

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