# BABESIOSIS

## Case Definition

### Confirmed Case:

A case that has confirmatory laboratory results with or without clinical evidence criteria (can include transfusion transmission)

### Probable Case:

A case that has *supportive* laboratory results **AND**

- meets clinical evidence criteria[1]
  **OR**
- is in a blood donor or recipient epidemiologically linked to a confirmed or probable babesiosis case.

## Laboratory Evidence

### Confirmatory laboratory tests include:

- Detection of *Babesia* species *(*e.g. *Babesia microti, Babesia duncani* or *Babesia divergens)* DNA in a whole blood specimen by amplification of a specific target Nucleic Acid Amplification Test (NAAT)**.**

### Supportive laboratory evidence:

- Serological evidence of elevated immunoglobulin (Ig) G (IgG) antibodies to *B. microti* in a single sample by indirect immunofluorescence assay (IFA) where the endpoint titre is ≥ 1:64; **OR**
- Identification of intraerythrocytic *Babesia* organisms by light microscopy in a Giemsa, Wright, or Wright-Giemsa–stained blood smear; **OR**
- Demonstration of a positive *B. microti* IgG immunoblot result by Centers for Disease Control and Prevention (CDC); **OR**
- Demonstration of a *B. divergens* total Ig or IgG antibody titre of ≥ 1:256 in an IFA; **OR**
- Demonstration of a *B. duncani* total Ig or IgG antibody titre of ≥ 1:512 in an IFA.

## Clinical Evidence

Clinical criteria include fever and at least one of fatigue, chills, sweats, headache, anorexia, hemolytic anemia, or thrombocytopenia.[1]

*Transfusion Transmission:*

Transmission can occur via blood transfusion, and rarely, via transplacental, perinatal, and solid organ transplantation.[2;3-9] *Babesia*-infected individuals can remain parasitemic for long periods following infection, and *Babesia* parasites can survive in blood products.[9] Babesiosis is the most commonly reported transfusion-transmitted tick-borne infection in the United States, and there has been one documented case to date in Canada.[9]

[1] See Clinical Evidence section.

For the purposes of surveillance, epidemiologic linkage between a transfusion recipient and a blood donor is demonstrated if all the following criteria are met:

1. Laboratory evidence of *Babesia* infection in the recipient and donor; **AND**
2. Transfusion recipient received one or more red blood cell (RBC) or platelet unit(s) within one year before the collection date of the recipient's positive specimen; **AND**
3. Transfused unit(s) was/were plausibly infectious based on assessment of donor infectivity at time of donation of implicated unit(s); **AND**
4. Transfusion-associated infection is considered at least as plausible as tick-borne transmission.

## Reporting Requirements

Report confirmed and probable cases to DHW Surveillance via Panorama.

## Additional Forms

None.

## Additional Comments

- Babesiosis is a provincially notifiable disease. Case counting will be applied as of May 23, 2023.
- These are definitions for surveillance and epidemiologic purposes only, and they do not represent clinical case definitions.
- Diagnostic testing should be performed by provincial public health laboratories and/or appropriate reference diagnostic centres (e.g., NML for molecular testing, National Reference Centre for Parasitology for *B. microti* IFA).
- Some forms of *Babesia* can be difficult to distinguish from *Plasmodium* on blood smears. Confirmation by a reference laboratory may be required if a patient's travel history and area of residence indicate exposure to *Babesia* is unlikely.
- In persons who are immunosuppressed or who have asymptomatic *Babesia* infections, active infections can be associated with lower antibody titers; titres may also be low early in the course of infection.
- Due to the persistence of elevated antibody titres in some patients, a single elevated titre may indicate either a recent or remote infection. Demonstration of an increase in titres or seroconversion between paired samples is therefore necessary for confirmation.
- Validated commercial IFAs and/or immunoblots specific for *B. divergens* and *B. duncani* are not currently available in Canada but samples may be submitted to reference centres such as the CDC who have validated assays for these rare pathogens. IgG immunoblot for *B.microti* is not available in Canada.

## References


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