

Babesiosis

Babesiosis is a parasitic infection of red blood cells. It is usually spread by the bite of certain types of ticks. In 2012, the first reported human case believed to be acquired in Australia was reported in a resident of New South Wales. People with symptoms usually require treatment for several days. Avoid ticks to prevent infection.

What is babesiosis?

Babesiosis is an infection of people and animals caused by the *Babesia* parasite.

- The *Babesia* parasite infects and damages red blood cells.
- Despite this, most people with *Babesia* infections feel well and do not have any symptoms.
- When symptoms do occur, they usually resemble an influenza-like illness with fever, chills, headaches, muscle aches, and fatigue. Jaundice (a yellow colour of the skin or eyes) may also occur.
- If symptoms develop, they usually occur 1 to 3 weeks after the tick bite.

Babesiosis can be severe and life-threatening, especially for people with other illnesses, the elderly, and particularly for people who do not have a spleen.

How is babesiosis spread?

Babesia parasites are usually spread by the bite of an infected tick. Because *Babesia* parasites infect red blood cells, the infection can rarely be spread through a blood transfusion from an infected donor, or from an infected mother to her baby during childbirth. Ticks in the *Ixodes* family are the most common tick linked to babesiosis transmission, although the tick vector has not been identified for all *Babesia* species and strains.

- The small nymph stage of the *Ixodes* tick is the most likely to carry and spread *Babesia* parasites to people. Because of their size people may not notice or recall the tick bite.
- Large adult ticks can also spread the infection but not as commonly as the nymphs.

People who test positive for *Babesia* infection should refrain from donating blood indefinitely.

Where is babesiosis found?

Babesia infection has been reported worldwide, with most cases reported from the north-east of the United States or from Europe.

In 2012, a case of severe babesiosis was reported in an individual from the south coast of New South Wales. This was the first reported human case of babesiosis believed to have been acquired in Australia. Note: this person had

not travelled overseas for many years but recalled having been bitten by ticks near home. This person also had underlying medical conditions.

The *Babesia* parasite causing the infections was identified directly and was found to be closely related to the strain most commonly associated with human babesiosis in North America (*Babesia microti*). It is not known which type of tick was responsible for transmitting the infection in this case.

In Australia, some strains of *Babesia* parasites cause infections in cattle (called Bovine babesiosis or 'tick fever'). The infection is primarily transmitted by the cattle tick (*Rhipicephalus (Boophilus) microplus*) and involves strains different to those that cause human infections.

It is not known how common it is for the *Babesia* parasites that cause human disease to infect ticks in NSW. It is assumed to be rare, given that only one human case has been reported. It is possible that other cases may have occurred in the past but were not recognised, particularly as most infections cause no symptoms.

How is babesiosis diagnosed?

In people who have symptoms of babesiosis, the active infection is primarily diagnosed by examining a blood sample under a microscope (using thick and thin films) and seeing the *Babesia* parasites in red blood cells.

- The symptoms of babesiosis can be similar to malaria, another parasitic disease of red blood cells, so a specialist laboratory (available in NSW) may be needed to confirm the diagnosis. Molecular (PCR) tests to look for *Babesia* DNA may also be recommended.
- Serological testing - testing for anti-*Babesia* antibodies - may support other test findings but is not sufficient on its own to diagnose active *Babesia* infection.

How is babesiosis treated?

People who are diagnosed with *Babesia* infection but who do not have symptoms of babesiosis may not require treatment. These people should have their blood monitored to ensure they become free of the parasite.

People with symptoms of babesiosis who have *Babesia* infection confirmed usually require a 7 to 10 day course of anti-parasitic medicines (usually atovaquone plus azithromycin, or clindamycin plus quinine). Doctors should seek advice from an infectious diseases physician when considering the diagnosis and treatment of *Babesia* infections.

How to prevent tick bites?

Ticks tend to live in coastal areas in NSW. People are at greatest risk when they visit habitats where ticks live such as forests and other densely vegetated areas, especially areas with high grass and abundant leaf litter.

Ticks can be found all year but the risk of tick bites is generally increased during the warmer months when people are more likely to visit tick areas. If tick affected areas cannot be avoided, some practical measures to reduce the risk of tick bites include the following:

- **Wear appropriate clothing** - when outdoors in tick areas wear long sleeved shirts and long pants tucked into socks and a wide brimmed hat. Ticks are also more easily detected on light coloured clothing.
- **Use insect repellent** - apply an insect repellent that contains DEET or Picaridin to exposed skin according to directions, and re-apply during the day as directed. Topical repellents not recommended for children under the age of 3 months. A permethrin spray may also be applied to clothes and hats to deter ticks.

- **Take precautions when bush walking** - keep to the centre of cleared paths in tick-infested areas as much as possible, and avoid brushing against plants and long grass as you walk. Regularly inspect your skin and clothes for ticks as you may be able to remove ticks before they attach.
- **Find and remove ticks from your body** - on returning from a tick affected area, carefully search for ticks on the body. Remember to also check your children.
- **Examine clothes and pets for ticks** - and take care with your clothes to avoid carrying ticks inside the house.
- **Reduce the risk of ticks around the home** - in tick affected areas keep lawns mown and keep mulch and leaf litter away from the house. Trim shrubs that overhang paths and play areas. Consider using fencing to exclude wildlife which may be a reservoir for the parasite.

Ticks in the nymph stage are tiny (about the size of a sesame seed) but are important in the transmission of babesiosis. Tick nymphs attached while biting may not be noticed and they can be difficult to detect. It is important to examine the skin closely for any small ticks that may be attached.

What to do if bitten by a tick

Follow the Department of Health and Aged Care advice here: [Management of tick bites in Australia](#)

What is the public health response?

Babesiosis is not a notifiable infection in NSW and so cases are not required to be reported to public health units. As this is a novel infection in Australia, doctors are encouraged to discuss cases of active infection believed to have been acquired locally with their public health units.

Other resources

- [First report of human babesiosis in Australia. Senanayake et al. Med J Aust 2012; 196 \(5\): 350-352](#) [subscription may be required].
- [US CDC - Babesiosis](#)
- [European CDC - Babesiosis](#)

For further information please call your local public health unit on **1300 066 055**.