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# Tick bite fever

## Frequently Asked Questions

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### What is tick bite fever?

Tick bite fever is a bacterial infection transmitted by ticks. It is caused by tiny bacterial organisms called rickettsias. They are responsible for a group of diseases called 'spotted fevers' that occur in many parts of the world. Wild and domestic animals are also infected, and act as sources of these diseases.

### Where does tick bite fever occur?

There are 2 types of tick bite fever that occur throughout sub-Saharan Africa and South Africa. One type (called 'Mediterranean spotted fever-like' or MSF-like) is transmitted by dog ticks, often in urban or peri-urban areas, and is sometimes responsible for severe illness. The other type ('African tick bite fever' or ATBF), is transmitted by cattle and game ticks (especially *Amblyomma* or 'bont' ticks) in rural farming and game reserve areas, and is usually a milder infection. Persons who walk or camp or work in the bush are at high risk for getting tick bite fever. Depending on where they are visiting or working, people at risk for tick bite fever may be also be exposed to other infections, such as malaria, mosquito-borne virus infections, sleeping sickness, bilharzia, typhoid fever, Congo-Crimean fever.

### How does a person get tick bite fever?

As the name suggests, tick bite fever is transmitted through the bite of an infected tick. Ticks get the infection from feeding on animals and/or are born with it. So even the tiny baby ticks, sometimes called 'pepper ticks' because they are so small, can transmit the infection. Because they are difficult to see and often go unnoticed, very small ticks are most often responsible for transmitting tick bite fever. Very rarely, people who remove ticks from their dogs and crush them, can get a splash of blood in the eye or mouth, and be infected that way.

### What are the signs and symptoms of tick bite fever?

People usually get sick 5 to 7 days after being bitten by an infected tick. Headache, which is often severe, fever, and body pains, are early symptoms. Nightmares are said to be common. Classically, the patient may develop an 'eschar' - a small dark brown or black scab, surrounded by obvious inflammation, on the skin anywhere on the body, sometimes hidden in the hair, between toes, in skin folds. Sometimes the eschar may go unnoticed unless or be misdiagnosed as a spider or insect bite. The lymph glands draining the bitten limb may be swollen and painful. A skin rash may appear, or there may be just a few red spots or small blisters, which may not be noticed. Occasionally, the rash may be extensive and/or involve the palms and soles. In very severe or neglected cases the patient may develop a haemorrhagic state and start bleeding into the skin or from injection sites. In this case the clinical presentation can resemble Congo-Crimean fever, or other viral haemorrhagic fevers.

### How is tick bite fever diagnosed?

There is usually a history of possible exposure, e.g. walking or camping, in the bush, a farm visit etc., or the finding of a tick on the skin. Tick bite fever is usually diagnosed clinically by the presence of the eschar, accompanied by one or more symptoms like fever, headache, rash, or painful lymph nodes in the area of the tick bite. Laboratory tests (antibody tests) are not useful in the acute stage to make the diagnosis (the

exception is PCR on a dry cottonwool swab of the eschar), but can be used to confirm the diagnosis a week or two later. In very ill patients, laboratory tests to exclude other infections and to assess and monitor the patient's condition will be required.

### **How is tick bite fever treated?**

Doxycycline is the drug of choice and is very effective, although it may take a day or two for the patient to feel better. Other antibiotics used in general practice for common infections that present with fever are much less effective, or totally ineffective, hence the importance of recognising the condition. In very ill patients, doxycycline can be life-saving and is never withheld. In mild cases, certain other antibiotics may be sufficient.

### **How can tick bite fever be prevented?**

Mosquito repellents that contain a chemical called DEET, like Tabard®, Peaceful Sleep®, and Mylol®, will repel ticks as well, but they need to be re-applied every few hours. Other products, e.g. herbal or homoeopathic remedies or citronella oil, are not effective. Clothes that are impregnated with permethrin insecticide will also work to some extent. However, none of these can be completely relied upon. If you have possibly been exposed to ticks, it is important to inspect yourself and your loved ones for ticks, which can be tiny, as mentioned earlier. Swimming or bathing/showering time is a good opportunity for a 'tick parade' and full body searches. Dogs should also be protected by appropriate anti-tick and -flea veterinary products, inspected regularly, and deticked if necessary. Do not crush such ticks between your nails, as their contents might be infective, as explained above. Ticks need to be attached for a while to transmit the rickettsias, so if they are found and removed promptly, the risk of getting tick bite fever is much reduced. To remove a tick, grip it as near to the skin as possible, if necessary using a pair of forceps, and try to ensure that the mouthparts, which are anchored firmly in the skin, are removed. Applying lit cigarettes or chemicals to the tick is not effective and may injure the skin.

### **Is it true that treatment stops you getting immune to another attack of tick bite fever, and so you should not get treated?**

Early treatment can reduce the immune response. However, even uncomplicated tick bite fever is an unpleasant disease, and also has the potential, especially in the very young or old, and in pregnancy, to cause severe or even fatal infection; every year several people in South Africa die unnecessarily from tick bite fever. Therefore, we recommend that all cases get effective treatment.

### **Can I take doxycycline or other antibiotics prophylactically to prevent tick bite fever?**

This is controversial, as in theory it could work. Some believe that it may not prevent infection, but just suppresses it until you stop taking the antibiotic. No controlled clinical trials have been done, and it is not recommended routinely. However, doxycycline is one of the antimicrobials used for malaria prevention in adults, so prevention of tick bite fever may be a useful side effect.

### **Does tick bite fever cause persistent infections and lead to ME or chronic fatigue syndrome?**

There is no credible scientific evidence that this happens, nor that prolonged courses of antibiotic treatment for rickettsial infections are effective in treating ME. In fact, such courses unnecessarily expose patients to unhealthy side effects of antibiotics.

### **Where can I find out more information?**

For emergency advice on laboratory testing and diagnosis, contact the NICD hotline: 082 883 9920.