

Instructions for the tick card & general information for tick bite diseases

If you are bitten by a tick it is important to remove the tick as soon as possible and very carefully. If the tick gets squeezed or irritated when removing, there is a chance that the tick will empty its stomach in the wound increasing your risk of infections with dangerous bacteria.

Use of the card

Maneuver the slit of the card under the tick, gently sliding the card further toward the tick and remove the tick from the skin according the instructions on the card.

The purpose of the large slot is to remove adult ticks and the smaller slit is for the small nymphs, about the size of a pinhead which can cause most of the infections. If you can't reach the tick by yourself then ask for help to remove it! Do not use any special fluids before or during removal which can irritate the tick and increase your chance of infection. Numerous tips found on the internet offer such solutions based on other people "good experiences" are not recommended because they are not safe.

Check if the snout (hypostome) of the tick is removed too. The snout can be infected with bacteria so it's best to make sure you remove this too. A good magnifying glass is very helpful too. If a tick is removed at home, be sure it is killed- you don't want it walking around again! Place it in a piece of tape and throw it in the bin. They are tough and flushing or squeezing them is not always enough!

Disinfect the wound with an antiseptic like alcohol (70% or more), iodine or Betadine. Other solutions recommended for use after an insect bite can suppress possible inflammatory responses and therefore can increase the chances of infection. Note the date and location where you were bitten and where on your body. Take photos of the bite spot and check later to see if there are striking changes. Like a mosquito spot, the bite spot can be irritated by removal so don't get anxious.

There are multiple other tick removal tools like special tick tweezers, a tick pen with a lasso or a freezing device. All tools have their pros and cons but this tick card is compact and developed to carry with you, for instance in your wallet.

Tick bite prevention

Ticks occur almost everywhere in nature; not only in forests, dunes and rural area, but also in parks and gardens. The immature ticks (nymphs), size of a pinhead, are a risk because of their abundance and they easily avoid detection. Ticks are often seen relatively low to the ground, like in low scrubs or in the tips of grass blades. In some cases a tick will drop from a tree on to a passing hiker. Ticks are active during most of the whole year, especially at temperatures from 5-7 degrees Celsius and in relatively humid circumstances.

Stay as much as possible on the paths or tracks when you are in nature and avoid tall grass. Wear protective clothing: closed shoes, trousers in your socks, long sleeved shirt etc. For children or if you crawl under low scrubs etc. a cap can provide extra protection. Ticks are easier to find when you wear light colored clothes.

After a walk in nature, or after working in the garden, it is recommended that you inspect your skin and clothing for ticks. They are easier to find with the help of another person. Ticks have a preference for warm and humid spots like popliteals (behind the knee), armpits, groins, behind ears, neck and hairline.

Also before you let pets in the house, check them for ticks! Caution: ticks on clothes can survive a washer or dryer at temperatures less than 60 degrees Celsius.

Special impregnated clothing offers extra protection against ticks and are available in outdoor sporting shops. You can also spray your skin and clothes with insecticides like DEET. Nothing offers complete protection but it reduces the chance of a tick bite. Agents like DEET are not harmless (extra caution with children and pregnant women need to be taken) and they can be corrosive on plastics and devices with lacquer. Be well informed before using these insecticides. Also, natural remedies such as garlic capsules can reduce the chance of a tick bite.

Ticks and Lyme disease

A tick is a small spider-like animal which can bite and suck blood from either humans or animals. They can transmit a vast array of diseases of which Lyme disease is the best known.

Lyme disease is caused by the bacteria *Borrelia burgdorferi* and can, when not treated timely, cause severe and permanent complaints and disabilities.



Many ticks in the Netherlands are infected with this species of bacteria and the percentage of infected ticks vary in time as well as being dependent on many factors like location, weather etc. Besides *Borrelia*, the tick can transmit other bugs called co-infections which can cause comparable complaints. See links below for further information. Be alert that if you are bitten in a foreign country this can be quite different from the situation in the Netherlands and your physician may not be up to date about this.

The longer a tick is attached to the skin - more than 12-24 hours - increases the risk of infection with *Borrelia* considerably; although infection can occur within a few hours. Many governmental or medical organization's websites advise that there is no risk within 24-48 hours but this is false! Unfortunately, with the current available tests, it is impossible to determine if you are infected with *Borrelia* immediately after the bite. The best advice is to monitor the bite spot well and be aware of possible suspicious disease symptoms:

- Only about half of the people infected with *Borrelia* will have a so called Erythema Migrans (EM) rash on the bite location within days or a few weeks. The EM is a clear visible red ring or spot which increases in size as time passes. The typical EM can be much larger than 5 cm in diameter and has a clear red color with a relatively lighter red center. The spot may be itchy, but this is not always the case. N.B.: an EM can deviate in color, size, shape etc. from the typical EM. The EM can stay visible for weeks, even months but will eventually disappear by itself without treatment. The disappearance of EM does not mean that the infection/disease is over! EM is difficult to recognize on people with a darker colored skin and can look like a bruise. If you see or suspect that you have an EM, go directly to your physician. If an EM is confirmed, you need immediate treatment with antibiotics. An EM is 100% proof for infection with the *Borrelia* bacteria; a test to confirm Lyme disease is only useful if the physician doubts if the spot really is an EM (see the comment about diagnostics test further on). You can still be infected with *Borrelia* (or another pathogen) even if you have no EM. In about half of the cases of infection, EM is not present (or goes unnoticed or undetected).
- After a *Borrelia* infection flu-like symptoms can occur, like flares of fever along with fatigue, headaches, along with throat and/or joint pain. Be aware of those symptoms after a tick bite and if necessary consult a general practitioner. Multiple complaints can arise in later stages and the development of the disease can vary from person to person.

The longer treatment is delayed, the higher your risk is at the disease becoming chronic and incurable. The standard treatment for Lyme disease is a several week course of antibiotics but there is disagreement in the medical world about what is optimal treatment; too short and too low of a dose of antibiotics increases the risk that the disease is not treated sufficiently which can cause recurrent relapses. Always be aware that suspicious symptoms following a tick bite can be caused by an infection from pathogens, other than *Borrelia*.

Tests for Lyme disease

Diagnosis is determined by a physician based on symptoms (complaints) and NOT on blood test results. The traditional blood tests (Lyme Elisa, EIA and Immunoblot/ Western Blot) are unreliable, especially in the first 6-8 weeks after infection. On average, half of the infections are missed (false negative: test results show no infection, although you are infected). A blood test can also show an infection where you are not infected or not infected anymore (false positive). Other diagnostic tests are available which have specific advantages like *Borrelia* PCR and LTT. In most cases these tests are not reimbursed by health insurance and also may not always provide a conclusive answer to the question if you are infected or not.

It is possible to send the removed tick to test if it is infected with the *Borrelia* bacteria. Keep in mind that this will only give a risk indication, and no certainty about infection. If the tick is not infected according to the test, it could be possible that you are bitten by a tick which was infected which you did not see or perhaps the test is not sensitive enough to measure the (remaining) infection in the tick. If the tick is infected though, this will not mean that the infection is transmitted to the person who was bitten and that this person will become ill.

More information (in Dutch):
<https://www.tekenbeetziekten.nl/>