

Tick Awareness – the risks of Lyme Disease



Courtesy of *Lyme Disease Action* and *Patients.co.uk*

Lyme disease is caused by infection with a type of bacterium (called a spirochete carried in deer blood). The particular species of spirochete that is responsible for Lyme disease is called *Borrelia burgdorferi* – the spirochete is spread by a tick biting an infected deer and then subsequently an unwary human.

What are ticks and what do they look like?

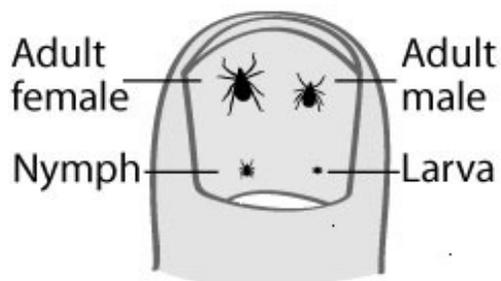
Ticks look like small flat spiders.

There are 3 stages of the life cycle: larva, nymph, and adult.

To the naked eye the larvae look like specks of soot, while nymphs are slightly larger, pinhead or poppy seed size. With their eight legs, adult ticks resemble small spiders.

Once an adult tick has started to feed, its body will become filled with blood. As the blood sac fills it generally becomes lighter in colour and can reach the size of a match head, generally grey in colour. The tick bite itself is totally painless and most people will only know they have been bitten if they become aware of a feeding adult tick attached to them. However, it is the pinhead size nymph that is the most likely to bite you.

A tick can be born with the disease that its infected mother tick carries. So, all three stages of the life cycle, larva, nymph and adult, are capable of transmitting disease.



Haunts and Habits

Cold temperatures reduce tick activity, so ticks are most active from April to October. Ticks can survive in many places but prefer slightly moist, shady areas such as grass, bracken, bushes and leaf litter. This is also where the animals they feed on are most likely to visit. Ticks can be found in both rural and urban locations. They are least likely to live in short grass or dry heather.

There are 'hotspot' locations throughout Britain usually areas with high deer populations.

- Exmoor
- New Forest in Hampshire
- South Downs
- Wiltshire and Berkshire
- Thetford Forest in Norfolk
- Lake District
- Yorkshire Moors
- Scottish Highlands
- Central London (Parks)



Where & for how long will a tick bite me?

Hard ticks seek hosts by an interesting behaviour called "questing." Questing ticks crawl up the stems of grass or perch on the edges of leaves on the ground in a typical posture with the front legs extended, especially in response to a host passing by. Ticks can detect heat emitted or carbon dioxide respired from a nearby host. Ticks are tiny and 'cling on' to you to suck your blood to feed and will generally drop off, but this may take several days. Ticks can attach anywhere on your body, so you do need to check all over. **Ticks like warm areas as they have good blood flow, so the obvious warm areas of the body (such as groin, armpits and behind knees) and pressure zones (such as under bra straps, watches, knickers line, tops of socks, etc.) should all be checked regularly.**



While attaching itself the tick periodically injects an anaesthetic into the area around its bite. **It takes typically half a day for the tick to excavate through human skin.** The good news is that during the hours the tick has been digging, the chance of Lyme transmission is very low. The bad news is that you won't feel it.

Once in place the tick feeds and its abdomen swells, its digestive processes begin producing increased amounts of saliva and the Lyme bacteria increase in number. The bacteria are normally carried in their gut, and only travel via their saliva, to their mouthparts and into your skin once they are engorged.

There are ongoing debates as to how long a tick must remain attached to you before transmitting a disease – the general consensus is anywhere between 6 – 24 hours, the longer the tick is attached the more likelihood there is of infection. Therefore, if you remove a tick soon after being bitten you are much less likely to develop Lyme disease, even if it was an infected tick.

If an infected tick bites me, will I become ill?

The majority of people, who are bitten by a tick, do not experience disease symptoms. In some instances this will be because the tick was not infected. In other cases people can remain without symptoms although they do actually carry the disease. Some of these people may never have symptoms, while others can start to experience illness at a later time in their life. However, some victims can start feeling noticeably ill within days or weeks of being bitten. The majority of people may never make the link between their illness and a tick bite.

Lyme Disease

The symptoms and effects of Lyme disease can be divided into three stages:

Stage One - early reaction to the local skin infection

This can develop anytime between 2 and 30 days after being bitten by an infected tick.

The classical symptom of Lyme disease is a typical rash called *Erythema migrans* (EM rash). However, this does not always occur. It probably occurs in around 45% of cases in the UK.



The rash is usually a single circular red mark that spreads outwards slowly over several days. The circle gets bigger and bigger with the centre of the circle where the bite occurred. As it spreads outwards a paler area of skin emerges on the inner part of the circle. Therefore, the rash is often called a 'bull's eye' rash. The rash is usually about 5cm in diameter, but may grow to up to 30 cm. The rash is not usually painful or particularly itchy. You may not even notice it if it is on your back. Without treatment, the EM rash typically fades within 3-4 weeks. However, just because the rash fades does not necessarily mean the infection has cleared from the body.

Flu-like symptoms occur in about half of cases. Symptoms include tiredness, general aches and pains, headache, fever, chills and neck stiffness. These symptoms are often mild and go within a few days even without treatment (but the infection may not have gone). Look out for the following, especially if none of your friend, family or work colleagues are also suffering from -

- Fatigue
- Joint and muscle pains
- Mild fever
- Headaches
- Drowsiness
- Swollen lymph glands



In some cases, the infection does not progress any further, even without treatment, as the immune system may clear the infection. However, in about half of cases that are not treated, the disease progresses to stage two.

Stage Two - early-disseminated disease

This may develop in untreated people weeks or months after the bite. Symptoms are variable but can include one or more of the following:

Joint problems in one or more joints - They most commonly affect the knee joint or jaw. The severity of joint problems can range from episodes of mild joint pains, to severe joint inflammation (arthritis) causing a lot of pain. Episodes of joint inflammation last, on average, three months.

Nerve and brain problems - Some affected people develop inflammation to nerves, particularly the nerves around the face. This may cause the nerve to stop working and cause facial weakness. Meningitis and encephalitis (brain inflammation) may occur.

Heart problems - Some affected people develop inflammation of the heart (myocarditis) and other heart problems. This may cause symptoms such as dizziness, breathlessness, chest pain and palpitations.

Rash - Several areas of the skin (not where the tick bite occurred) may develop a rash similar to *Erythema migrans* (described above). These 'secondary' rashes tend to be smaller than the original stage one rash. These tend to fade within 3-4 weeks.

Rarely, other organs such as the eyes, kidneys and liver are affected.

Stage Three - chronic Lyme disease

This may develop months to years after infection. It may develop after a period of not having any symptoms. Whole ranges of symptoms have been described in joints, nerves, brain and heart. The brain problems may include mild confusion, and problems with memory, concentration, mood, sleep, personality and/or language. There is controversy as to whether Lyme disease may cause depression, anxiety, schizophrenic-like illness, bipolar disorder and dementia.

How is Lyme disease diagnosed?

In most cases, Lyme disease is diagnosed in stage one of the disease by the typical symptoms. That is, the typical rash, sometimes also with a flu-like illness, in someone who has been bitten by a tick. Other tests are not needed in this situation and treatment is usually given.

Lyme does not have a single, static appearance and/or chemical signature. It not only changes throughout its life cycle, it has a bunch of genes that seem to do nothing but randomly alter its outer surface proteins so as to evade the immune system's fighters - and not coincidentally evade recognition on tests, which makes the diagnosis of stage two or three very difficult. Lyme disease should be diagnosed by a physical examination and medical history.

Diagnosis based on tests alone is not reliable – a negative result does not mean that the disease is not present.

What is the treatment for Lyme disease?

A course of antibiotics will usually clear the infection. Lyme disease is treated with antibiotics taken by mouth, usually Doxycycline, which is very effective but should not be given to children under age 9, pregnant women, or women who are breastfeeding (as it can stain the permanent teeth developing in young children or unborn babies), or if you are going to be in strong sunlight (as it makes the skin very photo-sensitive). A dose of 200mg / day is usually given for 5 / 6 weeks. Most people are diagnosed in stage one when treatment will clear the symptoms and prevent the development into stages two or three.

How can I avoid ticks?

It is quite easy to have a tick bite without you noticing - for example, on your leg, back or buttock. Many people who develop Lyme disease cannot remember being bitten by a tick.

You can reduce the risk of infection by:

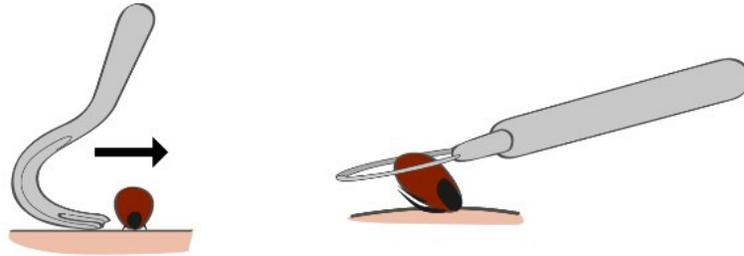
- Being aware of ticks and areas they normally live – where possible avoid walking through long grass, rushes and bracken, sitting on logs, etc.
- Avoid deer runs and the flattened areas of grass that may be deer-beds
- Don't handle / go near dead animals
- Wearing appropriate long clothing in likely tick areas (a long-sleeve shirt and trousers with ankle ties, or tied into boot tops)
- Light-coloured fabrics are useful, as it is easier to see ticks against a light background.
- Apply tick repellent containing DEET on exposed skin (except on the face, and also avoid putting the repellents on the hands of young children) and spray around the entry points of your garments, such as trouser bottoms, waistband and shirt cuffs
- Treat clothing with permethrin, which kills ticks on contact
- Shake out sleeping bags and clothing before using / wearing them
- Meticulously inspecting your skin for ticks, particularly when using an outdoor latrine, in the morning and at the end of the day
- Leave your outdoor gear in a porch or garage if possible

- Hot wash your outdoor clothes
- Shower as soon as you come indoors and check your body carefully for ticks, using a mirror to check your back, buttocks, etc. Re-check the following day.

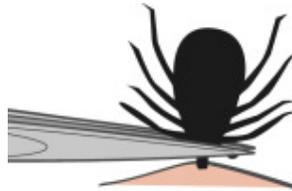
How do I remove a tick?

Your main aims are to remove all parts of the tick's body and to prevent it releasing additional saliva or regurgitating its stomach contents into your bite wound.

DO use a proprietary tick removal tool and follow the instructions provided. The two types of removal tool available are illustrated below. These tools will grip the head of the tick.



Alternative Method: With pointed tweezers grasp the tick as close to the skin as possible without squeezing the tick's body, pull the tick out without twisting – there may be considerable resistance.



Do not:

- Burn the tick off (for example, using lighted cigarette ends or match heads).
- Apply petroleum jelly, alcohol, nail varnish remover, or other substances (as this may stimulate the tick to regurgitate potentially infected material into the skin, which may increase the risk of transmission of infection).
- If you must use your fingernails to pull the tick off, wash your hands first, and don't squeeze the tick.

After removal, clean the skin with soap and water, or skin disinfectant, and wash hands.

If travelling in Europe, (including many established and new holiday destinations for outdoor tourism, for example Austria, Germany and Switzerland) make sure you learn about **Tick Borne Encephalitis (TBE)** before you go. It is a viral disease that attacks the nervous system and can result in serious meningitis (inflammation of the tissues around the brain), encephalitis (brain inflammation) and can lead to death. More info here - <http://www.tickalert.org/>



If you think you may have Lyme disease, download *Advanced Topics in Lyme Disease*, which is one of the definitive papers on the diagnosis and treatment guidelines for Lyme and other tick borne illnesses, by Joseph Burrascano (one of the most highly regarded and recognized doctors specializing in research and in the treatment of Lyme Disease). You can find it here -

<http://www.woodsmoke.uk.com/documents/files/lymesdisease.pdf>

Please don't let this stop you enjoying the outdoors... just be aware of the dangers and be vigilant.

