



Members' guide

Lyme and tick-borne diseases



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Introduction

People working outdoors in areas with infected ticks are at risk of contracting Lyme disease and other tick-borne infections. Those at risk include people working in animal or agriculture-related occupations, forestry workers and engineers who may be exposed to ticks when walking through bracken.

However, anyone who works outdoors in areas with infected ticks, or who is in contact with animals in high-risk areas, is at risk of contracting a tick-borne infection.

Tick-borne infections are examples of vector-borne diseases (VBDs) – infections passed from one animal to another via the bite of an infected vector. If ticks feed on the blood of an

infected animal, they can pass on the infection on the subsequent occasions they feed.

Thousands of people in the UK contract Lyme disease every year, and cases appear to be on the rise. This may be due in part to increased surveillance, detection and awareness, but changes in human lifestyle, animal movements, habitats and climate may all play a role.

Under health and safety law, employers have an obligation to assess and control the risk of outdoor workers contracting tick-borne infections. This guide for reps outlines the main tick-borne infections, how the risk should be managed in the workplace and provides suggestions for engaging with the employer in the management of the risk.

1. What are ticks?

1.1 Ticks are small, parasitic arachnids that feed on the blood of a large variety of hosts, including mammals, birds and reptiles. The size of a tick varies depending on the stage it is at in its life cycle, with a larva being as small as a full stop on this page and fully fed females being around the size of a baked bean.

1.2 There are around 20 different tick species recorded as endemic to the UK. Most only feed on specific types of animal, such as birds, but occasionally they find their way onto pets and humans. The tick most likely to bite humans in the UK is *Ixodes Ricinus*, more commonly known as the sheep tick or castor bean tick.

1.3 When ticks search for a host on which to feed, they climb to the tips of vegetation to make it easier for them to attach, known as “questing”. They will climb on when a host brushes past the vegetation. Once a suitable feeding site has been found on the host, the tick will feed – potentially for several days, depending on the life stage of the tick – before detaching and dropping off.

2. Where are ticks found?

2.1 Ticks require areas with dense ground layer coverage of vegetation for survival and reproduction. Areas such as woodlands, grasslands and moorlands provide this dense vegetation layer and a suitable range of hosts on which to feed. Within these habitats, ticks are often found in ecotones – the transition areas between different habitats.

2.2 As such, ticks can be found all over the UK. Some of the areas where they are particularly common include the New Forest, Exmoor, the South Downs, Thetford Forest, the Lake District, the North Yorkshire Moors, and the Highlands and Islands of Scotland. However, they are increasingly reported in gardens and urban parks.

2.3 There is a consensus that the distribution and abundance of ticks is changing in both the UK and across Europe, although the lack of reliable data makes the extent of this hard to determine. It is likely that changes to the weather, the landscape and the population density of the animals they typically feed on, driven by climate change, play a role in this.

3. How many are infected?

3.1 Most ticks bites are harmless as not all ticks carry disease. Nevertheless, infected ticks are found throughout the UK. Although some areas appear to have a higher prevalence of infected ticks, prevalence data are incomplete and infection rates may fluctuate from year to year.

3.2 Studies suggest that infection rates in a given area could range from zero to almost one in five ticks. One study of urban green spaces in southern England conducted in 2015 and 2016 found that 18% of ticks were infected with a disease.

3.3 Although ticks are present all year around, they are most likely to bite between February and September.

4. Which diseases can tick bites cause?

4.1 Different species of tick can act as vectors for different diseases, but taken as a whole ticks are capable of transmitting pathogens causing the following diseases.

Lyme disease

4.2 Lyme disease, also called Lyme borreliosis, is the most common disease carried by ticks. It is a bacterial infection that can cause a wide variety of symptoms. The most common are flu-like symptoms of aching, fever, headache and fatigue; photophobia (light sensitivity); abnormal skin sensations (tingling, numbness, itching); a stiff neck; and, in two-thirds of cases, an erythema migrans rash – a roughly circular red rash, without itching or pain, that slowly spreads outwards.

4.3 In some cases, Lyme disease can affect the central and peripheral nervous systems, which is known as Lyme neuroborreliosis or neurologic Lyme disease. This can cause a wide range of neurological and psychiatric symptoms.

Anaplasmosis

4.4 Anaplasmosis, also called Human Granulocytic Anaplasmosis (HGA) tends to cause fever, chills, severe headache, muscle aches, nausea, vomiting, diarrhoea and loss of ap-

petite. There have been some UK cases but testing of potential cases is rare.

Babesiosis

4.5 Babesiosis is caused by single-celled parasitic microorganisms that infect red blood cells. Many people infected with Babesia do not have symptoms, but older people and those who are immunocompromised are at greater risk. It can cause flu-like symptoms, such as fever, headache, body aches, nausea and fatigue. Babesiosis can also cause haemolytic anaemia – the abnormal breakdown of red blood cells.

Louping ill

4.6 Louping ill is a very rare disease in humans which causes a severe infection of the central nervous system. The disease has two phases, the first of which comes with flu-like symptoms. The second phase is more severe, with neurological effects.

Ehrlichiosis

4.7 Early symptoms of ehrlichiosis are usually mild or moderate and may include flu-like symptoms, including fever, headache, muscle aches, nausea, vomiting, diarrhoea, loss of appetite and rash.

Tick-borne encephalitis

4.8 Tick-borne encephalitis (TBE) can cause a few days of flu-like symptoms, and in a very small number of cases can progress to encephalitis, a more serious disease involving the central nervous system. The first documented case of TBE acquired in the UK was reported in July 2019.

5. Diagnosis and testing

5.1 Diagnosis of Lyme disease can be complicated because typical symptoms overlap with many other conditions. This is further complicated by the fact there are no tests for Lyme disease currently in routine use that can definitively diagnose the disease or distinguish active from past infection.

5.2 National Institute for Health and Care Excellence (NICE) guidelines state that doctors should diagnose Lyme disease and begin treatment (a course of antibiotics) if a person has an erythema migrans rash. However, in the absence of a rash, NICE says doctors can diagnose either by recognising typical symptoms following a known tick bite or by suspecting possible Lyme disease and confirming this with a test.

5.3 Blood tests which look for antibodies are the main test. This is usually carried out through a two-stage process. However, they do not always produce accurate results. Tests can return a false positive result if the individual has other bacterial infections. False negatives can happen if antibodies have not developed sufficiently, despite there being an active infection. Additionally, antibodies can persist for years, so a positive test does not always indicate active disease.

6. How common are tick-borne diseases?

6.1 Lyme disease is the most common of the tick-borne diseases in the UK. Figures from Public Health England suggest there are between 2,000 to 3,000 new cases each year in England and Wales.

6.2 However, some have suggested this is an underestimate because the disease can be difficult to diagnose and people may not notice or remember a tick bite.

6.3 Some research suggests the incidence of Lyme disease is on the rise. One study estimated that the prevalence of Lyme disease increased rapidly between 2001 and 2012, leading to an incidence of around one in every 8,200 people. It was detected in patients living in every UK region, with the highest incidence rates in Scotland, followed by south west and southern England.

6.4 However, this study was based on NHS health records and this may therefore be due to wider awareness of the issue and GPs who have better diagnostic guidelines.

7. The law

7.1 The Health and Safety at Work Act 1974 requires employers to ensure the general health, safety and welfare of their staff. More specific regulations also apply in the workplace for preventing, controlling and reporting tick-borne infections.

7.2 The Control of Substances Hazardous to Health Regulations 2002 (COSHH) regulate work with substances that present a risk to human health. Tick-borne diseases are classed as “biological agents” and the regulations require employers to assess and control workers’ exposure.

Consultation

7.3 Employers have a duty under the Safety Representatives and Safety Committees Regulations 1977 to consult health and safety representatives on:

- The introduction of any measure likely to substantially affect the health and safety of employees – for example, a new work activity that carries a risk of being bitten by a tick;
- Information they must provide to employees – such as information on ticks and the control measures they have planned to control the risk of being bitten; and

- The planning and organising of any health and safety training – such as training in the employer’s tick prevention strategy.

7.4 Additionally, employers should consult health and safety representatives on the risk assessment – reps and employees have practical knowledge to contribute and will be able to advise on whether the control measures are practical and feasible.

Accident reporting

7.5 The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) require employers to report diseases that are attributable to an occupational exposure to a biological agent. If a worker is diagnosed with Lyme or any other tick-borne disease after being bitten by a tick at work, the employer must report it to the Health and Safety Executive.

Risk assessments

7.6 As infected ticks are found across the UK, there is a foreseeable risk to anyone working in woodlands, grasslands and moorlands, and adjacent ecotones, including rural gardens and urban parks.

7.7 Given the evidence of changing distribution of ticks, reps should encourage their

employer to consider the environment people work in and whether it is a typical tick habitat, even if it is not in an area of country known for high numbers of ticks. A narrow focus on well-known tick hotspots, such as the New Forest or the Highlands of Scotland, should be discouraged.

7.8 An employer's first duty under COSHH is to stop employees being exposed to a source of infection wherever possible. Employers will need to consider whether the job can be modified so that employees do not enter at-risk areas with woods, bushes, tall grass and leaf litter.

7.9 If this isn't possible, employers should evaluate the risks and work out, in consultation with staff, how to control the risk of tick bites. Employers should consider how likely it is that infection will result, principally by evaluating how often tasks are carried out in tick habitats, how long workers will spend in the environment and how many employees are likely to be exposed.

Control measures

7.10 Exposure cannot always be prevented. Where this is the case, COSHH requires employers to adequately control it. This means reducing the risk of infection to a level that will not harm workers' health.

7.11 If possible, employers should consider whether they can control the vegetation in the work area and control or discourage the activities of animals. This will be more likely on land that is owned by the employer, but it may be possible to arrange this with landowners in advance of work starting.

7.12 Reps should consider whether the risk – the intensity of the work activity in tick habitats – makes this necessary. If staff visit the at-risk area routinely, the employer should consider regularly removing leaf litter or removing, mowing or cutting back tall grass and brush; controlling rodent and small mammal populations; and discouraging deer activity.

7.13 If this isn't possible, other control measures and the principles of good occupational hygiene should be applied in all situations.

Clothing and PPE

7.14 When avoiding at-risk sites is not possible, personal protective equipment is especially important. Workers should be provided with protective clothing that prevents ticks from attaching to the skin. This is principally long-sleeved shirts, long trousers, socks, possibly gloves and closed-toed shoes. Shirts should fit tightly around the wrists and be tucked into the trousers. Socks should be pulled over the ends of the trouser legs.

7.15 Employers should ensure clothes are cleaned promptly at sufficient temperature to kill any ticks that may remain. Ideally, this will be arranged by the employer. In circumstances where this is employees' responsibility, they should be provided with appropriate information on how to clean the clothing.

Insect repellents

7.16 Employers should consider whether to provide workers with insect repellents for any exposed skin, although providing workers with appropriate clothing is preferable.

7.17 Repellents containing 50% DEET and picaridin, which are applied directly to the skin, are effective against ticks and are widely available.

7.18 If insect repellents are used, employers should ensure they are used in line with the manufacturer or supplier's instructions and that workers should be shown how to use them.

7.19 Both DEET and picaridin can cause allergic reactions in sensitive individuals. If using these products, employers should ensure workers are asked about their allergies.

Training

7.20 Employers must provide workers with appropriate training. This includes information about:

- The employer's precautions and the worker's role in implementing them, such as covering exposed skin;
- How tick-borne diseases are spread;
- Where ticks are commonly found;
- What ticks look like at each life stage;
- The risks of exposure and infection;
- Common symptoms of tick-borne infections;
- That they should monitor themselves for any symptoms in the weeks after working in tick habitats;
- The importance of the timely reporting of workplace illnesses and injuries;
- How tick bites known to have occurred during the course of employment should be entered in the accident book;
- How to check themselves for ticks on the skin;
- The importance of prompt, correct tick removal and how to do this and how to use tick removal tools;
- If necessary, organisations providing information and support, such as patient charities.

Tick removal tools

7.21 When working in areas where ticks may live, workers should be encouraged to inspect their skin and clothing periodically throughout a job and at the end of the day. Removing any attached ticks within 24 hours can decrease the risk of infection.

7.22 Employers should provide staff with tick removal tools, which are similar to tweezers but better designed for the job of removing ticks. They can be purchased online or from many vets and pharmacies. Staff should be trained in how to use them and, if they are bitten, that they should check for a rash in the following weeks and consult their doctor if a rash or other symptoms develop.

8. More information and resources

Resources

- Prospect factcard on zoonotic infections
<https://library.prospect.org.uk/id/2017/June/22/Zoonotic-infections>
- Health and Safety Executive COSHH guidance
www.hse.gov.uk/coshh
- Public Health England tick awareness resources,
www.gov.uk/guidance/tick-surveillance-scheme
- National Institute for Occupational Safety and Health guidance on occupational Lyme disease
www.cdc.gov/niosh/topics/lyme/default.html
- Royal College of General Practitioners Lyme disease toolkit
www.rcgp.org.uk/clinical-and-research/resources/toolkits/lyme-disease-toolkit.aspx
- NHS information on Lyme disease
www.nhs.uk/conditions/lyme-disease

Organisations

- **Lyme Disease Action** – charity raising awareness of tick-borne diseases through information, support and scientific and medical education
www.lymediseaseaction.org.uk
- **Lyme Disease UK** – charity providing support and guidance to people living with the effects of Lyme disease,
lymediseaseuk.com
- **Tick-borne Illness Campaign Scotland** – charity focused on achieving better treatment for patients in Scotland with Lyme Disease and related co-infections
www.ticscotland.org.uk



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