

# Tick-borne encephalitis virus in the UK: What it is and how to protect yourself

April 18 2023, by Sally Cutler

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Credit: AI-generated image ([disclaimer](#))

A confirmed case of [tick-borne encephalitis](#) (TBE) was recently [reported in England](#). TBE is a disease that can lead to inflammation in the brain and is caused by a virus transmitted by the bite of a tick.

These blood-feeding arthropods can [harbor and transmit](#) various

infectious diseases. Many associate tick bites with Lyme disease, however, in much of Europe (northern, central, and eastern regions and beyond through to parts of Asia), [TBE virus](#) can be transmitted by the same ticks.

In fact, more than [3,800 cases](#) of TBE were reported across 24 European countries during 2020, according to the European Center for Disease Prevention and Control. The incidence in Europe was 0.9 cases per 100,000 people in 2020, but this shows significant variation by country. For example, the rate was 7.9 per 100,000 in the Czech Republic and 24.3 per 100,000 in Lithuania.

A general upward trend in human cases has been noted over recent years, while there have been expansions to the usual known areas for TBE. We don't fully understand the reasons for this, but [climate change](#) is likely to be an important factor.

This virus wasn't present in the UK until recent years. An initial case was reported [in 2019](#) in an infant who acquired the infection in southern England. This was followed by another probable case from southern England [in 2020](#). In June 2022 a case was reported [in Scotland](#), and the most recent case, reported in October 2022, was a person thought to have become infected while visiting England's North Yorkshire Moors.

Taken together, this evidence suggests that the TBE virus is now successfully circulating in the UK, albeit at low levels.

## **How did it get here?**

Ticks can "hitch a lift" on migratory birds, which is probably the route of entry into the UK. However, for the virus to [establish and circulate](#), specific climatic conditions are needed that allow the different life stages of a tick to feed on the blood of their vertebrate host (such as a

rodent). The virus can be transferred from infected to non-infected ticks when both feed on the same host.

Since 2019, studies of [ticks in the UK](#) have detected low levels of TBE virus in ticks from both [Thetford forest](#) and the Hampshire and Dorset border region. Ticks infected with TBE virus have also been detected in [the New Forest](#) and the North Yorkshire Moors.

Slight differences have been found in the genetic background between these viruses, suggesting there have been introductions from multiple locations.

[TBE virus](#) can be divided into five variants based on the geographical areas in which they're generally found. The variant being detected in the UK to date belongs to the European subtype of TBE virus and has been one of the milder variants.

Each variant consists of multiple strains. Those detected in the UK have [shown similarity](#) to the Norwegian Mandal, a strain identified in 2009, and a strain detected in 2017 in the Netherlands.

## Symptoms

Although the virus has encephalitis in its name, becoming infected doesn't necessarily mean you will get [encephalitis](#) (swelling of the brain).

The [effects of this virus](#) can range from having no symptoms at all, to fever, fatigue and body pains, through to infection of the central nervous system where it results in inflammation (meningitis to severe encephalitis) that can lead to long-term neurological damage or death. Encephalitis is more common in older patients.

More serious symptoms to look out for that may indicate encephalitis

include severe headache, a stiff neck, confusion, and weakness in the arms and legs.

## Preventing TBE

Typically, TBE shows [a seasonal pattern](#) with a peak in July and August.

There is [a vaccine](#) that has been used to prevent TBE in endemic regions for many years. The vaccines are safe and highly effective, but require boosters.

While the levels of TBE virus are low in the UK, vaccination is probably not justifiable, but this needs to be actively monitored. Vaccination might be considered for selected groups at high risk of tick exposure, such as forestry workers.

The vaccine is also worth considering [for people](#) visiting a country where TBE is common and planning to do outdoor activities while there. The vaccine isn't available on the NHS but can be accessed through travel clinics.

As we're seeing TBE [virus](#) become established in the UK, we need to ensure that those who become sick after tick bites receive a screen for a full range of tick-borne pathogens, rather than just the better-known Lyme disease tests. Accordingly, the [UK Health and Security Agency](#) has recommended changes to testing in hospitals to ensure quick detection of new cases.

Also, enhanced surveillance of ticks will be important to help us understand TBE risk in different areas of the UK.

While the overall risk to the public is very low, people can take [simple measures](#) to reduce the risk of tick bites when outdoors in moorlands and

woodlands. These include walking on clearly marked paths, covering skin with clothing as much as possible, and using insect repellents such as Deet.

It's also worthwhile checking your body for ticks after time spent in potentially tick-infested areas. Anyone who becomes unwell after a [tick](#) bite should see a doctor.

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