



UK Health
Security
Agency



Department
for Environment
Food & Rural Affairs



Animal &
Plant Health
Agency

One Health vector-borne disease surveillance report 2025

May 2026

Presentation

- This presentation accompanies the first annual One Health vector-borne disease surveillance report, published May 2026
- The aim of this presentation is to provide a summary of the report
- Please refer to the full report for further detail and references, available from:
[One Health vector-borne disease surveillance - GOV.UK](#)

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1. Background

- ***What are vector-borne diseases (VBDs)?*** Diseases that have life cycles that include arthropod vectors (insects, arachnids), animals and humans
- ***What is One Health?*** One Health is defined as a unifying approach to sustainably balance and optimize the health of people, animals (domestic and wild) and ecosystems (plants and the environment) by recognising that all three of these are closely linked and interdependent
- ***What is a One Health approach to VBD surveillance?*** Integrating human, animal and arthropod vector surveillance to monitor and respond to the risk of VBDs, requiring multisectoral collaboration

1. Background

Changing epidemiology of VBDs

- In recent decades, there has been a shift in the distribution and epidemiology of major VBDs (including malaria, dengue, chikungunya, West Nile virus and Lyme disease)
- Record global case numbers have been reported for diseases like chikungunya and dengue, and in Europe countries have seen outbreaks of these diseases for the first time

1. Background

Emergence of locally-acquired human cases

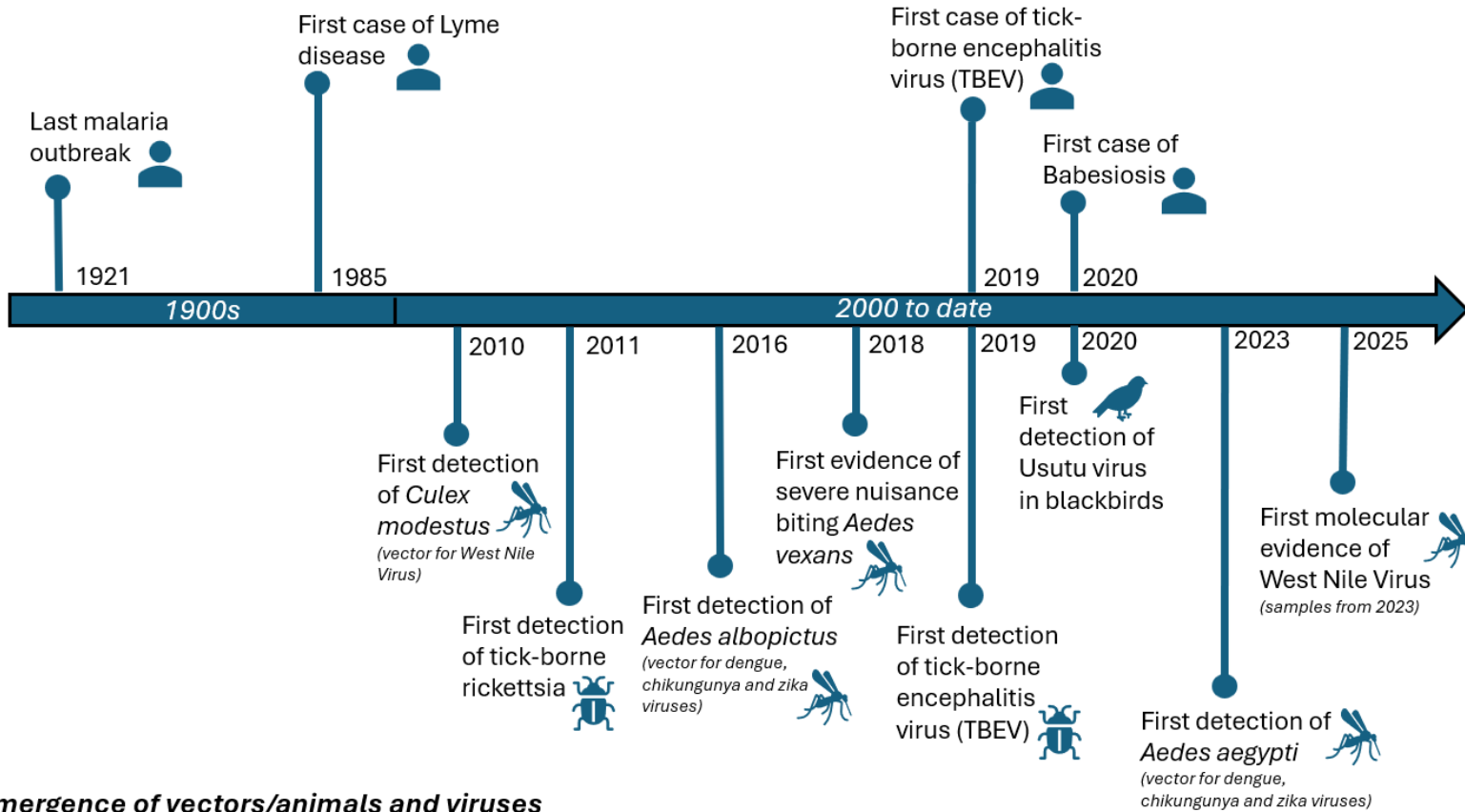


Figure 1. Timeline of the emergence of VBDs in vectors, animals and locally-acquired human cases in England

1. Background

In response to this changing risk of VBDs to human health:

This new One Health VBD surveillance report integrates data from vector, animal and human surveillance for 2025 in England

Publishes the VBD risk monitoring matrix for the first time, a tool which synthesises surveillance data into a composite risk level to systematically track the dynamic risk of VBDs to human health in England

- Surveillance data is reported for pathogens from each group of the VBD risk monitoring matrix, where data is available and where detections were reported through vector, animal or human surveillance in 2025
- An overview of existing surveillance systems for vectors, animals and humans is summarised in Appendix B to D of the report

2. One Health VBD coordination

- There are several multi-agency groups (for example, the [Human Animal Infections and Risk Surveillance \(HAIRS\) group](#)) and networks which help to coordinate preparing, monitoring and responding to the risks of VBDs in England
- During 2025, a new joint One Health West Nile virus surveillance group was convened, including the Animal and Plant Health Agency (APHA), NHS Blood and Transfusion service, and UKHSA, that met monthly during the summer and monitored relevant vector, animal and human surveillance and research data

3. VBD risk monitoring matrix

- The VBD risk monitoring matrix was developed to inform prevention, preparedness and response activities
- To compile the matrix:
 - An initial list of VBDs was compiled through literature search and surveillance reports
 - Pathogens were included or excluded according to:
 - Inclusion: Reporting of a human case in the UK or Europe; and/or the pathogen had led to an outbreak or event of public health significance anywhere in the world within the last 10 years
 - Exclusion: If the pathogen was already monitored by one of the other UKHSA-based horizon scanning groups based on mode of transmission, for example, *Yersinia pestis* is monitored by the contact horizon scanning group

3. VBD risk monitoring matrix

- VBDs were grouped into the following **four categories** and the transmission level summarised (Level 0 to 4):
 - Group 1 Mosquito borne pathogens with no significant animal reservoir
 - Group 2 Mosquito borne pathogens with animal reservoir
 - Group 3 Tick-borne pathogens
 - Group 4 Pathogens transmitted by other vectors
- Based on data up to 31 December 2025, **40 VBDs of human health significance** were included:
 - 16 mosquito-borne, 10 tick-borne, 13 transmitted by other vector species, and one with multiple modes of transmission

3. VBD risk monitoring matrix

Level 0: vector not detected

Transmission level	Group 1 Mosquito borne pathogens with no significant animal reservoir	Group 2 Mosquito borne pathogens with animal reservoir	Group 3 Tick-borne pathogens	Group 4 Pathogens transmitted by other vectors
Level 0 – Vector not detected		Equine encephalitis viruses Ross river virus		<i>Oropouche virus</i> <i>Leishmania spp</i> (leishmaniasis) <i>Trypanosoma spp</i> Filaria: <i>Onchocerca volvulus</i> , <i>Wuchereria bancrofti</i> , <i>Brugia spp</i> <i>Loa loa</i> , <i>Mansonella spp</i> Sand fly fever viruses <i>Orientia tsutsugamushi</i> (Rickettsiaceae family)

3. VBD risk monitoring matrix

Level 1: vector present

Transmission level	Group 1 Mosquito borne pathogens with no significant animal reservoir	Group 2 Mosquito borne pathogens with animal reservoir	Group 3 Tick-borne pathogens	Group 4 Pathogens transmitted by other vectors
Level 1a – Detected (defined as competent vector detected transiently in single setting or linked to importation (e.g. freight) or otherwise without evidence of being established)	Dengue virus Chikungunya virus Zika virus Yellow fever virus Mayaro virus	Japanese encephalitis virus Inkoo virus	Other spotted fever group rickettsioses (<i>R. rickettsia</i> , <i>R. conorii conorii</i> , <i>R. conorii indica</i> , <i>R. africae</i>)**** Crimean-Congo Haemorrhagic Fever virus	
Level 1b – Established (defined as continued detection of competent vector in single or multiple sites over time)	<i>Plasmodium</i> spp (malaria)	Rift Valley virus Ťahyňa virus <i>Dirofilaria</i> spp Sindbis virus	<i>Neoehrlichia mikurensis</i>	<i>Rickettsia typhi</i> (Murine typhus) <i>Borrelia recurrentis</i> (Louse-borne relapsing fever) <i>Rickettsia prowazekii</i> (Epidemic typhus) Thelazia callipaeda <i>Babesia venatorum</i>

**** Not *R. massiliae*, *R. raoultii*, *R. helvetica* or *R. felis*

3. VBD risk monitoring matrix

Level 2: Pathogen detected in vector or animals

Transmission level	Group 1 Mosquito borne pathogens with no significant animal reservoir	Group 2 Mosquito borne pathogens with animal reservoir	Group 3 Tick-borne pathogens	Group 4 Pathogens transmitted by other vectors
Level 2a – Pathogen detected in vectors only	N/A	West Nile virus Usutu virus	<i>Rickettsia raoultii</i> <i>Rickettsia massiliae</i> <i>Rickettsia helvetica</i> <i>Borrelia miyamotoi</i> (Tick-borne relapsing fever) <i>Spiroplasma ixodetis</i>	<i>Rickettsia felis</i> (Flea-borne spotted fever)
Vel 2b – Pathogen detected in animals*	N/A	Usutu virus		

3. VBD risk monitoring matrix

Level 3: One or more autochthonous (locally-acquired) human case(s) in single geographical area OR single sporadic cases in unrelated geographical areas**

Transmission level	Group 1 Mosquito borne pathogens with no significant animal reservoir	Group 2 Mosquito borne pathogens with animal reservoir	Group 3 Tick-borne pathogens	Group 4 Pathogens transmitted by other vectors
Level 3 – One or more autochthonous (locally-acquired) human case(s) in single geographical area OR single sporadic cases in unrelated geographical areas**	<i>Francisella tularensis</i> (tularemia)***	<i>Francisella tularensis</i> (tularemia)	<i>Francisella tularensis</i> (tularemia) <i>Babesia divergens</i> <i>Anaplasma phagocytophilum</i> Louping ill virus Tick-borne encephalitis virus	<i>Francisella tularensis</i> (tularemia)

*** *Francisella tularensis* (tularemia) can be transmitted in a number of ways including via ticks, mosquito, animal contact, ingestion, and airborne routes

3. VBD risk monitoring matrix

Level 4: Geographically spread autochthonous (locally-acquired) transmission to humans

Transmission level	Group 1 Mosquito borne pathogens with no significant animal reservoir	Group 2 Mosquito borne pathogens with animal reservoir	Group 3 Tick-borne pathogens	Group 4 Pathogens transmitted by other vectors
Level 4 – Geographically spread autochthonous (locally-acquired) transmission to humans			<i>Borrelia burgdorferi</i> (Lyme disease)	

4. Summary of human cases of VBDs in England, 2025

Summary of human cases of VBDs in England, 2025	
Locally-acquired	Cases were limited to those transmitted by ticks (VBD risk monitoring matrix: Group 3), with Lyme disease remaining the most common in England, with 1,168 acute cases reported in 2025, and two cases of probable tick-borne encephalitis (TBE) complex reported in patients without a history of international travel. No locally acquired human cases of mosquito borne infections were reported in 2025.
Travel-associated	There were travel-associated cases of malaria (1,629 cases), dengue (336 cases), chikungunya (159 cases), rickettsioses (37 cases), Zika virus disease (7 cases) and West Nile virus (2 cases) reported in England. Three cases of imported Oropouche virus and one case of Usutu virus infection were reported, representing the first travel-associated cases diagnosed in England.

5. Summary of VBD incident responses in England, 2025

The table below outlines the 3 incident responses described in the 2025 report, refer to the report for a summary of the response to these incidents.

Case Study	
1. Detection of invasive mosquitoes	Single adult <i>Aedes albopictus</i> and <i>Aedes aegypti</i> were detected at Heathrow baggage terminal on two separate occasions.
2. First molecular evidence of West Nile virus in UK mosquitoes	During 2025, mosquitoes collected from a Nottinghamshire site in 2023 were tested for West Nile virus as part of the Vector-Borne-RADAR project.
3. TBE complex cases	In August 2025, two unrelated cases of probable TBE complex infections with no international travel history were notified to UKHSA.

6. Mosquito-borne pathogens with no significant animal reservoir (Group 1)

This section reports on 2025 cases of the Group 1 pathogens dengue, chikungunya, and Zika viruses (all transmitted by *Aedes* mosquito species, which are potentially invasive), and malaria.

Group 1 Surveillance summary, England 2025	
Vector (Mosquitoes)	• In 2025, there were two detections of invasive <i>Aedes</i> mosquito species identified through mosquito traps at London Heathrow airport, with no evidence of established populations • In 2025, three native <i>Anopheles</i> species detected • Between 2010 and 2015, there were no detections of invasive <i>Aedes</i> mosquito species however, from 2016 onwards, there has been one or two detections in most years
Animal	• Not applicable
Human	• To date, there have been no locally acquired cases of dengue, chikungunya and Zika virus disease in England and due to the absence of the main vector (<i>Aedes</i> mosquito species) the risk to human health is very low for all three pathogens. In 2025, a total of 502 travel-associated cases were reported • From 2021: • travel-associated cases of dengue in England have increased yearly with a record number of cases noted in 2024 (876 cases) which was in line with global trends. In 2025, there was a decrease in cases of dengue in England with a total of 336 cases • travel-associated cases of chikungunya have increased year on year with a total of 159 cases reported in 2025 • a small number of travel-associated cases of Zika virus have been reported with the highest number (15) noted in 2024 and 7 cases reported in 2025 • In 2025, there were 1,629 travel-associated cases of malaria (<i>Plasmodium</i> species) in the UK, this is a decrease in comparison to cases reported across the UK in 2024 • Cryptic malaria cases, reported in the Malaria annual reports, are uncommon in the UK and make up less than 1% of all cases

6. Mosquito-borne pathogens with no significant animal reservoir (Group 1)

- The figure (right) highlights travel-associated cases in England
 - Dengue remains the most frequently reported, but cases decreased from 2024, in line with global trends
 - Reported cases of chikungunya continued to increase
 - Small numbers of Zika virus disease continue to be reported each year

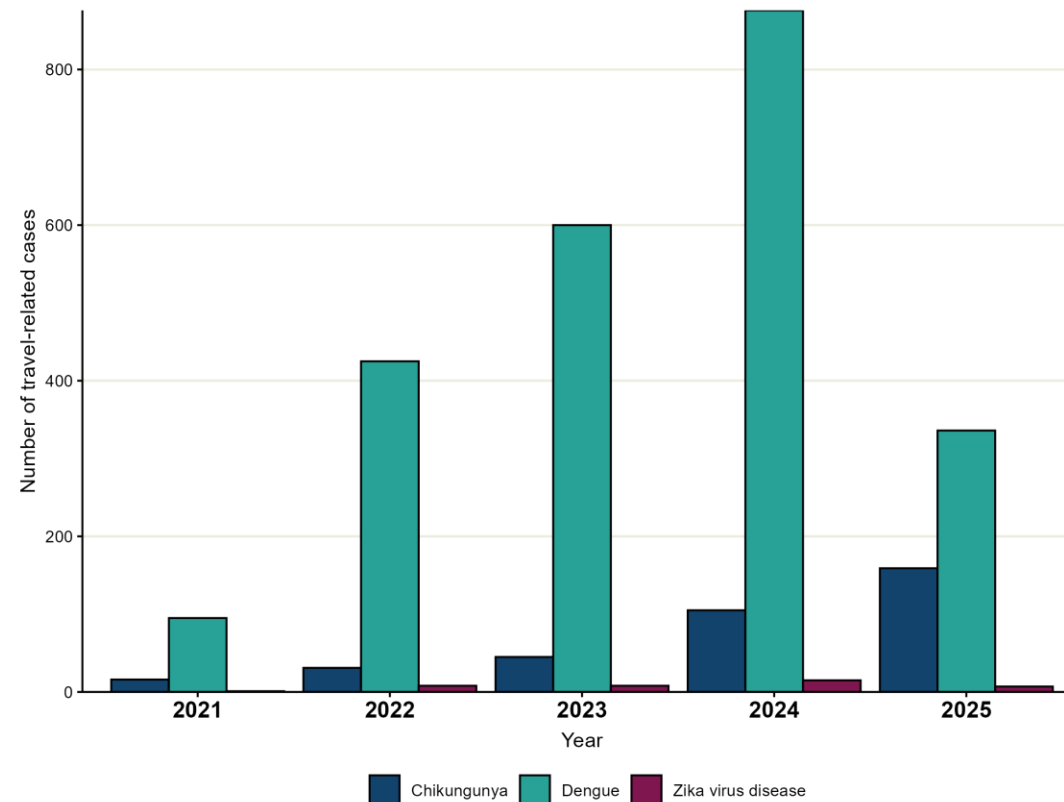


Figure. Number of travel-associated chikungunya, dengue and Zika virus disease cases by year, England, 2021 to 2025.

7. Mosquito-borne pathogens with significant animal reservoir (Group 2)

In Group 2 pathogens, Usutu virus (USUV) and West Nile virus (WNV) are reported on, transmitted by *Culex* species mosquitoes and maintained in a mosquito-bird transmission cycle.

Group 2 Surveillance summary, England 2025	
Vector (Mosquitoes)	• The bridge vector for Group 2 pathogens, <i>Culex modestus</i> was first detected in 1944 and again in 2010 in the North Kent marshes. Between 2010 and 2025, <i>Culex modestus</i> further expanded in sites in coastal and estuarine Essex, Suffolk, Hampshire and West Sussex. • In 2025, <i>Culex modestus</i> was detected in four new locations, Kent, Cambridgeshire, Northamptonshire and Lincolnshire. • In 2025, the first molecular detection of WNV in a UK mosquito was reported in a sample collected in 2023, with no further detections in subsequent samples collected during 2025 • In 2020, USUV was detected for the first time in mosquitoes in England and has since increased in its geographic range across England
Animal	Birds • As noted through vector surveillance, there have been no detections of WNV in birds in 2025 • There has been an increasing range of USUV detections in birds in southeast England Equines • In 2025 and in prior years, there were no detections of locally acquired WNV in equines
Human	• To date, there have been no locally acquired cases of WNV or USUV reported • In 2025, there were two travel-associated cases of WNV and a travel-associated case of USUV was reported for the first time, detected in a blood donor

7. Mosquito-borne pathogens with significant animal reservoir (Group 2)

- The geographic range of USUV detections in birds and mosquitoes has expanded since its first detection in 2020
- The figure (right) shows the distribution of USUV detections through bird surveillance in 2025

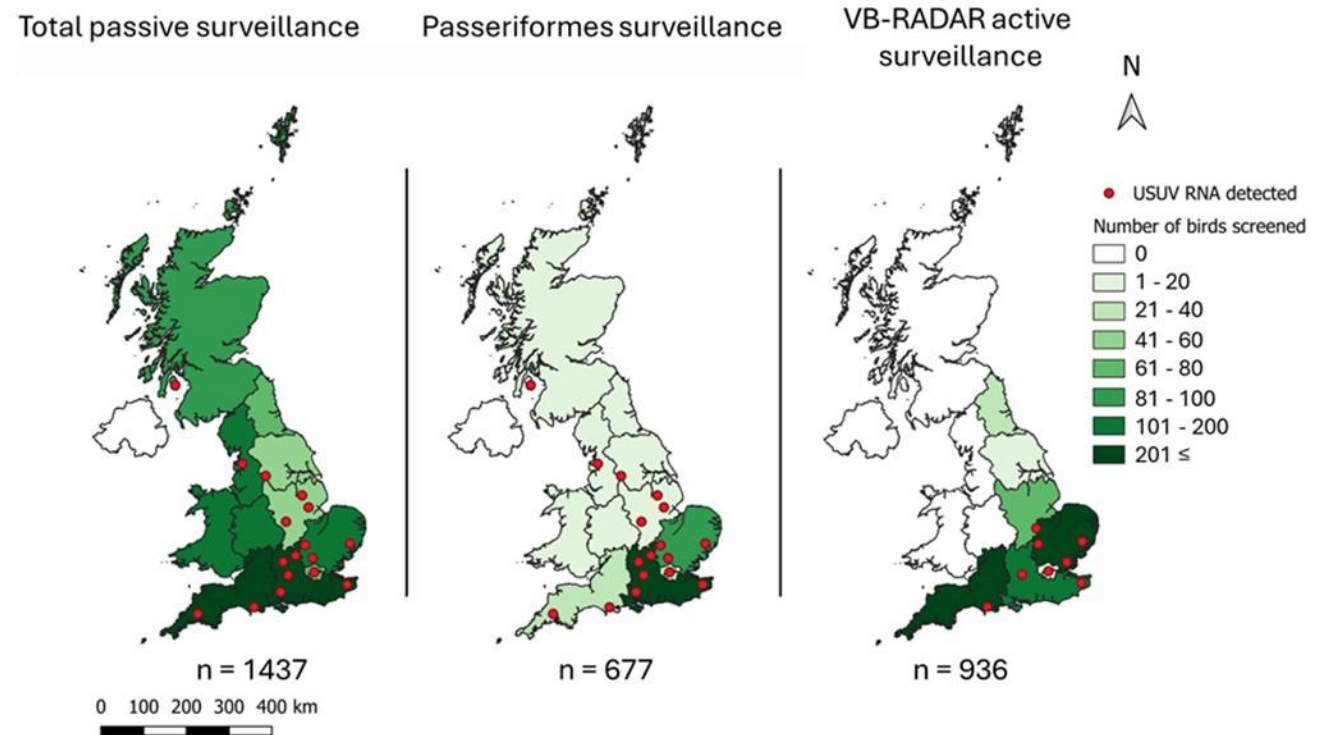


Figure. Bird surveillance across the Great Britain in 2025 and USUV detections (red circle), by (1) all birds screened for USUV and WNV, (2) *Passeriformes* (target species) only and (3) birds screened through the active surveillance VBD-RADAR project.

8. Tick-borne pathogens (Group 3)

This section reports on Group 3 pathogens, *Borrelia burgdorferi* (Lyme disease), tick-borne encephalitis virus (TBEV), louping ill virus (LIV), *Babesia divergens*, *Anaplasma phagocytophilum*, and Rickettsial infections reported in 2025.

Group 3 Surveillance summary, England 2025	
Vector (Ticks)	<i>Ixodes ricinus</i> remains the most common tick reported in England
Animal	Livestock - Louping ill virus (LIV) was reported in 31 sheep and 5 cattle - Tickborne fever caused by infection with <i>Anaplasma phagocytophilum</i> was reported in 104 sheep and 25 cattle - Babesiosis caused by infection with <i>Babesia divergens</i> was reported in 30 cattle
Human	- Lyme disease remains the most common locally acquired tick-borne infection - In 2025, 1,168 laboratory-confirmed acute Lyme disease cases (including acute neurological cases) were reported, this was higher than 2024 (959 cases) but similar to 2023 (1,151 cases) - Since 2019, there has been a total of six locally-acquired human cases of TBE complex (including confirmed and probable TBE complex). Of these cases, there were two locally acquired human cases of probable TBE complex in 2025. - Additionally, there were two travel-associated confirmed TBE complex cases (travel to Europe) in 2025 - There were 37 travel-associated cases of Rickettsial infections

8. Tick-borne pathogens (Group 3)

Lyme disease (*Borrelia burgdorferi*)

- In 2025, overall, 1,168 acute Lyme disease cases were reported, including 134 acute neurological cases (Figure to right)
- This was an increase compared to 2024, when 959 acute Lyme disease cases (including acute neurological cases) were reported, but was similar to 2023, when 1,151 cases were reported

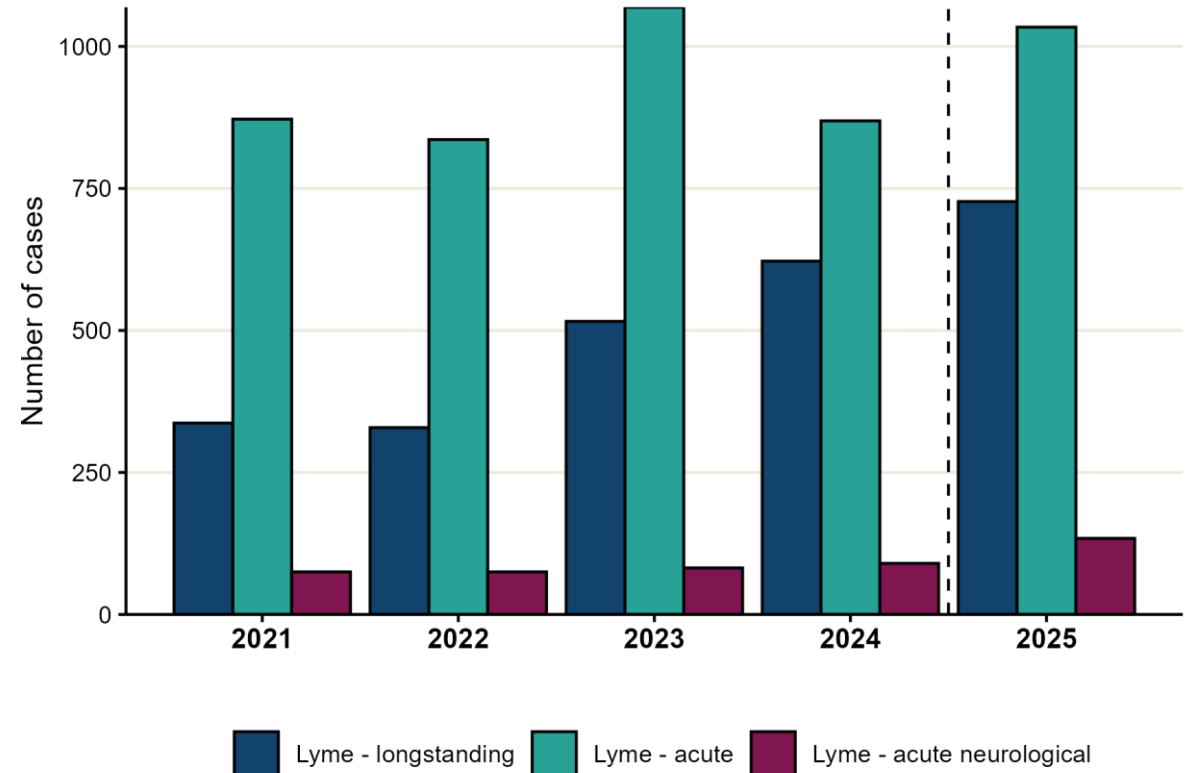


Figure. Laboratory confirmed cases of Lyme disease in England by year, 2021 to 2025. The dashed line indicates the change in surveillance definition from 2025 onwards.

9. Other vectors (Group 4)

This section reports on cases of disease caused by Group 4 pathogens (transmitted by arthropod vectors other than mosquitoes and ticks) reported in 2025.

Group 4 Surveillance summary, England 2025	
Vector	To date, there is no evidence of primary vectors of Oropouche virus
Animal	No key animal reservoirs present
Human	In 2025, there were three travel-associated cases of Oropouche virus were reported in England for the first time

10. Research and special studies

- This section highlights recent mosquito-, tick-borne and other VBD research and special studies of interest conducted in collaboration with Defra, APHA or UKHSA that were either published or ongoing during 2025, and where they have not been described earlier in the report
- Defra and UKRI (UK Research and Innovation) funded a number of VBD research projects from 2023 to 2026 including VB-RADAR, OpTick, TickTools
- Please refer to Table 8 in the report for a summary of research projects