

# TBE in Belgium

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**E-CDC risk status: affected** (data as of end 2022)

## History and current situation

In 2018, the two first human tick-borne encephalitis (TBE) cases with possible/probable autochthonous infection were diagnosed at the National Reference Centre (NRC) of Arbovirus (The Institute of Tropical Medicine, Antwerp, Belgium). Every year, some imported cases of TBE are also detected, infected in other European countries such as Germany,<sup>1</sup> Scandinavia, Austria, Kyrgyzstan or Slovenia<sup>2</sup> and Russia.

Several seroprevalence/prevalence studies in sentinel animals and ticks have been performed in Sciensano. Seropositive dogs, cattle, roe deer, and wild boar have been found in Belgium.<sup>3-7</sup> Up till now, no positive tick has been detected in Belgium (on a total of ca. 1,600 ticks tested).<sup>8</sup>

1. Serum samples of Belgian dogs were obtained from 3 diagnostic laboratories in Northern Belgium (n=688) and Southern Belgium (n=192). All samples were taken by local veterinary surgeons between March 15, 2009 and June 22, 2009. ELISA-positive and borderline samples were subjected to a tick-borne encephalitis virus (TBEV) seroneutralization test. One dog was confirmed TBEV seropositive but the clinical history of the seropositive dog could not explain beyond doubt where and when TBEV infection was acquired.
2. Based on a targeted, risk-based sampling design, serological screening was performed on Belgian cattle (n=650), selected from the 2010 Belgian national cattle surveillance serum bank. All samples were subjected to a seroneutralization test. Seventeen bovines were seropositive and 6 had borderline results. The overall bovine seroprevalence in the targeted area was estimated between 2.61% and 4.29%. This confirmed for the first time the presence of TBE foci in wild animals in Belgium.

3. Roe deer sera collected between 2008 and 2013 (n=190) in Flanders were examined for antibodies against TBEV using a seroneutralization test. Seroprevalence was 5.1%.
4. As part of a Flemish wildlife surveillance in 2013, a serological screening was performed on sera from wild boar (*Sus scrofa*; n=238) in order to detect TBEV-specific antibodies by using a seroneutralization test. Ten wild boars were found to be TBEV-seropositive (2.9% of tested wild boars). This study demonstrated the presence of TBEV-specific antibodies in wild boar and highlighted potential TBEV-foci in Flanders.

The above studies in animals suggest that TBEV has been circulating for at least several years in Belgium (at a low level), and infections in humans were expected to occur. In 2018, two human cases of TBE were reported, in people that were possibly/probably infected in Belgium. However, since they also traveled abroad during the incubation period, the autochthonous origin could not be confirmed. In 2019, a seroprevalence study among 195 forestry workers in Flanders revealed that none had antibodies showing evidence of an acquired infection.<sup>9</sup>

Three confirmed autochthonous cases have been diagnosed in Belgium during summer 2020. The patients had been exposed in geographically separate regions of the country, two of which were adjacent to an area with known TBEV seropositivity in animals.<sup>10</sup> Two travel-associated TBE cases were diagnosed in 2021. One after travel to Austria while the other after travel to the Czech Republic.

There were also two travel-associated TBE cases diagnosed in 2022. One after travel to Sweden and the other after travel to Slovenia. No autochthonous cases were reported in 2021 and 2022.

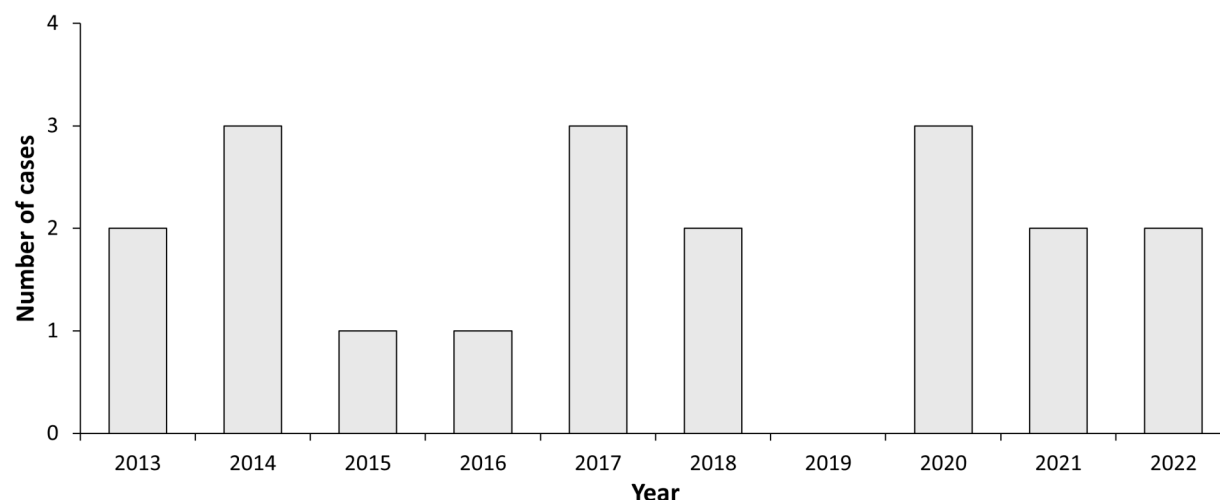
Based on the current epidemiological findings, Belgium is classified as an affected country for TBE.

**Table 1: Virus, vector, transmission of TBE in Belgium**

<b>Viral subtypes, distribution</b>	No information available in humans yet. No virus-positive animals or ticks have been reported to date.
<b>Reservoir animals</b>	Rodents: To date, no rodents seropositive for TBEV have been found in Belgium (Study realized by Sciensano in 2014, not published). Seropositive cattle, roe deer, and wild boar have been identified (cattle in the Wallonia region and wild boar in Flanders). <sup>3-7</sup>
<b>Infected tick species (%)</b>	No positive ticks have been detected (Sciensano project in 2018 – RNA detection, Institute of Tropical Medicine (ITM) project in 2018 – RNA detection). <sup>8</sup>
<b>Dairy product transmission</b>	No information available

**Table 2: TBE reporting and vaccine prevention in Belgium**

<b>Mandatory TBE reporting</b>	None
<b>Other TBE surveillance</b>	<ol style="list-style-type: none"> <li>1. A national reference center (NRC) for TBE has been established since 2011. This center performs laboratory confirmation in suspected human cases and reports to Sciensano. <ol style="list-style-type: none"> <li>a. From 2011 to 2015: Sciensano, Brussels, Belgium</li> <li>b. From 2016 to 2020: ITM, Antwerp, Belgium</li> <li>c. From 2021 to 2025: ITM, Antwerpen, Belgium</li> </ol> </li> <li>2. Human surveillance via NRC <ol style="list-style-type: none"> <li>a. From 2011 to 2015: Sciensano, Brussels, Belgium</li> <li>b. From 2016 to 2020: ITM, Antwerpen, Belgium</li> <li>c. From 2021 to 2025: ITM, Antwerpen, Belgium</li> </ol> </li> <li>3. Animal surveillance (2011 to present): Sciensano, Brussels, Belgium.<sup>3-7</sup></li> <li>4. Tick surveillance (2018 to present): ITM, Antwerp, Belgium and Sciensano, Brussels, Belgium.</li> </ol> <p>Case definition as described in <a href="https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:262:0001:0057:EN:PDF">https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:262:0001:0057:EN:PDF</a>. Confirmed case: symptoms of TBE and immunoglobulin M (IgM) and/or ribonucleic acid-positive.</p>
<b>Special clinical features</b>	No information available
<b>Available vaccines</b>	FSME-IMMUN (purchased from Baxter by Pfizer in 2014)
<b>Vaccination recommendations and reimbursement</b>	In 2019, the Belgian Superior Health Council published recommendations for 3 different epidemiological situations. In the current situation (sporadic cases possible), vaccination is only recommended for travelers to endemic regions doing outdoor activities in forested areas (such as hiking, camping, mushroom picking, etc.) during the tick season (spring, summer and autumn), and for people handling TBEV in a laboratory setting. <sup>11</sup>
<b>Vaccine uptake by age group/risk group/general population</b>	No data available
<b>Name, address/website of TBE NRC</b>	ITM, Antwerpen, Belgium, <a href="http://www.itg.be">www.itg.be</a>

**Figure 1: Burden of TBE in Belgium over time**

Source Data: Appendix—Figure 1

## Appendix

Source data: Figure 1

Year	Number of cases
2013	2
2014	3
2015	1
2016	1
2017	3

Year	Number of cases
2018	2
2019	0
2020	3
2021	2
2022	2

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