

TBE in Estonia

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E-CDC risk status: endemic (data as of end 2023)

History and current situation

The first cases of tick-borne encephalitis (TBE) in Estonia were identified in 1949. Today, Estonia is a TBE-endemic country. A TBE-endemic area in Estonia is defined as an area with circulation of the TBEV between ticks and vertebrate hosts as determined by detection of the TBEV or the demonstration of autochthonous infections in humans or animals within the last 20 years.

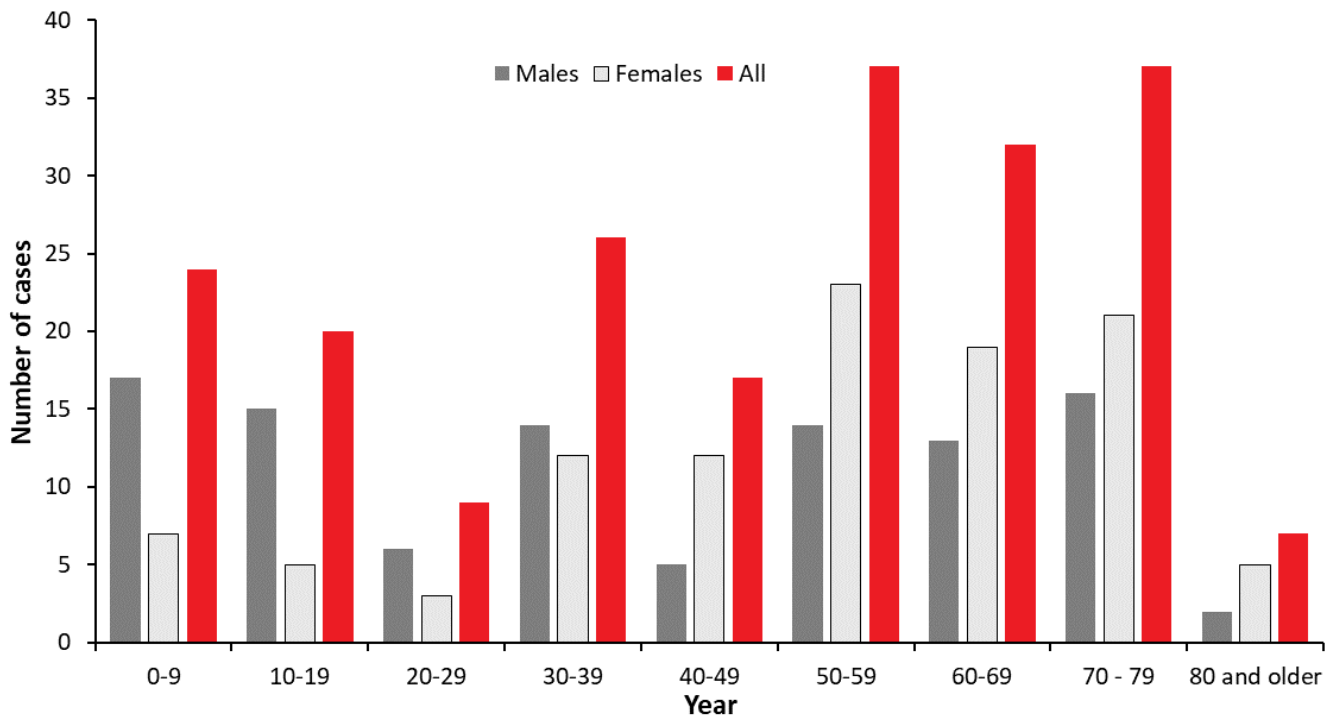
Euro-Asian genotypes of TBEV – the Western or European (TBEV-EU), Siberian (TBEV-Sib), and Far-Eastern (TBEV-FE)

subtypes are co-circulating in Estonia. Vectors of TBEV, the tick species *Ixodes ricinus* and *Ixodes persulcatus*, are distributed throughout the country.

The high-risk season for infection coincides with the period of biological activity of ticks and lasts for 7 months from April to November, peaking in June to August.

Most TBE cases are diagnosed in persons ≥ 60 years of age and the incidence among the rural population is 1.8 times higher than among the urban population.

Figure 1: Age and gender distribution of TBE cases in Estonia, 2023



TBE seasonality: case numbers, Estonia 2023

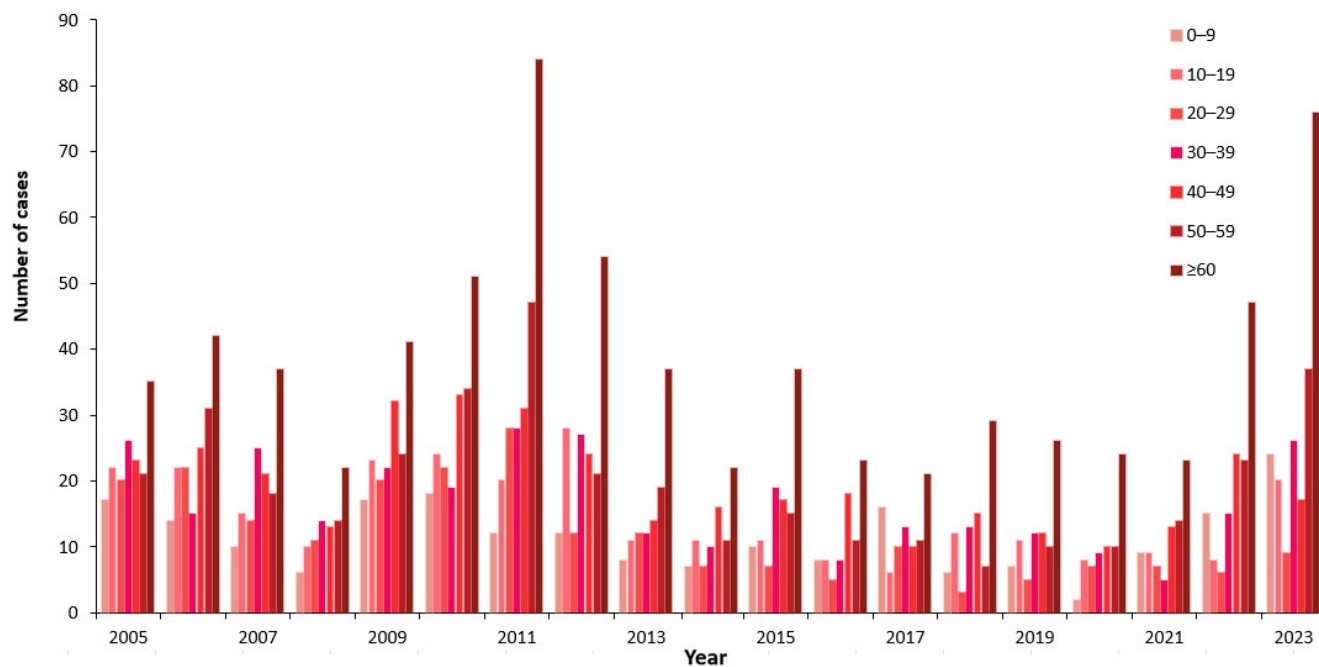
January – 1, February – 1, March – 0, April – 0, May – 3, June – 20, July – 19, August – 49, September – 45, October – 56, November – 11, December – 4 cases

TBE total cases 209 and incidence 15.6 per 100 000 population in Estonia 2023

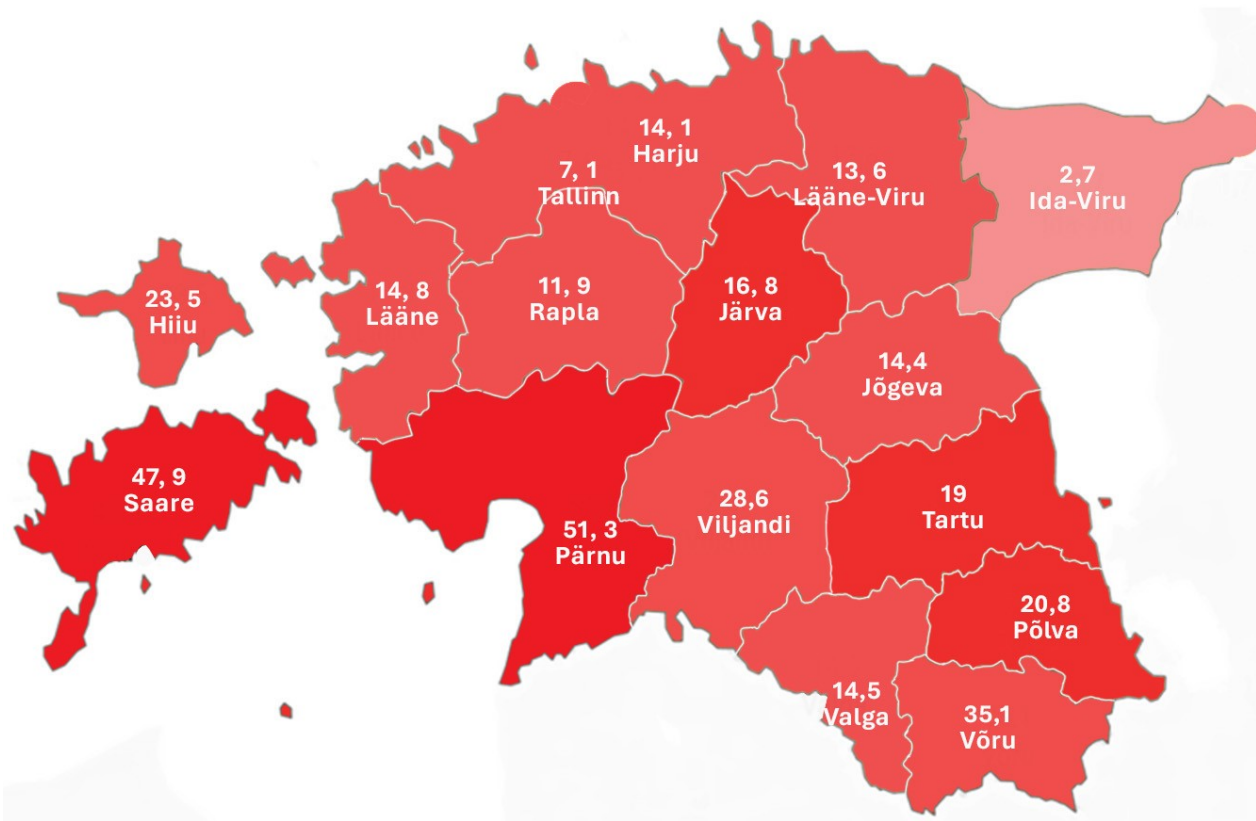
Source Data: Appendix—Figure 1

Overview of TBE in Estonia

Table 1: TBE in Estonia																			
Viral subtypes, distribution	Co-circulation of European (TBEV-EU), Far-Eastern (TBEV-FE), and Siberian (TBEV-Sib) subtypes																		
Reservoir animals	Rodents, ruminants, game																		
Infected tick species (%)	2011: <i>I. persulcatus</i> 8%, <i>I. ricinus</i> on mainland 0.6% – 0.8% and Saaremaa 3.0%. 2013: Estonia: <i>I. persulcatus</i> 4.23%, <i>I. ricinus</i> 0.42%. 2018: Tallinn 0.44% - 2.7%. 2023: Estonia 1.1% - 8.3%: Valga county 6.1% and Viljandi county 8.3%.																		
Dairy product transmission	Documented but rare																		
Mandatory TBE reporting	<p>Reporting: neurologists, infectious disease specialist</p> <p>Case definition Clinical criteria: a person with symptoms of the central nervous system (meningitis, meningoencephalitis, encephalomyelitis, encephaloradiculitis)</p> <p>Laboratory criteria for case confirmation: At least 1 of the following:</p> <ul style="list-style-type: none"> • TBE-specific IgM and IgG antibodies in blood • TBE-specific IgM antibodies in CSF • Seroconversion of 4-fold increase of TBE-specific antibodies in paired serum samples • Detection of TBE viral nucleic acid in a clinical specimen • Isolation of TBEV from clinical specimens. Probable case: detection of TBE-specific IgM antibodies in a unique serum sample <p>Epidemiological criteria Exposure to a common source (unpasteurized dairy product). Case classification:</p> <ul style="list-style-type: none"> • Possible case: not applicable • Probable case: a person meeting the clinical criteria and the laboratory criteria for a probable case OR a person meeting the clinical criteria and with an epidemiological link • Confirmed case: a person meeting the clinical and laboratory criteria for case confirmation 																		
Other TBE surveillance	Laboratory and epidemiological surveillance																		
Special clinical features	Biphasic disease: meningitis, meningoencephalitis, or meningoencephalomyelitis. Risk groups: people who often spend time outdoors (in nature)																		
Available vaccines	<p>ENCEPUR CHILDREN, ENCEPUR ADULTS, TICOVAC CHILDREN, TICOVAC ADULTS</p> <table border="1"> <thead> <tr> <th colspan="3">TBE vaccination by age in Estonia, 2022</th> </tr> <tr> <th>Age</th> <th>Vaccination (3 doses)</th> <th>Revaccination (dose 4 or more)</th> </tr> </thead> <tbody> <tr> <td>1 - 14</td> <td>6513</td> <td>6544</td> </tr> <tr> <td>15 - 17</td> <td>418</td> <td>1261</td> </tr> <tr> <td>Adults</td> <td>14475</td> <td>25800</td> </tr> <tr> <td colspan="3">General population of Estonia 2022: 1,331,796</td> </tr> </tbody> </table>	TBE vaccination by age in Estonia, 2022			Age	Vaccination (3 doses)	Revaccination (dose 4 or more)	1 - 14	6513	6544	15 - 17	418	1261	Adults	14475	25800	General population of Estonia 2022: 1,331,796		
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Vaccination recommendations and reimbursement	Vaccination recommendations 1998. No reimbursement; self-paid																		
Vaccine uptake by age group/risk group/general population	Vaccine uptake by general population (vaccinated and revaccinated): 2018 – 3.1%; 2019 – 3.7%; 2020 – 3.4%; 2021 – 2.6%, 2022 – 4.1%, 2023 – 5.8%.																		
Name, address/website of TBE National Reference Center	Health Board, Tallinn Paldiski St 81; https://www.terviseamet.ee																		

Figure 2: Age distribution of TBE in Estonia, 2005–2023

Source Data: Appendix—Figure 2

Figure 3: Sites of TBEV-infection in Estonia, 2023

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Appendix

Source data: Figure 1

Year	Males	Females	All
0 - 9	17	7	24
10 - 19	15	5	20
20 - 29	6	3	9
30 - 39	14	12	26
40 - 49	5	12	17
50 - 59	14	23	37
60 - 69	13	19	32
70 - 79	16	21	37
80 and older	2	5	7
Total	102	107	209

Source data: Figure 2

Year	Vanusrühmad (aastates) / Age groups (years)						
	0-9	10-19	20-29	30-39	40-49	50-59	60≤
2005	17	22	20	26	23	21	35
2006	14	22	22	15	25	31	42
2007	10	15	14	25	21	18	37
2008	6	10	11	14	13	14	22
2009	17	23	20	22	32	24	41
2010	18	24	22	19	33	34	51
2011	12	20	28	28	31	47	84
2012	12	28	12	27	24	21	54
2013	8	11	12	12	14	19	37
2014	7	11	7	10	16	11	22
2015	10	11	7	19	17	15	37
2016	8	8	5	8	18	11	23
2017	16	6	10	13	10	11	21
2018	6	12	3	13	15	7	29
2019	7	11	5	12	12	10	26
2020	2	8	7	9	10	10	24
2021	9	9	7	5	13	14	23
2022	15	8	6	15	24	23	47
2023	24	20	9	26	17	37	76

Source data: Figure 3

Counties	Cases
Tallinn (capital)	31
Harjumaa	25
Hiiumaa	2
Ida-Virumaa	3
Järvamaa	5
Jõgevamaa	4
Läänemaa	3
Lääne-Virumaa	8
Pärnumaa	45
Põlvamaa	5
Raplamaa	4
Saaremaa	15
Tartumaa	30
Valgamaa	4
Viljandimaa	13
Võrumaa	12
Total	209

References

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