

TBE in Lithuania

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

History and current situation

The first case of tick-borne encephalitis (TBE) in Lithuania, diagnosed by clinical and epidemiologic criteria only, was reported in 1953. A forest worker became ill with the disease in April after a tick bite, had a typical clinical presentation with shoulder girdle muscle paralysis and bulbar syndrome, and died after 12 days from the start of clinical symptoms. Autopsy data were compatible with viral encephalitis.¹ Serological diagnosis of TBE in Lithuania was started in 1970.²

In Lithuania, *Ixodes ricinus* is the main vector of tick-borne encephalitis virus (TBEV), which is spread throughout the entire country. In addition, *Dermacentor reticulatus* is also found in Lithuania.^{3,4,5} In 1974, 142 of 13,726 field-collected ticks in two northeastern districts of Lithuania (Rokiškis and Biržai) located near the Latvian border were identified as *Ixodes persulcatus*.⁶ The recent entomological studies have also detected *I. persulcatus* in the Rokiškis district.⁷ TBEV is found from ticks collected in all administrative districts of Lithuania and in 3 urban parks in the country.³ According to the recent nationwide study conducted in Lithuania in 2017–2019, which investigated 7,170 *I. ricinus* and 1,676 *D. reticulatus* ticks (questing), collected from 81 locations in all ten counties, TBEV-infected ticks were found at 16 locations in seven counties, with minimum infection rate (MIR) ranging from 0.1% to 1.0%. The MIR of TBEV in the total sample of *I. ricinus* was 0.4 % and for *D. reticulatus* it was estimated to be 0.4 %.⁴ Sequence analysis of Lithuanian TBEV strains isolated from humans and field-collected ticks has shown that the virus belongs to the European TBEV subtype.^{8,9} TBEV seroprevalence in non-vaccinated healthy permanent residents in Lithuania is 3%.¹⁰

Since 1990, the highest TBE incidence in Lithuania was recorded in 2003 (21.95 per 100 000; 763 cases), 2016 (22.1 per 100 000; 633 cases), and 2019 (25.5 per 100 000; 711 cases).¹¹ From 1998 to 2012, the highest annual incidence of TBE was recorded in the northern and central parts of the country, mainly in the municipalities of Kaunas, Panevėžys, and Šiauliai. Between 1998 and 2011, when the average incidence of TBE in Lithuania was 11.5 cases per

100,000 people, the average incidence rate in Panevėžys, Šiauliai and Radviliškis districts was 52.1, 45.6, and 33.3, respectively (3–5 times higher than the average incidence in the country).¹² Since 2013, a new trend in the epidemiology of TBE in Lithuania could be observed. While the incidence in the three aforementioned districts remains high, an increase in Vilnius, Alytus and Utena counties is gradually but steadily recorded. During the last 5 years, the highest TBE incidence rate in Lithuania was observed in Utena county (the northeastern part of Lithuania on the border to Latvia): 2019 – 59.5/100 000, 2020 – 66/100 000, 2021 – 31.6/100 000, 2022 – 33.5/100 000, 2023 – 40.5/100 000.¹¹

Presently, TBE is the most common viral infection of the CNS in Lithuania¹², with a total of 13,332 TBE cases reported between 1990 and 2023, and 22 lethal TBE cases registered during the last ten years (2013–2023).¹¹ Children (mainly school children and adolescents) comprise 8.7% of all TBE cases in the country¹². During the last 5 years (2019–2023), preschool children comprised 0.8% - 2% out of all TBE cases in the Lithuania.¹¹ Retired and unemployed people are the major risk group for infection with TBEV in Lithuania; 42.4%–56.4% of TBE patients are infected in the immediate areas surrounding their homes.^{13,14} 7.8% of TBE cases in Lithuania are milk-borne.¹⁴

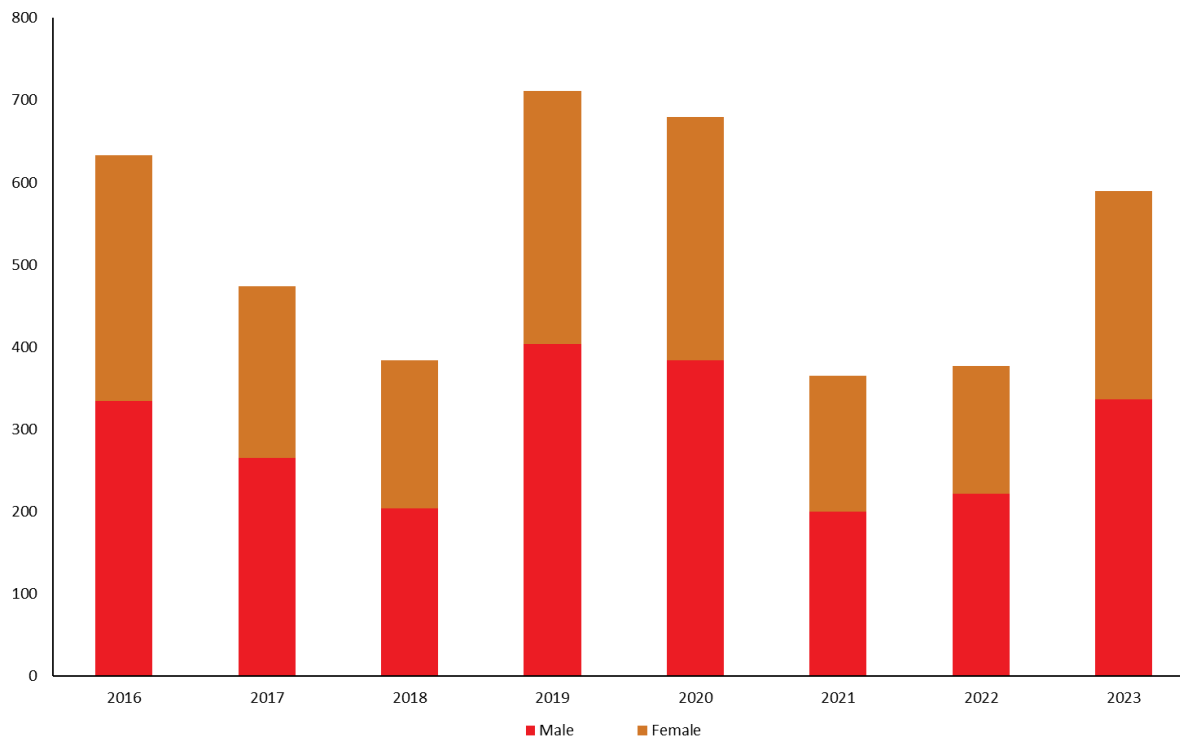
Overview of TBE in Lithuania

Table 1: Virus, vector, transmission of TBE in Lithuania

Viral subtypes, distribution	European TBEV subtype ^{8,9}
Reservoir animals	Main reservoir animals – <i>Apodemus agrarius</i> , <i>Apodemus flavicollis</i> , <i>Myodes glareolus</i> ¹⁵
Infected tick species (%)	<i>I. ricinus</i> (0.1%–1.84%), <i>D. reticulatus</i> (0.58%) ⁴
Dairy product transmission	7.8% ¹⁴

Table 2: TBE reporting and vaccine prevention in Lithuania

Mandatory TBE reporting	All patients with CNS form of TBEV infection confirmed by serological methods (TBEV IgM ± IgG) are reported to the National Public Health Centre under the Ministry of Health ¹¹
Other TBE surveillance	N/A
Special clinical features	Biphasic disease in 58%- 72.2% ^{13,14} Risk groups: retired people, unemployed people, and permanent inhabitants of highly endemic areas ^{11,13,14} Moderate and severe sequelae in 30.8%. Mortality 0.75% ¹³
Available vaccines	Encepur, Ticovac. ¹¹
Vaccination recommendations and reimbursement	Vaccination of adults: the recommendations by Lithuanian Society for Infectious Diseases (2022; no reimbursement). Reimbursed for military recruits and forestry workers. ¹¹ Since 2024 – reimbursement for all adults above 50 years of age (starting with cohort of 50-55 years of age in September 2024). ¹⁷
Vaccine uptake by age group/risk group/general population	Vaccine uptake (at least one dose of TBE vaccine) in 2020: 37% ¹⁸ Total number of consumed TBE vaccine doses: 2021: 334,664 ¹⁹ 2022: 327,867 ²⁰ 2023: 381,698 (Razmuviene, D. National Public Health Centre under the Ministry of Health. Personal communication)
Name, address/website of TBE NRC	National Public Health Centre under the Ministry of Health ¹¹

Figure 2: Gender distribution of TBE cases in Lithuania, 2016-2023

Source Data: Appendix—Figure 2

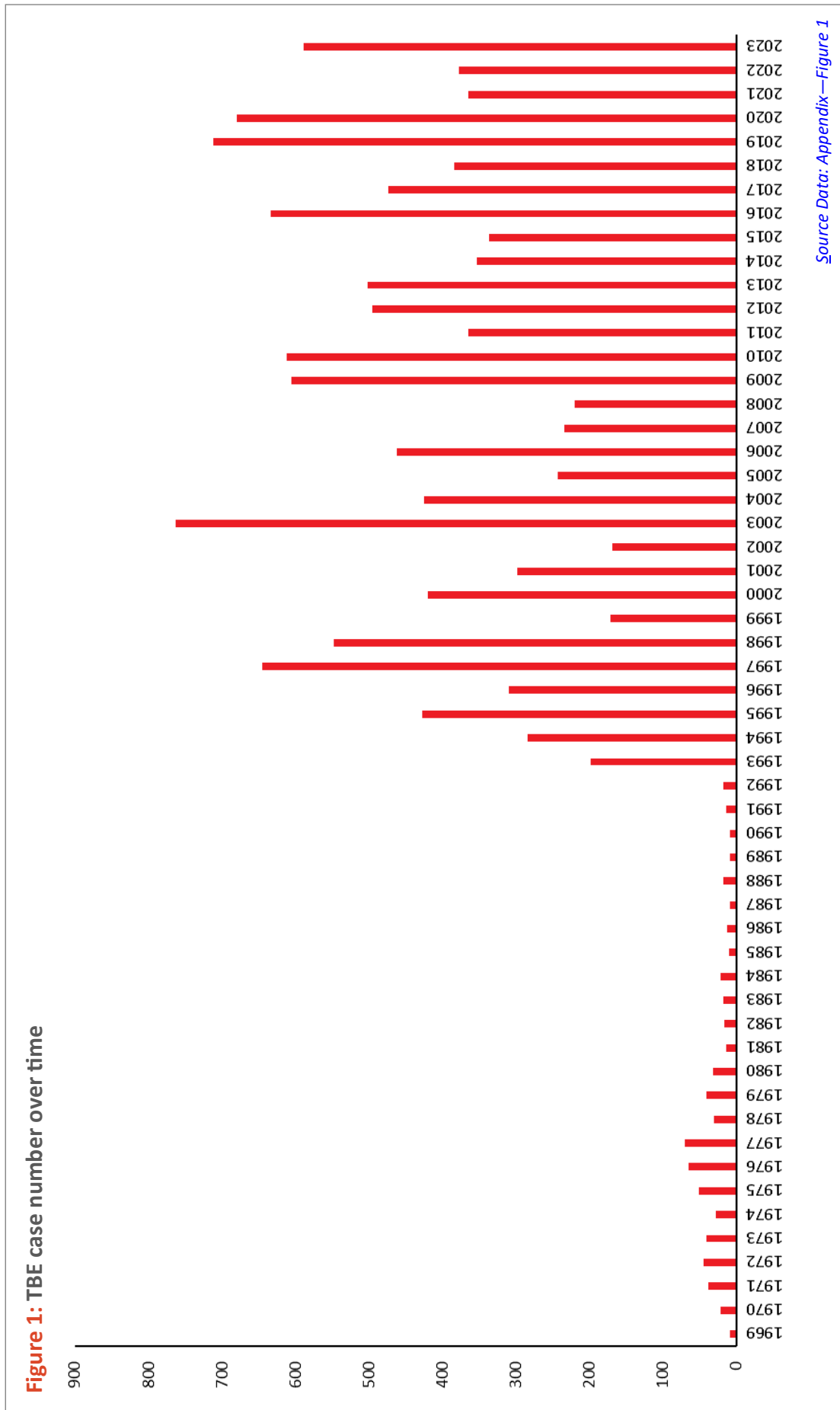
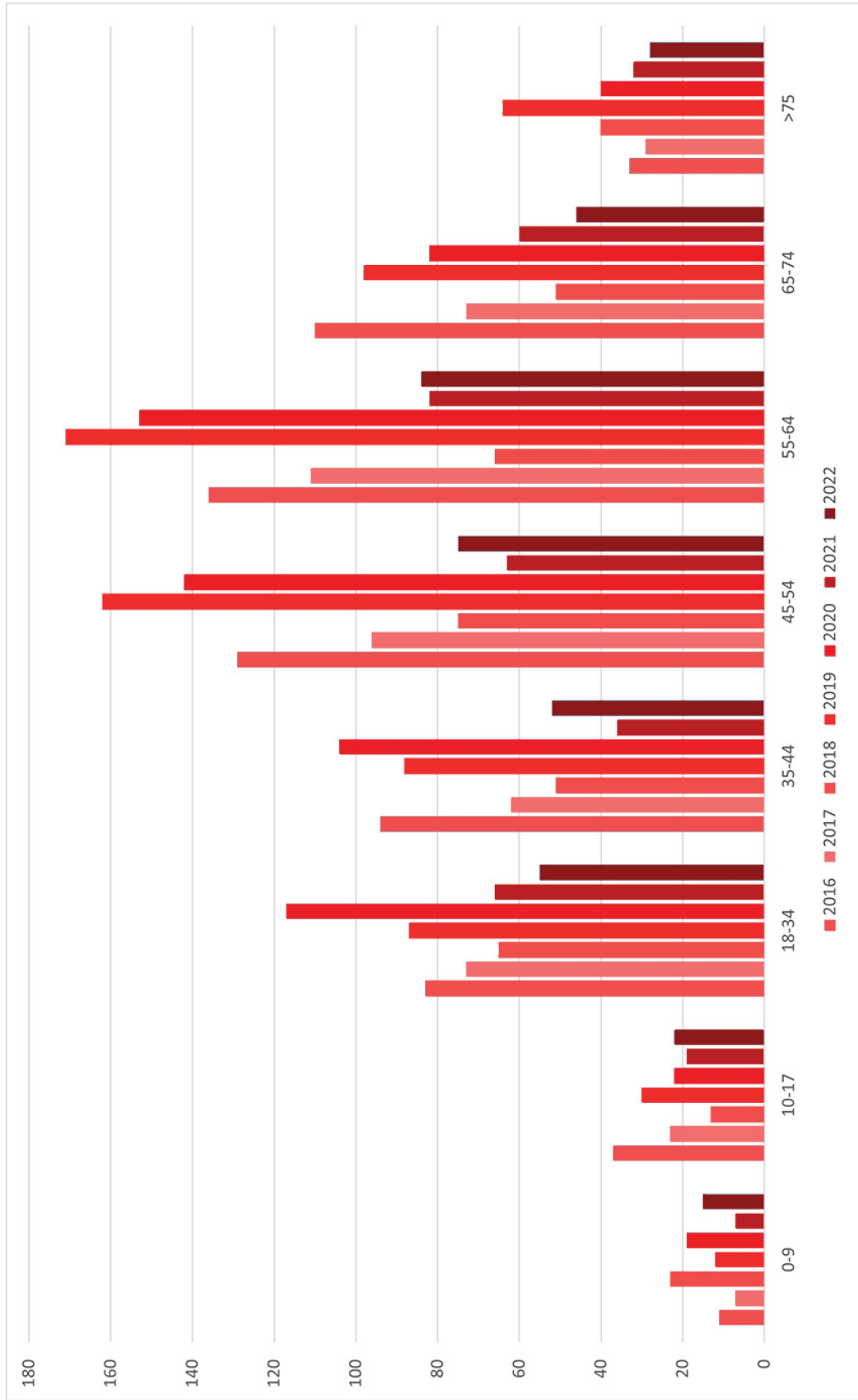


Figure 3: Age and gender distribution of TBE cases in Lithuania, 2016-2022



Appendix

Source data: Figure 1

Year	Number of cases	Incidence / 10 ⁵
1969	9	0.3
1970	21	0.7
1971	38	1.12
1972	44	1.14
1973	40	1.12
1974	28	0.8
1975	51	1.5
1976	65	1.9
1977	70	2.1
1978	30	0.9
1979	41	1.1
1980	32	0.9
1981	13	0.3
1982	16	0.4
1983	18	0.5
1984	21	0.6
1985	10	0.2
1986	12	0.3

Year	Number of cases	Incidence / 10 ⁵
1987	9	0.2
1988	17	0.5
1989	8	0.2
1990	9	0.2
1991	14	0.4
1992	17	0.4
1993	198	5.3
1994	284	7.6
1995	427	11.5
1996	310	8.4
1997	645	17.4
1998	548	14.8
1999	171	4.6
2000	419	11.3
2001	298	8.5
2002	168	4.8
2003	763	22
2004	425	12.2

Year	Number of cases	Incidence / 10 ⁵
2005	243	7.1
2006	462	13.5
2007	234	6.9
2008	220	6.5
2009	605	17.9
2010	612	18.3
2011	365	11.1
2012	495	16.5
2013	501	16.9
2014	353	12
2015	336	11.5
2016	633	22.1
2017	474	16.8
2018	384	13.7
2019	711	25.8
2020	679	24.3
2021	365	12.8
2022	377	13.4
2023	589	20.8

Source data: Figure 2

Year	Male	Female
2016	334	299
2017	265	209
2018	204	180
2019	404	307
2020	384	295
2021	200	165
2022	222	155
2023	336	253

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Citation:

Mickiene A. TBE in Lithuania. Chapter 13. In: Dobler G, Erber W, Bröker M, Chitimia-Dobler L, Schmitt HJ, eds. *The TBE Book*. 7th ed. Singapore: Global Health Press; 2024. doi:10.33442/26613980_13-20-7

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