



## EFFECTIVENESS OF TBE VACCINATION IN LATVIA

### Background

The number of TBE cases has increased across Europe during the last decade, even though effective TBE vaccines are available. Studies about the effectiveness have been carried out in various European countries (see e.g., [Newsletter August 2022](#), [Newsletter February 2022](#), [Snapshot 34/2022](#), [Snapshot week 15/2023](#)). Overall, TBE vaccine effectiveness was estimated to be over 90% in Austria, Switzerland, and Germany. Vaccination failures are rare, and the analyses indicate that they are independent from the number of vaccine injections and from the timing of booster intervals after primary vaccination.

Latvia has the third highest TBE incidence reported to the European Centre for Disease and Prevention and Control – in 2020, the TBE incidence in Latvia was 7.8 per 100,000 population despite TBE vaccination being recommended for all individuals  $\geq 1$  year of age.

### Results

An observational vaccine effectiveness study was carried out in Latvia including all persons of at least 1 year of age. A total of 716 TBE laboratory-identified cases in 2018–2020 were ascertained. The median age of patients was 52.5 years. Fever was reported in 80.3%, and a biphasic course was observed in 54.4%. The onset of disease was mainly from May to October (96.2%). A total of 19% were farmers, forest workers, or had occupations with frequent exposure to ticks.

Of the laboratory-identified TBE virus-infected cases, 92.9% had a confirmed TBE virus infection, of which 94.4% were TBE serum IgG positive and 7.1% had a probable TBE virus infection.

Meningitis was reported in 87.1%, meningoencephalitis in 9.5%,

meningoencephalomyelitis in 1.0%, encephalomyelitis in 0.2% and unspecified CNS involvement in 0.2%. Disease severity was mild in 60.5%, moderate in 30.5% and severe in 8.9%. The case fatality rate was 2.2%.

Of the TBE cases, 99.4% had a known TBE vaccine history, of which 98.2% were unvaccinated and 1.8% had received at least one dose of vaccine. Of those who received one or more doses, 30.8% were fully vaccinated, and the TBE vaccine brand was known for 84.6% – 90.9% had received FSME-IMMUN and 9.1% received Encepur.

Ipsos interviewed 14,399 people selected from the general population, and among the persons reporting TBE vaccine history, 22.5% had received one or more doses of only FSME-IMMUN, and 5.3% had received one or more doses of only Encepur.

The vaccine effectiveness for fully vaccinated persons was 99.2% against medically attended TBE virus infection, 99.1% against hospitalization with TBE virus infection, 97.6% against medically attended TBE virus infection without CNS involvement and 99.5% against TBE.

### Discussion

This study disclosed a high TBE vaccine effectiveness in Latvia, similar to those previously reported for Austria, Switzerland, and Germany.

The authors estimated that during the study period (2018–2020), a total of 897 hospitalizations have been averted in Latvia which has a population of nearly 2 million inhabitants.

Brand-specific vaccine effectiveness was shown to be high in all age groups vaccinated with FSME-IMMUN, while the low uptake of Encepur precluded the estimation of effectiveness for this vaccine in this study.



Little difference was found in vaccine effectiveness between having received a booster dose earlier than 10 years compared to  $\geq 10$  years after primary vaccination indicating that the public health impact of TBE vaccination could be retained if the currently recommended interval between boosters was increased for all age groups.

## Literature

Zavadska et al.  
Effectiveness of tick-borne encephalitis vaccination in Latvia, 2018–2020: an observational study  
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