



EFFECTIVE OF TBE VACCINATION IN CAZECH REPUBLIC

Background

The Czech Republic has a high incidence of TBE virus infections. In 2020, 235 of all cases reported by the European Centre for Disease Prevention and Control (ECDC) were from the Czech Republic. Despite a broad TBE vaccination recommendation, only about a third of the general population has received at least one TBE vaccine injection. Several studies in European countries have shown that TBE vaccine effectiveness (VE) is high (e.g. Germany, [Newsletter August 2022](#) and Latvia, [Newsletter February 2022](#)). In the Czech Republic, a full analysis of TBE VE has not yet been published. An observational study has been carried out to estimate TBE VE in this country from 2018 – 2022.

Results

As part of routine clinical practice, blood and/or CSF specimens were collected from hospitalized patients. They were analyzed for TBE IgM and IgG antibodies, and vaccination status was determined. Maintenance and analysis of public health surveillance data were conducted at the National Institute of Public Health.

A total of 3648 TBE cases were reported from 2018-2022. Data about hospitalization were available from 3517 patients (96.4%), and of these patients, 3324 (94.5%) were hospitalized. Of the 3648 TBE cases, vaccine history could be determined for 3166 individuals (86.6%).

Of the TBE cases with no known vaccine history, 3105 (98.1%) were unvaccinated, and 61 patients (1.9%) had received at least one TBE vaccine injection, of which 11 (18.0%) were vaccinated in accordance with the recommended vaccination schedule, and 50 (82.0%) were partially vaccinated.

TBE VE effectiveness among persons who had received at least 3 vaccine doses in 2018 to 2022 was 97.6%. Stratified by age groups, VE was

97.1% for those aged 1-15 years, 97.9% for those aged 16-59 years and 96.9% for those who were 60 years and older.

TBE VE was 98.1% in persons having received at least 4 doses of vaccine at ≤ 10 years and 95.7% at ≥ 10 years after receipt of the last vaccine dose.

It was estimated that in a scenario with no TBE vaccination in the Czech Republic, there would have been 4668 TBE cases from 2018 to 2022. It was estimated that 1020 TBE cases and six deaths were averted by vaccination.

Discussion

The results of this study show that the high VE of TBE vaccines and with almost all TBE cases occurring among unvaccinated persons, demonstrated that the low vaccine uptake in the Czech Republic is an important contributing factor to the high TBE incidence in this country. During the study period only about 10% of the Czech population was vaccinated according to the recommended vaccination schedule and two-thirds were unvaccinated.

There was only a small difference of VE between those who had received their latest booster ≤ 10 years to ≥ 10 years indicating that a booster interval of 10 years instead of 3 or 5 years would be feasible potentially helping to increase TBE vaccine uptake.

Literature

Kyncl J, Angulo FJ, Orlikova H, et al. Effectiveness of Vaccination Against Tick-Borne Encephalitis in the Czech Republic, 2018-2022. *Vector Borne Zoonotic Dis.* 2024;24(9):607-613. doi:10.1089/vbz.2023.0166

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Compiled: September 2024