

The cost-effectiveness of tick-borne encephalitis vaccination in Estonia

Summary

Objective: To evaluate the effectiveness, safety and cost-effectiveness of tick-borne encephalitis vaccination in Estonia.

Methods: Literature reviews for evidence on effectiveness, safety and cost-effectiveness for TBE vaccines were performed in the PubMed database and the Cochrane Database of Systematic Reviews. The TBE incidence and vaccination coverage were estimated based on the Estonian Health Board data, and the effectiveness and safety of the TBE vaccines were assessed based on literature. The cost-effectiveness analysis was performed from the health and social care payer's perspective. The data including health care utilisation bills, prescription drug use and sick leave for all TBE patients from the periods of 2007–2009 and 2011–2013 were obtained from the Estonian Health Insurance Fund, the data on social benefits from the Social Insurance Board. Quality of life outcomes data were based on a published literature. A Markov cohort model was used to simulate the cost-effectiveness of the population-based TBE vaccination programme, compared to the standard practice. Cost-effectiveness was evaluated separately in a total population (in a cohort of 1-year-old children) and among persons ≥ 50 years. The model evaluated differences in costs and quality-adjusted life-years (QALYs), using incremental cost-effectiveness ratios (ICER). Costs and effects were discounted at the annual discount rate of 5%.

Results: The crude incidence of TBE (12.5 / 100,000) in Estonia was among the highest in Europe, and the current vaccination coverage was insufficient to control the endemic situation. The TBE vaccines are highly effective and can be recommended for the vaccination programme in Estonia. In the base-case scenario with 50% vaccination coverage, the incidence of TBE was reduced by 42%. Compared to the standard practice, QALY gains were 0.0009 per person and the cost per QALY was €60,572. Vaccination of the population ≥ 50 years appeared more cost-effective, with QALY gains of 0.0015 and ICER of €24,576, respectively. However, the vaccination of the older population does not have a significant impact on incidence reduction in the total population. In the sensitivity analysis, ICER ranged from €11,562 to €84,289 for the total population, and from €13,095 to €30,419 for the people ≥ 50 years, mostly influenced by the discount rate, vaccine price and extension of the vaccination interval.

Conclusions: The TBE vaccines are effective and safe and can be recommended for the population-based vaccination programme in Estonia. The vaccination of people ≥ 50 years of age is cost-effective from the health care payer's perspective. However, the vaccination of the older population has a limited impact on incidence reduction in the total population.

Citation: Jürisson M, Taba P, Võrno T, Abram M, Eiche I-E, Uusküla A. *Puukentsefaliidi vastase vaksineerimise kulutõhusus Eestis*. Tartu: Tartu Ülikooli tervishoiu instituut; 2015.