

## The cost-effectiveness of seasonal influenza vaccination

### Summary

**Objectives:** Current HTA report evaluates the impact of seasonal influenza vaccination by analysing the costs and cost-effectiveness of the nationwide vaccination of population-based target groups in Estonia.

**Methods:** Literature reviews for evidence of effectiveness, safety and cost-effectiveness of seasonal influenza vaccination in risk groups of children, pregnant women, older adults and patients with comorbidities were carried out in relevant databases. Due to inconclusive evidence on vaccine effectiveness in comorbid risk groups cost-effectiveness was evaluated only in population-based groups of young children and older adults. An independent Markov cohort model was constructed to compare the cost-effectiveness of vaccination to no vaccination in risk groups during one year. The analysis was based on hypothetical cohorts of: a) 22,500 children under 2 years of age and, b) 240,000 adults aged 65 and older. Data for virulence and severity of the influenza cases, effectiveness and quality of life outcomes was obtained from published literature; costs were calculated based on Estonian data and expert opinions. The model evaluated the number of avoidable influenza cases and differences in costs and quality-adjusted life-years (QALYs) using incremental cost-effectiveness ratios (ICER). Additional budget impact analysis for vaccination of different target groups was performed.

**Results:** In the base-case scenario, vaccination against seasonal influenza reduced influenza cases by 15% in the cohort of children less than 2 years of age and by 25% among older adults respectively. Compared to no vaccination, 4 QALYs were gained per cohort of 22,500 children and 50 QALYs per cohort of 240,000 older adults. ICER for children's cohort was €15,107 per QALY ranging between €8,351 – 38,109 in sensitivity analysis. ICER for the cohort of older adults was €11,819 per QALY ranging between €5,177 – 28,424 in sensitivity analysis. In both groups, the results were most influenced by vaccine effectiveness with 25% reduction in base-case effectiveness (50%) increasing the ICER considerably. The yearly costs of vaccination programme for children under 2 years (assuming 30% of coverage and including campaign costs) were €77,500. Among older adults, the costs of vaccination programme (assuming 50% of coverage and including campaign costs) were €1,210,000. Vaccination would reduce the influenza-related costs by €11,890 and €588,642 respectively.

**Conclusions:** National influenza vaccination programme for population-based risk groups would reduce the influenza cases including severe cases requiring hospitalisation and illness-related costs in both young children and older adults. The ICERs vary slightly, but their cost-effectiveness ratios in Estonia are comparable to results from previously published data. The results of current HTA serve as a guidance to decision makers in future reassessments of national vaccination plans.

**Citation:** Võrno T, Maimets M, Lutsar K, Reile R, Stimmer K, Reim M, Kiivet R-A. Riskirühmade gripivastase vaksineerimise kulutõhusus Eestis. Tartu: Tartu Ülikooli tervishoiu instituut; 2014.