

Cost-effectiveness of rotavirus vaccines in Estonia

Objectives: To evaluate the cost-effectiveness of vaccination against rotavirus with Rotarix or Rotateq compared to non-vaccination in Estonia from the third party payers perspective.

Methods: Markov cohort model was constructed to follow an approximate Estonian annual birth cohort of 16 000 children until the age of five. Vaccine coverage was assumed to be 95%. Vaccine efficacy of Rotarix against mild and moderate rotavirus gastroenteritis cases was assumed to be 79% and 96% against severe cases requiring hospitalization. For Rotateq efficacy was assumed to be 74% and 94% respectively. Main outcome measures of the model were mild (no medical attention necessary), moderate (GP visit needed) and severe (hospitalized) rotavirus gastroenteritis cases. Based on quality of life lost in association with measured outcomes, quality-adjusted life-years (QALY) were calculated for the vaccinated and non-vaccinated cohorts. Costs were considered from the perspective of third party payer and included expenses associated with treatment, prescription drugs, parent's temporary work incapacity benefits and vaccine costs. Costs and effects were discounted using an annual discount rate of 5%.

Results: In case of vaccination with Rotarix by the age of five approximately 2700 mild, 1900 moderate and 960 severe cases of rotavirus gastroenteritis would be prevented per Estonian annual birth cohort of 16 000 children. For Rotateq the number of prevented cases would be 2600, 1800 and 950 respectively. As compared to non-vaccination arm by vaccination 55-57 quality-adjusted life years (QALY) would be gained during the five year period. From the perspective of third party payer the incremental cost effectiveness ratio (ICER) of Rotarix and Rotateq vaccines compared to non-vaccination would be 13 000–27 000 €. The key impact factors of cost-effectiveness results were cost of vaccines and prognoses on the number of cases requiring hospitalization.

Conclusions: Vaccination against rotavirus would prevent a considerable amount of rotavirus gastroenteritis cases in Estonia. However, due to relatively high vaccine prices, the savings on treatment costs would be considerably lower than the cost of vaccination program. In most likely scenarios ICER in case of vaccination will be 13 000–30 000 € per QALY.