Cost-effectiveness of rotavirus immunization in Vietnam

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vaccine prevents 408 469 cases of precancerous cervical lesions. Due to HPV vaccination the incidence of CC is reduced by1858 cases, which corresponds to 31 588 years of life saved in the vaccinated cohort. The cost of an additional life-year saved is 10,166 € (405,535 rubles), and the cost of averted CIN case is 786 € (31,360 rubles). **CONCLUSIONS:** Vaccination with Human Papillomavirus recombinant vaccine seems a cost-effective option in Russia.

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METHODOLOGICAL CHALLENGES FOR ECONOMIC EVALUATIONS OF VACCINATION PROGRAMS: THE CASE OF PERTUSSIS BOOSTER VACCINATION

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OBJECTIVES: Pertussis incidence has been increasing in adolescents and adults in the last two decades with transmission to vulnerable young infants. This epidemiological changing has raised interest in the cost-effectiveness of booster vaccination (extra administration of a vaccine after an earlier dose). A critical review of economic evaluations of pertussis booster vaccination was performed in order to develop recommendations for future studies. This review illustrates specific challenges encountered in economic evaluations of vaccination programmes. **METHODS:** The literature search covered cost-effectiveness studies of pertussis booster vaccination, published until November 2010, worldwide. We extracted information on model structures, input data and results. **RESULTS:** We identified 13 publications (9 distinct models) referring to cost-effectiveness of pertussis booster vaccination. The most frequently studied strategies were adolescent booster vaccination (9/13), cocooning strategy, i.e. vaccination of mothers and family member(s) of newborn infants (6/13), one-time adult pertussis booster vaccination (6/13), and decennial vaccination of adults with pertussis containing boosters (4/13). All studies found that booster vaccination was a cost-effective or cost-saving strategy compared to no booster vaccination. However, conclusions differed concerning the exact age groups to vaccinate and frequency of vaccination. Results were strongly affected by assumptions regarding unreported cases and uncertainty around incidence. Four models ignored herd immunity (HI) effects, 3 assumed incidence reduction attributable to HI, and 2 were transmission dynamic models predicting HI effects. Several studies considered incidence at steady state, although it was not reached before 80 years for some strategies. Methods used to compare multiple strategies were often inappropriate. **CONCLUSIONS:** Reviewed studies showed that pertussis booster vaccination is cost-effective or dominant vs. no booster vaccination, but did not identify any optimal vaccination schedule. Results are variable due to uncertainty surrounding disease incidence and extent of HI. Future economic evaluations should explore a wider range of strategies, according to local context.

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MODELLING THE EPIDEMIOLOGICAL IMPACT OF ROTAVIRUS VACCINATION TO ASSESS ITS COST-EFFECTIVENESS IN ENGLAND AND WALES

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OBJECTIVES: Rotavirus infection causes severe gastroenteritis in children worldwide. Its disease burden has been reduced in countries where mass rotavirus vaccination programmes have been introduced. England and Wales (E&W) have not yet implemented such a mass vaccination programme, but are currently re-evaluating its potential cost-effectiveness. Our study uses a dynamic model to predict the epidemiological and economical effect of such a mass vaccination programme in E&W beginning in the autumn of 2011. **METHODS:** A previously published age-structured dynamic model was upgraded and parameterised with country-specific data for the introduction of the oral rotavirus pentavalent vaccine. We report the impact of vaccination on disease incidence reduction, timing of seasonal epidemics and herd immunity levels. The model was then used to assess whether a mass vaccination of RotaTeq is cost-effective and affordable for E&W. **RESULTS:** Our results predict that vaccination can reduce the burden of severe disease by 70% and delay the epidemic peak by two and a half months with coverage of 95%. Our calculations further show that herd immunity accounts for about a quarter of the reduction in incidence. If the pentavalent vaccine-induced immunity does not wane over five years, severe disease in children under five years of age is eliminated within two years after the introduction of vaccination. The probability of a mass vaccination strategy being cost-effective is presented under likely vaccine waning scenarios, administration cost assumptions and possible dose prices. **CONCLUSIONS:** This work allows policymakers to determine both the epidemiological impact and cost implications of a mass vaccination programme against rotavirus with the pentavalent vaccine in England and Wales. Although long considered unlikely to be cost-effective in E&W using static models, the pentavalent vaccine demonstrates a significant impact in reducing rotavirus cases at acceptable levels of cost-effectiveness when using appropriate modelling techniques.

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PHARMACOECONOMIC ANALYSIS OF TREATMENT OF COMMUNITY-ACQUIRED PNEUMONIA (CAP)

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OBJECTIVES: Evaluation of comparative cost-effectiveness of CAP treatment with moxifloxacin versus combined therapy with cefotaxime and macrolides in adult patients. **METHODS:** Patients were randomized in two groups. MOX group received moxifloxacin 400 mg i.v. once-daily with further switch to oral formulation 400 mg daily. COMB group received either cefotaxime 1000 mg i.m. 3 times per day as monotherapy or in combination with oral azithromycin or clarithromycin. Efficacy and safety criteria were evaluated according to clinical data, laboratory tests and X-ray examination. Cost-effectiveness analysis was performed. **RESULTS:** MOX group included 30 patients, mean age 33.6±16.5 years; COMB group included 50 patients, mean age 26.5±15.6 years. The efficacy of moxifloxacin treatment was 96.7%, in-hospital stay duration was 15.9±3.3 days. The efficacy of treatment in COMB group was 88.0%, patients were discharged after 18.2±3.7 days. Direct medical costs including antibacterial treatment and in-hospital days were 46712 RUB (€1173) in MOX group and 46970 RUB (€1180) in COMB group. CERMOX = 48307 RUB (€1213), CERCOMB = 53375 RUB (€1340). **CONCLUSIONS:** CAP treatment with moxifloxacin compared to combined therapy with cefotaxime and macrolides in adult patients is more effective and cost saving technology.

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COST-EFFECTIVENESS OF ROTAVIRUS IMMUNIZATION IN VIETNAM: RESULTS AND CHALLENGES

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OBJECTIVES: To assess the cost-effectiveness of universal rotavirus immunization, explicitly the use of Rotateq® and affordability of implementing rotavirus immunization based on the Global Alliance for Vaccines and Immunization (GAVI)-subsidized vaccine price in the context of Vietnamese health care system for the next 5 years. **METHODS:** An age-structured cohort model was developed for the 2009 Vietnamese birth cohort and applied a 5-year time horizon with time cycle of 1 month for < 1-year-old children and annually thereafter. Results from no vaccination and vaccination were compared. Outcomes included rotavirus episodes requiring home-treatment, outpatient visits, hospitalizations and deaths. Multiple outcomes per rotavirus infection are possible in the model. Acceptability and affordability analyses were done using Monte Carlo simulations. Costs were expressed in 2009 US$. **RESULTS:** Rotavirus immunization would not completely protect under-five-year-old children against rotavirus infection due to partial nature of vaccine immunity, however, would effectively reduce rotavirus severe cases by ~55%. Under the GAVI-subsidized price, the minimum vaccination budget would be US$1.6 million annually. In the base-case, the incremental cost per quality-adjusted-life-year (QALY) was US$665 from health care perspective, <Vietnamese per-capita-GDP in 2009. Affordability results showed that at the GAVI-subsidized vaccine price, rotavirus vaccination could be affordable in Vietnam. **CONCLUSIONS:** Rotavirus immunization in Vietnam would be a cost-effective health intervention. However, it only becomes affordable under the GAVI's financial support. Vaccine price is the most crucial factor to decision-makers regarding introducing this vaccine into the country's immunization. Given the high under-five mortality rate, results showed that rotavirus immunization is the "best hope" for prevention of rotavirus-related diarrhoeal disease in Vietnam. In the next five years, Vietnam is definitely in debt to external financial support in implementing rotavirus vaccination. It is recommended that new and cheaper rotavirus vaccine candidates be developed to speed up rotavirus vaccines introduction in the developing world.

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MODELING THE LONG TERM CLINICAL OUTCOMES AND HEALTH CARE COST IMPACT OF INITIATING TREATMENT WITH ATAZANAVIR/R COMPARED WITH DARUNAVIR/R, LOPINAVIR/R AND EFAVIRENZ FOR HIV-1 INFECTED TREATMENT-NAÏVE PATIENTS: COUNTRY RESULTS FOR ITALY, SPAIN, PORTUGAL AND UK

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OBJECTIVES: To estimate the cost and effects of initiating treatment with atazanavir/r (ATV/r) compared to darunavir/r (DRV/r), lopinavir/r (LPV/r) and efavirenz (EFV) in treatment-naïve HIV-1 patients in Italy(I), Spain(S), Portugal(P) and UK. **METHODS:** HIV-disease progression is modeled using a micro-simulation model. Health states are a function of HIV-RNA, CD4+cells, AIDS defining events (ADEs), and comorbidities. At model entry patients receive either ATV/r, LPV/r, DRV/r, or EFV with a treatment backbone. Treatment-sequences are modelled following treatment discontinuation due to virological failure, adverse events, resistance, or treatment related co-morbidities. Country-specific patterns for HIV related drug use were applied to estimate specific treatment sequences; maximized at 8 treatment lines after which patient were assumed to be untreated. Efficacy and tolerability inputs of first line treatments were derived from a Mixed-Treatment-Comparison, supplemented by published literature and product-SPCs for remaining drug specific data for efficacy, tolerability and safety. Occurrence of (non)-AIDS defining malignancies was linked to current CD4+cell count and independent of therapy. Cost estimates were based on country specific sources. A 25-year time-horizon was chosen for the base-case analyses. A payer's perspective was chosen and country-specific discount rates were applied. **RESULTS:** Across countries, total costs per patient who started with ATV/r ranged between €126,947(I) and €154,285(P). Predicted incremental costs of ATV/r versus comparators ranged between -€27,004 (S) versus LPV/r and -€13,165 (P) versus EFV. Estimated incremental QALYs of ATV/r versus comparators varied from -0.68(UK) versus EFV to 0.78(UK)