Abstracts

PIN24

THE COST-EFFECTIVENESS OF A QUADRIVALENT HUMAN PAPILLOMAVIRUS VACCINE (6, 11, 16, 18) IN NORWAY

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OBJECTIVES: to assess the cost-effectiveness of alternative quadrivalent human papillomavirus (HPV) vaccination strategies in Norway. METHODS: A non-linear, deterministic, age-structured, mathematical model of the transmission dynamics of HPV infection (HPV types 6,11,16,18) and disease development in the population was developed and integrated with an economic model. Inputs for the model were obtained from public data sources, published literature, and clinical trials. We assumed a vaccine coverage rate of 90%. We varied duration of protection from 10 years to lifetime. Current cervical cancer screening practices were assumed to remain unchanged with vaccination.

RESULTS: Vaccinating girls before the age of 12 augmented by a female, 12–24-year olds temporary 5-year catch-up program was the most effective strategy examined, reducing the incidence of HPV 6/11/16/18-related genital warts, cervical intraepithelial neoplasia (CIN1,2,3), and cervical cancer by 96%, 94%, and 94%, respectively 100 years following vaccine introduction. Early reductions in disease and associated costs were primarily attributable to prevention of infection with HPV types 6/11. For example, 90% of the costs of HPV disease avoided and 92% of the cases avoided during the first 5 years was attributable to preventing HPV 6/11 infection. However after 35 years, the majority of HPV disease cost avoided was primarily attributable to preventing HPV 16/18 infections. The cost-effectiveness ratio for this strategy when compared with a strategy of vaccinating females before the age of 12 was NOK61165 per quality adjusted life year (QALY) gained. The following parameters were most influential on the RESULTS: degree and duration of vaccine-derived protection, vaccine coverage and costs, and preference weights. CONCLUSION: A quadrivalent HPV (6,11,16,18) vaccine national program can reduce the incidence of cervical cancer, CIN (1,2,3), and genital warts and provide survival benefits and quality of life improvements at a cost-effectiveness ratio within the range accepted as cost-effective for a reasonably wide range of model input values.

PIN25

A COST-EFFECTIVENESS STUDY OF A UNIVERSAL PNEUMOCOCCAL VACCINATION PROGRAM WITH THE 7-VALENT PNEUMOCOCCAL VACCINE (PCV-7) IN SWEDEN

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OBJECTIVES: Streptococcus pneumoniae is a frequent cause of bacterial meningitis, septicaemia, pneumonia and acute otitis media. These diseases lead to substantial mortality, morbidity and costs. There is 7-valent pneumococcal conjugate vaccine (PCV-7) developed, that has proved to be highly effective against invasive disease, but has also provided significant protection against pneumonia and acute otitis media. The objective of this study was to evaluate the projected health benefits, costs and cost-effectiveness of vaccination with the 7-valent conjugated pneumococcal vaccine compared with no vaccination, in all infants in Sweden. METHODS: An economic model (Markov model) was used in order to perform a cost-utility and a cost-effectiveness analysis, comparing a universal pneumococcal vaccination program with a no-vaccination program. The main outcomes were measured by reduction in the disease burden, costs and net costs of vaccination (per individual and a whole birth cohort), incremental cost per Quality adjusted life years (QALY) and life year (LY) gained. RESULTS: The results of the current health economic analysis indicate that a universal pneumococcal vaccination program in Sweden could prevent a considerable number of pneumococcal infections- mainly acute otitis media infections- and reduce the related morbidity and mortality. The incremental cost per QALY and LY gained was estimated to range between SEK250,000 and SEK300,000. In case herd immunity was included, the ICER was estimated to range between 100,000 and 150,000 per QALY and LY gained. CONCLUSION: The incremental cost per QALY gained advocates that the health benefits of vaccination in Sweden can be achieved within generally accepted levels of cost per QALY. The sensitivity analyses indicate that this conclusion is robust to reasonable changes in the assumptions upon which the analysis was based.

PIN26

THE COST-EFFECTIVENESS OF A QUADRIVALENT HUMAN PAPILLOMAVIRUS VACCINE IN HUNGARY

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OBJECTIVES: to assess the cost-effectiveness of alternative quadrivalent human papillomavirus (HPV) vaccination strategies in Hungary. METHODS: A non-linear, deterministic, age-structured, mathematical model of the transmission dynamics of HPV infection (6, 11, 16, 18) and disease development in the population was developed and integrated with an economic model. Inputs for the model were obtained from public data sources, published literature, and clinical trials. We assumed a vaccine uptake of 85% for routine vaccination and 10% for catch-up vaccination. We varied duration of protection from 10 years to lifetime. Current cervical cancer screening practices were assumed to remain unchanged with vaccination.

RESULTS: Vaccinating females before the age of 12 augmented by a female, 12–24-year olds temporary 5-year catch-up program was the most effective strategy examined, reducing the incidence of HPV 6/11/16/18-related genital warts, cervical intraepithelial neoplasia (CIN), and cervical cancer by 91%, 91%, and 94%, respectively one hundred years following vaccine introduction. The cost-effectiveness ratio for this strategy when compared with a strategy of vaccinating females before the age of 12 was HUF2,501,750 per quality adjusted life year (QALY) gained. The following parameters were most influential on the RESULTS: degree and duration of vaccine-derived protection, vaccine coverage and costs, and preference weights. CONCLUSION: A quadrivalent HPV vaccination program can reduce the incidence of cervical cancer, CIN, and genital warts and provide survival benefits and quality of life improvements at a cost-effectiveness ratio within the range accepted as cost-effective for a reasonably wide range of model input values.