Cost-effectiveness of pneumococcal polysaccharide vaccination in adults: a systematic review of conclusions and assumptions

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OBJECTIVES: Streptococcus pneumoniae infections in adults are associated with substantial morbidity, mortality, and costs. The objective of this study was to provide an analysis of the conclusions and assumptions of published studies on the cost-effectiveness of pneumococcal polysaccharide vaccination (PPV-23) (23 serotypes) in adults. METHODS: A search of recent literature (1997–2008) was conducted to identify cost-effectiveness studies pertaining to the use of PPV-23 to prevent invasive pneumococcal disease (IPD) in adults. A structured review of the impact of model assumptions on cost-effectiveness ratios was undertaken. Cost per life year gained (LYG) or quality adjusted life year (QALY) were reported in 2007 US dollars. RESULTS: The literature search identified 31 studies, 19 of which reported some cost data but did not include cost-effectiveness data for PPV-23 vaccination. All but one of the remaining twelve studies compared PPV-23 vaccination with no vaccination, and these were included in this analysis. Vaccination of over 65 year olds with PPV-23 for the prevention of IPD was found to be cost-effective with incremental cost effectiveness ratios ranging from 2007 $9,810 to $26,140 per LYG and from $9.08 (cost-saving) to $33,955 per QALY. Review of model parameters revealed that the results of these studies have to be considered in the light of limitations of available data on vaccine effectiveness, disease incidence, and case-fatality ratios. CONCLUSIONS: All the PPV-23 is a cost-effective, and in some cases a cost-saving, vaccination strategy for the prevention of IPD in the elderly. Further economic evaluation of PPV-23 may be warranted based on the availability of new data on vaccine efficacy, IPD incidence and case fatality in the adult population in the post-PCV7 era.

VARIATION IN EFFICIENCY FRONTIERS FOR HIV/AIDS PREVENTION AND TREATMENT

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OBJECTIVES: To investigate how the cost-effectiveness of preventing or treating HIV/AIDS varies by a series of potentially relevant external factors. METHODS: We reviewed the cost-effectiveness evidence for HIV/AIDS prevention and treatment in the Cost-Effectiveness Analysis (CEA) registry. We extracted 21 HIV/AIDS-related articles, which included 84 individual cost-effectiveness (CE) ratios. Plotted FE curves were visually distinct, depending on the prevention type, with primary prevention interventions being most efficient. With respect to country, the EF curve for the U.S. and South Africa were separate, with the curve for South Africa lying near the vertical axis, reflecting low cost per QALY ratios for interventions studied. Subgrouping by payer perspective (e.g., health care payer) and intervention type (pharmaceutical, education, and screening) did not affect the separation of the lines. CONCLUSIONS: The CE ratio clustering in HIV/AIDS was found on the C-E plane, which suggested separate FE curves should be considered by stratifying by prevention stage and country. These results may differ for other diseases, but this analysis shows that stratified EF analysis could help to develop a deeper appreciation of cost-effectiveness beyond crude cost per QALY ratios without stratification.

Cost of pneumococcal infections and cost-effectiveness analysis of pneumococcal vaccination in Turkey

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OBJECTIVES: Vaccination of elderly and at-risk population against Streptococcus pneumoniae is recommended and partially reimbursed in Turkey due to the substantial medical and economic burden. However, only ~2% of these populations were vaccinated in 2007. A three-step economic analysis was designed to measure the burden of pneumococcal infections (pneumonia and bacteremia) from a public payer perspective for elderly (>60 years) and at-risk populations (>59 years), and to evaluate the benefits of implementing a vaccination program. METHODS: First, we evaluated the cost of pneumonia and bacteremia in retrospective and prospective studies in public hospital services in Ankara. Secondly, a static model was used to evaluate cost-effectiveness of vaccination in the two targeted populations using demographic and epidemiological data obtained from Turkish sources or, when unavailable, from international literature. A stochastic Monte Carlo simulation estimated the incremental cost-effectiveness ratio in Euros ($1) per life year gained (LYG), assuming that vaccination protected for 5 years with 50–70% effectiveness against pneumococcal bacteremia.