COST-EFFECTIVENESS OF PNEUMOCOCCAL VACCINATION (PCV) FOR INFANTS WITH THE 7-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN HONG KONG

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OBJECTIVES: To examine the cost-effectiveness of PCV and to determine if there is any long-term cost offset if it became a routine vaccination for infants. METHODS: Two hypothetical cohorts of 1000 infants (one vaccinated and one unvaccinated) were followed over lifetime. A decision analytical model was used to analyze the cost and cost-effectiveness of the vaccine from a government's perspective. The probabilities of events of invasive pneumococcal diseases (IPD) and otitis media (OM) were derived from published local or overseas data. Vaccine efficacy (mid-range) from overseas trials was used. Cost avoidance arising from herd immunity was calculated based on overseas published data. Cost of management of complications arising from pneumococcal infections was estimated from a group of hospitalized or outpatient cases from 2 large regional public hospitals in Hong Kong. The costs associated with non-hospitalized disease states were captured through interviews with a group of identified GPs selected from different regions in Hong Kong. Vaccination programme costs included vaccine acquisition cost and cost of administration. Productivity loss was assessed in terms of extra care from family members, reduced earning ability and early retirement due to disability, absenteeism, and premature death. RESULTS: After a routine four-dose vaccination of infants in their first year of life, the PCV was estimated to have averted 566 cases of IPD and 2562 cases of OM. Using a discount rate of 5% for all projections, the direct and indirect costs per life year gained (CLYG) is HKD94,300 (USD12,090, 1USD = 7.8HKD) and HKD63,000 (USD8077) if no herd effect was included. With herd immunity included, the direct and indirect CLYG is reduced to HKD58,600 (USD7513) and HKD38,000 (USD4890) respectively. CONCLUSION: PCV appears to be cost-saving by averting IPD and related complications and also cost-effective due to herd immunity.