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Cost-effectiveness of an additional birth dose of Hepatitis B vaccine to prevent perinatal transmission in medical setting in a developing country (Mozambique)

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Abstract

This study is the first to assess the cost-effectiveness of an additional birth dose of Hepatitis B (HBV) vaccine administered by professional birth attendants in medical settings in a sub-Saharan country (Mozambique). The WHO has recommended the birth dose to prevent perinatal transmission of HBV. A Markov model was constructed to analyze the costs and effects associated with avoiding perinatal transmission of HBV through a birth dose vaccination in addition to the existing vaccination schedule in Mozambique. The comparator intervention is the existing vaccination schedule administered at 6–10–14 weeks. The analysis was conducted for the birth cohort of 2008. As the context is a low-income setting our main outcome measure was disability-adjusted life years (DALYs) averted. Transition probabilities, costs and effects were estimated based on a thorough literature review. One- to three-way sensitivity analyses were conducted to account for uncertainty in the data. We found an incremental cost-effectiveness ratio (ICER) for the additional birth dose of 250.95 US$ per DALY averted. Assuming a willingness-to-pay threshold of 441 US$, which was the GDP per capita for Mozambique in 2008, the findings show the additional birth dose to be highly cost-effective. However, one-way sensitivity analysis reveals that the outcome changes with parameter variation. To give unambiguous recommendations on introducing the birth dose in Mozambique, more information on the parameters that render the birth dose cost-ineffective in sensitivity analysis is needed. Those parameters are 'vaccine effectiveness', 'prevalence of HBV among mothers', 'the transition probability from chronic HBV to liver cancer' and 'the risk of perinatal transmission for mothers negative for the Hepatitis B "e" antigen (HBeAg)'. Parameter variation (one-way) showed the ICER to lie between 72 US$/DALY averted and 683 US$/DALY averted.

Biography

Vinod Mrithinjayam, currently a management consultant, graduated from department of health policy, The London School of Economics and Political Sciences in 2011. He is also a registered pharmacist in India and has over 6 years of experience delivering healthcare consulting projects. He has worked with a diverse set of health insurers, medical devices & technology, and pharmaceutical companies across U.S and U.K. His core skills are life sciences, healthcare IT, health economics, corporate strategy, and public policy & reforms. He is also a Professional Academy of Health Management Certified from the United States.