The estimated cost-effectiveness of paediatric rotavirus vaccination in the Kingdom of Saudi Arabia

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Background: Rotavirus gastroenteritis is a major health burden in young children worldwide. This study investigates the cost-effectiveness of universal paediatric rotavirus vaccination with RIX4414, a two-dose human rotavirus vaccine, in the Kingdom of Saudi Arabia (KSA).

Methods: A Markov cohort model with a cycle time of one month is constructed in Microsoft Excel. A hypothetical birth cohort –estimated at 562,400 infants- is entered into the model and followed over average life expectancy with acute rotavirus events measured up to the age of 5 years. Probabilities, utility scores, and costs for hospitalisations, hospital-acquired rotavirus infection, medical consultations, emergency visits and deaths are taken from published sources, databases, and after consensus from experts. Costs and benefits are discounted at 3% per year and compared between vaccinated and unvaccinated cohorts from a societal perspective.

Results: Estimated number of rotavirus-related diarrhoea events per year is between 129,358 (min) and 168,728 (max). Total cost without vaccination is estimated between SAR 85 (min) and 192 million (max) per year, of which direct medical costs account between 77%-81% and indirect costs between 19%-23%. Vaccination (96% coverage) reduces the number of gastro-enteritis events with 65-66% between 43,609 -58,709 and number of medical visits from 112,486 - 140,600 per year to 14,745-18,900. Total cost, including cost of vaccination, in the vaccinated cohort is estimated at SAR 100 to 116 million per year, saving SAR 76 million or causing an extra cost of SAR 15 million per year compared with no vaccination, for a cost of SAR 6 to 9 million per birth cohort.

Conclusion: Paediatric vaccination against rotavirus with a 2 dose vaccine (RIX4414) would improve health outcomes in KSA and may save up to 5 SAR (best scenario) or being an extra cost of 1.16 SAR per child at risk (worst scenario), the latter still being very cost-effective.

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