A quadrivalent vaccine against serogroup B meningococcal disease: a cost-effectiveness study

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Citation

Authors’ conclusions
Meningococcal disease is a devastating disease, which can be rapidly fatal and has important long-term impact on the life of those affected and their parents/caregivers. This cost-effectiveness study did not integrate the full extent of human suffering due to IMD. Decisions on vaccine policies are obviously based on several factors, including impact on individuals and the society, and cost-effectiveness is only one of these factors. Nevertheless, cost-effectiveness models throw a useful light on the opportunity (if any) of the different vaccination options. These models have shown that the introduction of a routine immunisation programme with 4CMenB can reduce meningococcal disease in Belgium, but involves a high frequency of adverse events, though principally mild and transient, following vaccination. If the vaccine does not disrupt group B carriage the greatest number of cases are averted through routine combined infant and adolescent routine vaccination policy. However the cost per quality adjusted life year gained of such a strategy is above €300 000. If the vaccine is able to disrupt carriage acquisition, greater decreases in cases can be achieved through vaccination. In the short-term, this is best achieved through routine infant vaccination, and in the long term strategies including routine adolescent vaccination result in higher and sustained reductions in cases over the long term. Infant strategies alone, with or without indirect effects, have limited impact and cannot be considered costeffective. Most strategies considered (including scenario analyses) resulted in very high costs per QALY gained, over €100 000. Only a few analyses assuming 30% vaccine efficacy against carriage acquisition in the dynamic model presented more favourable cost-effective ratios. First, routine adolescent vaccination alone presented cost-effectiveness ratios that are similar to those estimated for other vaccines recently introduced. Second, infant and adolescent vaccination combined presented cost per QALY gained below €40 000 only under high incidence and case fatality or ‘best case’ assumptions. It is important to note, however, that in the dynamic model, the use of continuous vaccination (100 birth cohorts) and differential discounting results in vaccination appearing more economically favourable than in the static model. Besides the effect on carriage, the epidemiological and economic models were sensitive to a number of the parameters considered, particularly: disease incidence, case-fatality rate, vaccine profile, vaccine uptake, the cost of the vaccination programme, population mixing, carriage prevalence and the discounting rate used. The results of this study may need to be revisited when new evidence becomes available, in particular the effect of 4CMenB on carriage.

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