Economic benefits of hepatitis B vaccination at sexually transmitted disease clinics in the US

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study examined the net costs of a universal hepatitis B virus vaccination programme for adults treated at sexually transmitted disease (STD) clinics during one year. The authors concluded that this national vaccination programme for adults at STD clinics resulted in cost savings. The methodology appears to have been appropriate and was clearly reported. The authors' conclusion appears to be valid.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the net costs of a universal hepatitis B vaccination programme for adults treated at sexually transmitted disease (STD) clinics during one year.

Interventions
The universal hepatitis B vaccination was compared against no vaccination. The monovalent adult hepatitis B vaccine was administered in three doses, within one year, to individuals who reported no prior vaccination.

Location/setting
USA/STD clinics.

Methods
Analytical approach:
This economic evaluation was based on a Markov model with a lifetime horizon for a hypothetical cohort of two million adults (aged 25 years). The authors stated that a societal perspective was adopted.

Effectiveness data:
The clinical data came from multiple sources, including a selection of known, relevant studies, surveillance databases, and hospital in-patient databases. The primary input to the model was the vaccine efficacy, which came from published studies.

Monetary benefit and utility valuations:
: None.

Measure of benefit:
The summary benefit measure, which was not combined with the costs, was the number of new hepatitis B virus (HBV) cases. Other measures included the cases of acute HBV infection, chronic HBV infection, and cirrhosis.

Cost data:
The economic analysis included the costs of vaccination (acquisition and administration), the direct medical costs of HBV infection, and travel and time costs for vaccination. The acquisition costs were based on the US federal contract price. The medical costs were calculated using national cost-to-charge ratios on the mean hospitalisation charges from the US Department of Health and Human Services. The patients' productivity losses were valued using national average earnings of production workers and the minimum wage. The authors assumed that all costs of vaccination occurred in the initial year and were therefore not discounted. Other costs were discounted at a yearly rate of 3%. All costs were in US dollars ($) and the price year was 2005.
Analysis of uncertainty:
One-way sensitivity analyses were undertaken on the key model inputs, including the cohort age, risk of infection, proportion receiving at least one dose of vaccine, and average daily wage. The results of the sensitivity analysis were presented in a graph.

Results
Over the lifetime of the cohort of two million adults treated in STD clinics, there were 237,021 new HBV infections without the vaccination programme and 131,194 with the vaccination; a difference of 105,828.

The total medical and productivity costs were $1,587 million without the vaccination and $878 million with the vaccination. The total programme costs were $138 million, and the time and travel costs for vaccination were $45 million. The cost savings of the vaccination programme were $526 million.

The sensitivity analysis showed that the cost savings were most sensitive to changes in the cohort age, risk of infection, proportion of individuals receiving at least one dose, and the mean daily wage.

Authors’ conclusions
The authors concluded that the national HBV vaccination programme for adults at STD clinics resulted in cost savings.

CRD commentary
Interventions:
The authors clearly reported the interventions and their details, which were relevant to the US setting.

Effectiveness/benefits:
The effectiveness data were mainly derived from published studies, but no systematic search of the literature was reported. Few details of the characteristics of the primary sources of data, such as their design, patient population, or type of intervention, were reported. This makes it difficult to ascertain if the best available evidence was used. The primary outcomes were well reported.

Costs:
The cost categories reflected the stated perspective. The details were reported for the calculation of the vaccination programme costs, but few details of the disease-related costs were provided. This limits the possibility of replicating the analysis in other settings. The use of discounting and the price year were explicitly reported. The costs were treated deterministically in the base case. Sensitivity analysis around the cost estimates was well conducted.

Analysis and results:
This was a cost-consequences analysis and the health outcomes were not combined with the costs. The sensitivity analysis, to assess whether the results were robust to changes in the estimates, was well conducted. The authors acknowledged some limitations of their study.

Concluding remarks:
The methodology appears to have been appropriate and was clearly reported. The authors’ conclusion appears to be valid.

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Bibliographic details

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