Vaccinating Thai adolescents against hepatitis A: is it cost-effective
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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.

Health technology
The vaccination of Thai adolescents against hepatitis A was studied.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study used modelling techniques. The costs and consequences were examined in a hypothetical group of 100 Thai adolescents aged between 12 and 18 years.

Setting
The setting was unclear. The economic study was carried out in Thailand.

Dates to which data relate
The principal parameters in the model for effectiveness were derived from studies published between 1998 and 2001. The dates to which the costs related and the price year were not explicitly stated.

Source of effectiveness data
The effectiveness data were derived from a review of the literature.

Modelling
A literature-based decision analytic model was developed to assess the clinical outcomes and the economic costs associated with each of the three strategies. The model examined the probability of getting infected with hepatitis A and the probability of needing outpatient and inpatient care.

Outcomes assessed in the review
The outcomes assessed were:

- the prevalence of natural immunity,
- the immunogenicity of vaccination,
- the prevalence of infection in susceptible groups, and
outcome of infection (the numbers that need outpatient and inpatient care).

**Study designs and other criteria for inclusion in the review**
Not reported.

**Sources searched to identify primary studies**
Not reported.

**Criteria used to ensure the validity of primary studies**
Not reported.

**Methods used to judge relevance and validity, and for extracting data**
Not reported.

**Number of primary studies included**
Five studies were included in the review.

**Methods of combining primary studies**
The primary studies were not combined.

**Investigation of differences between primary studies**
The differences between the primary studies were neither reported nor investigated.

**Results of the review**
The prevalence of natural immunity to hepatitis A was 7.9%.

The hepatitis A vaccine was effective in 96% of those vaccinated.

The prevalence of hepatitis A infection was 0.08% in the susceptible population.

Of the adolescents infected, 9.24% needed inpatient hospital care and the remainder needed outpatient care.

**Measure of benefits used in the economic analysis**
The consequence in terms of numbers developing hepatitis A and numbers needing outpatient and inpatient treatment, with each strategy, was estimated. The cost of treating cases of hepatitis A was estimated in the three groups. In the cost-consequences analysis, the authors assumed that clinical effectiveness was similar. Thus, the economic analysis was based on cost-differences only (cost-minimisation), which they classified as a cost-benefit analysis.

**Direct costs**
The direct costs of the hepatitis A screening test and vaccine were obtained from the authors' hospital. Discounting was not carried out, even though the costs were incurred during more than 2 years. The price year was not specified. The cost of outpatient and inpatient treatment of hepatitis A was also derived from literature.

**Statistical analysis of costs**
Point estimates were used for the costs. There was no stochastic analysis.

**Indirect Costs**
The costs of lost productivity and transportation for cases of hepatitis A infection were included. The quantities and the costs were not analysed separately. Discounting was not carried out, although it would have been relevant as the costs were incurred during more than 2 years.

**Currency**
Thai baht (Baht). The conversion rate for Baht to US dollars ($) was reported.

**Sensitivity analysis**
No sensitivity analysis was carried out.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The total cost of the 'no intervention' strategy was Baht 244.61.

The cost for vaccination without testing was Baht 2,866.41.

The cost for vaccination after screening was Baht 3,149.41.

**Synthesis of costs and benefits**
Not applicable because of the cost-consequences approach adopted.

**Authors' conclusions**
The most benefit (in monetary terms according to the analysis) was gained by the 'no intervention' strategy. The least beneficial strategy was immunisation after testing.

**CRD COMMENTARY - Selection of comparators**
The selection of the comparators was explicitly reported and was appropriate for the study question. The authors justified the age group they selected for study. You should decide if the comparator represents current practice in your own setting.

**Validity of estimate of measure of effectiveness**
The effectiveness data were derived from the literature. However, the authors did not report details of their search strategy. It is therefore possible that the available studies were used selectively. Details about the quality of the retrieved studies were limited, thus making it difficult to comment on the quality of the effectiveness estimates.

**Validity of estimate of measure of benefit**
The authors based their measure of benefit on costs only, defining their study as a 'cost-benefit' analysis. However, the instruments necessary to build a cost-benefit analysis were not utilised (human capital or willingness to pay approaches to quantifying health benefits). Therefore, the study should more appropriately be described as a cost-effectiveness/cost-minimisation study.
Validity of estimate of costs
Not all the relevant categories of cost appear to have been included. The perspective was not explicitly stated, but the inclusion of the indirect costs implies that it might have been societal. Only the costs of the hepatitis A screening tests and vaccine were included, and not the costs of performing the test and administering the vaccine. The review of the literature found that 7.9% of the population were immune. This group would not need vaccination. Although one could assume the same level of immunity in the no intervention group, the calculations assumed that the entire population in the no intervention group was susceptible. Thus, the numbers of infections in this group would be lower than calculated, and the calculation would have overestimated the costs of the no intervention group.

Other issues
The authors discussed the factors that affect the generalisability of their results, and indicated that the cost-effectiveness is dependent on setting, as demonstrated by the results of other studies. As such, they also compared their results with those of other studies.

Implications of the study
The authors considered their findings to indicate that it is not cost-effective to give the hepatitis A vaccine to Thai adolescents. They suggested further study, employing a sensitivity analysis, to determine the effect on this conclusion of a decrease in the cost of the vaccine. The study had several methodological limitations and, therefore, the results should be treated with caution.

Source of funding
None stated.

Bibliographic details

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