Cost-effectiveness of peginterferon alfa-2a compared to lamivudine treatment in patients with hepatitis B e antigen positive chronic hepatitis B in Taiwan

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
The objective of the study was to assess the cost-effectiveness of peginterferon alpha-2a, compared with lamivudine, for the treatment of hepatitis B e antigen-positive chronic hepatitis B in a hypothetical cohort of 32-year-olds in Taiwan. The authors concluded that treatment with peginterferon alpha-2a is likely to be cost-effective in comparison with lamivudine. The methodology of the study appears appropriate and was relatively well reported. However, the authors' conclusions did not adequately address uncertainty in the model.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objective of the study was to assess the cost-effectiveness of 48 weeks of peginterferon alpha-2a (pegIFN α-2a), compared with lamivudine, for the treatment of hepatitis B e antigen (HBeAg)-positive chronic hepatitis B (CHB) in a hypothetical cohort of 32-year-olds in Taiwan.

Interventions
PegIFN α-2a monotherapy was compared with lamivudine monotherapy. Both treatments were administered for 48 weeks at a dose of 180 μg/day for pegIFN α-2a and 100 mg/day for lamivudine.

Location/setting
Taiwan/secondary care.

Methods
Analytical approach:
A Markov model was developed to estimate the health benefits and costs of the two treatment strategies for HBeAg-positive CHB. A lifetime horizon was used. The authors stated the study was conducted from the perspective of the Taiwanese Bureau of national health insurance.

Effectiveness data:
The effectiveness data were generally taken from published studies. The clinical and demographic characteristics of the cohort were taken from a published clinical trial, while transition probabilities between the various health states were obtained from a number of published studies, with the data being validated by eight clinical hepatology experts in Taiwan. The authors reported that preference was given to studies which were most applicable to Taiwanese patients. However, no further details of the search methods or inclusion criteria were provided.

Monetary benefit and utility valuations:
The health state utilities were based on data from published economic evaluations.

Measure of benefit:
The summary measures of benefit were the life-years and quality-adjusted life-years (QALYs). The health benefits were discounted at an annual rate of 3%.

Cost data:
The cost categories included in the analysis were those associated with the management of the different disease states. They were presented as the total annual costs for each state. For three of the disease states - CHB, compensated cirrhosis and decompensated cirrhosis - resource use was obtained from the treating clinicians, while the unit costs came from the 2004 Fee Schedule for Medical Service and Reference List for Drugs. The costs for two of the other health states were obtained from published sources. The costs were in new Taiwan dollars (NTD) and were discounted at an annual rate of 3%. The price year was 2004.

Analysis of uncertainty:
A one-way sensitivity analysis was conducted in order to determine the impact of uncertainty on the cost-effectiveness ratio.

Results
Treatment with pegIFN α-2a monotherapy resulted in total costs of NTD 355,932 per patient, while treatment with lamivudine monotherapy was associated with a total cost of NTD 200,016.

There were gains of 15.19 life-years and 14.49 QALYs from treatment with pegIFN α-2a, compared with 14.86 life-years and 14.08 QALYs from treatment with lamivudine.

The incremental cost per life-year gained with pegIFN α-2a was NTD 466,936 and the incremental cost per QALY gained was NTD 380,619.

The one-way sensitivity analysis showed that the estimates of incremental cost-effectiveness were most sensitive to variations in the probability of developing compensated cirrhosis from CHB, the probability of developing compensated cirrhosis from the seroconversion state and the pegIFN α-2a efficacy rate.

Authors' conclusions
The authors concluded that 48-week treatment with pegIFN α-2a in HBeAg-positive patients is likely to be cost-effective in comparison with lamivudine.

CRD commentary
Interventions:
Both interventions were described clearly, including information on dosage. They appear to have represented current practice for the treatment of HBeAg-positive CHB in the authors' setting.

Effectiveness/benefits:
The effectiveness data were derived from a wide range of sources. While the authors reported that a thorough review of the clinical and health economics literature was conducted to identify appropriate estimates for the model, further details of the review were not provided; this makes it difficult to determine whether the best available evidence was used. However, the parameters used in the model were validated by a number of experts, which increases the likelihood that the best estimates were used for the setting. Details of the transition probabilities used in the model, along with their source, were fully reported in the paper and were subjected to one-way sensitivity analysis.

Costs:
The costs were presented as the total costs for the management of different health states, rather than separately as unit costs and resources, which reduces the possibility of replicating the analysis in other settings. However, the source of the resource use and unit cost data was relatively well reported. Details of the price year and discounting were reported.

Analysis and results:
The authors conducted an appropriate incremental analysis and reported the results clearly and in full. The impact of uncertainty in the model parameters was investigated through one-way sensitivity analysis which, although appropriate, could have been supplemented with two-way and probabilistic sensitivity analyses for a more complete assessment of the impact of uncertainty. The authors acknowledged several limitations of their analysis, which were mainly related to limitations in the data.
Concluding remarks:
The methodology of the study appears appropriate and was relatively well reported. However, the authors' conclusions did not adequately address uncertainty in the model.

Funding
Hoffman-La Roche.

Bibliographic details

Indexing Status
Subject indexing assigned by NLM

MeSH
Antiviral Agents /economics /therapeutic use; Cohort Studies; Cost-Benefit Analysis; Disease Progression; Hepatitis B Surface Antigens /analysis; Hepatitis B, Chronic /drug therapy /economics /epidemiology; Humans; Interferon Alfa-2a /economics /therapeutic use; Lamivudine /economics /therapeutic use; Markov Chains; Polyethylene Glycols /economics /therapeutic use; Quality of Life; Taiwan /epidemiology

AccessionNumber
22007001914

Date bibliographic record published
03/11/2008

Date abstract record published
23/12/2008