Cost-effectiveness of treating influenzalike illness with oseltamivir in the United States
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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.

CRD summary
This study examined the cost-effectiveness of oseltamivir versus usual care for the treatment of influenza-like illness, in four target populations. The authors concluded that oseltamivir was cost-effective compared with usual care for all four populations, when only the direct costs to the health care payer or society were analysed. There was insufficient reporting of the methods and it is unclear if the authors’ conclusions were appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of oseltamivir compared with usual care for the treatment of influenza, in high-risk individuals, aged between 13 and 64 years, with comorbidities; in individuals, aged over 65 years; in healthy individuals, aged between 13 and 64 years; and in children, aged from one to 12 years.

Interventions
Oseltamivir was compared against usual care, which was the treatment of influenza symptoms using non-prescription drugs.

Location/setting
USA/primary care.

Methods
Analytical approach:
A published decision analytic model, namely the Simulating Anti-Influenza Value and Effectiveness (SAVE) model, was modified for this economic analysis. The time horizon was one year and the authors reported that both a societal and a health care payer’s (third-party payer) perspectives were adopted.

Effectiveness data:
The effectiveness data were from national datasets and published studies. The main clinical parameters were the probability of influenza-related hospitalisation, death, and complications.

Monetary benefit and utility valuations:
The utility values were from published studies.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the measure of benefit.

Cost data:
The economic analysis included the costs of medications; primary care physician and specialist visits for influenza, pneumonia, bronchitis, and otitis media; and hospitalisation. Productivity losses due to influenza morbidity, premature death, complications, or caring for a sick child were also included. The median weekly wage for full- and part-time workers in 2005 was used. The resource use was from national datasets, the literature, and authors’ assumptions and the unit costs were from national sources. Hospital charges were converted to actual costs, using facility specific cost-to-charge ratios. The costs were converted to 2006 prices using the consumer price index. All costs were reported in US dollars ($).
Analysis of uncertainty:
The uncertainty was investigated using one-way sensitivity analysis, for specific clinical and cost parameters. The impacts of lower diagnostic accuracy rates, a lower percentage of patients receiving oseltamivir within 48 hours, and higher oseltamivir resistance rates, were also tested. A worst-case scenario where oseltamivir did not result in a reduction in influenza-related complications nor hospitalisations was also tested.

Results
The results were presented for each of the four target populations. The expected QALYs gained with oseltamivir ranged from 10.3752 for elderly individuals to 30.2472 for children. With usual care they ranged from 10.3713 for elderly individuals to 30.2430 for children.

From a societal perspective, the total costs per patient treated with oseltamivir ranged from $351.28 for elderly individuals to $1,567.56 for high-risk individuals. With usual care. they ranged from $321.83 for elderly individuals to $1,659.15 for high-risk individuals.

Oseltamivir was dominant, as it was more effective and less costly than usual care, for all target populations, except elderly individuals, where the incremental cost-effectiveness ratio (ICER), over usual care, was $7,652 per QALY gained.

Sensitivity analyses demonstrated that these results were most sensitive to variation in the influenza complications with usual care, the reduction in complications and hospitalisations with oseltamivir, and the probability of developing pneumonia. In the worst-case scenario, the ICER for oseltamivir over usual care ranged from $32,826 per QALY gained for elderly individuals to $170,424 for children.

Authors' conclusions
The authors concluded that oseltamivir was more cost-effective than usual care for the treatment of influenza-like illness, for all patient groups, when only the direct costs to society or the health care payer were taken into account.

CRD commentary
Interventions:
The interventions were clearly reported and they were compared with the usual care in the authors' setting. Other treatments, if there were any, which is likely, were not considered and this makes the study only a partial analysis.

Effectiveness/benefits:
No systematic review of the literature was reported. The details of the studies used as primary sources, such as their design, method of analysis, and study population, were not reported, which makes it difficult to objectively assess the validity of the estimates used. The authors justified the exclusion of adverse events due to oseltamivir. Little information was provided on the valuation methods for the utilities. QALYs are a validated measure of benefit that assess the impact of interventions on both quantity and quality of life and allow cross-disease comparisons to be made.

Costs:
It appears that the appropriate categories of costs were included for each perspective. The costs and quantities were not reported separately and the costs were reported as total categories, limiting the transparency of the analysis. Adjustments for inflation were made using the consumer price index, but the medical component of the consumer price index would have been more appropriate.

Analysis and results:
The costs and benefits were combined, using an incremental approach. Sensitivity analysis was only conducted, using a deterministic approach, while a probabilistic analysis would have been more appropriate. This analysis was restricted to specific model parameters and the results were only presented for the societal perspective. The authors discussed one limitation of their study, which was that the analysis did not include diagnostic testing before treatment.

Concluding remarks:
There was insufficient reporting of the methods and it is unclear if the authors' conclusions were appropriate.
Funding
Funded by Roche Laboratories, Inc.

Bibliographic details

PubMedID
19233995

DOI
10.2146/ajhp080296

Original Paper URL
http://www.ajhp.org/cgi/content/abstract/66/5/469

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Antiviral Agents /economics /therapeutic use; Child; Clinical Trials as Topic; Cost of Illness; Cost-Benefit Analysis; Decision Trees; Humans; Influenza, Human /drug therapy /economics; Models, Economic; Oseltamivir /economics /therapeutic use; Quality-Adjusted Life Years; Risk Factors; Time Factors; United States

AccessionNumber
22009101495

Date bibliographic record published
09/09/2009

Date abstract record published
27/10/2010