Antiviral therapies for Herpes zoster infections: are they economically justifiable?

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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
Antiviral therapies for herpes zoster infections.

Type of intervention
Treatment.

Economic study type
Cost-utility analysis.

Study population
Immunocompetent patients with mild or acute herpes zoster symptoms, excluding patients with facial zoster who were all assumed to receive antiviral therapy.

Setting
Hospital. The study was set in the USA.

Dates to which data relate
Effectiveness data were collected from studies published between 1994 and 1999. Cost data were collected from studies published between 1994 and 1998. The price year was 1995.

Source of effectiveness data
Effectiveness data were derived from a literature review.

Modelling
A Markov decision analytic model was used to determine the cost-effectiveness of the strategies to treat zoster infections.

Outcomes assessed in the review
The review assessed the risk of postherpetic neuralgia (PHN), and the decreased duration of PHN due to antiviral therapy, by age group and severity of symptoms, the probability of hospitalisation, the median PHN duration, and antiviral effects.

Study designs and other criteria for inclusion in the review
Only studies relating to immunocompetent patients were included in the review.
Sources searched to identify primary studies
MEDLINE was searched from 1966 onwards and EMBASE from 1990 onwards. Bibliographies were also searched.

Criteria used to ensure the validity of primary studies
Not stated.

Methods used to judge relevance and validity, and for extracting data
Summary statistics from individual studies were used.

Number of primary studies included
At least 7 primary studies were included.

Methods of combining primary studies
The narrative method was used.

Investigation of differences between primary studies
Not stated.

Results of the review
For mild acute herpes zoster, the risk of PHN was 10% (40-year-olds), 15% (60-year-olds), and 20% (70-year-olds).

For severe acute herpes zoster, the risk of PHN was 15% (40-year-olds), 25% (60-year-olds), and 30% (70-year-olds).

For mild acute herpes zoster, the decreased duration of PHN due to antiviral therapy was 0% (40-year-olds), 20% (60-year-olds), and 20% (70-year-olds).

For severe acute herpes zoster, the decreased duration of PHN due to antiviral therapy was 0% (40-year-olds), 20% (60-year-olds), and 20% (70-year-olds).

For all age groups and severity of symptoms, and per patient, the probability of hospitalisation was 0.26%, the median PHN duration was 90 days, the decreased duration of acute herpes zoster was 1.6 days, and the antiviral relief of acute symptoms was 50%.

Measure of benefits used in the economic analysis
Quality-adjusted life years (QALYs) were used as the measure of benefits. Utility estimates were derived from two published studies describing quality of life given by general population groups for other medical conditions. Benefits were discounted at an annual rate of 3%.

Direct costs
Direct costs were discounted at an annual rate of 3%. Quantities and costs were reported separately. Direct costs included acute zoster costs (physician and all other therapy costs excluding antiviral therapy), antiviral treatment costs, hospitalisation costs, and PHN costs. The categories included in the latter were not explicitly stated. The quantity/cost boundary adopted was that of the health service. The estimation of quantities and costs was based on published information from other studies. Costs and quantities were collected from previously published studies. Average wholesale prices were used for medication costs. All costs were converted to US dollars using the US Consumer Price Index. The price year was 1995.
Statistical analysis of costs
No statistical analysis of costs was reported.

Indirect Costs
Indirect costs were included in the sensitivity analysis, but not in the baseline results. It was assumed that one of the antiviral effects would be decreased indirect cost of seeking care for PHN. The cost boundary adopted was that of the patient. Quantities were not reported separately from costs. The estimation of costs was based on the authors’ assumptions. The price year was 1995.

Currency
US dollars ($) with 1 UK pound = 1.60 US dollars.

Sensitivity analysis
One-way, two-way, and three-way sensitivity analyses were conducted on model estimates.

Estimated benefits used in the economic analysis
Not reported.

Cost results
Not reported.

Synthesis of costs and benefits
For mild acute herpes zoster, the incremental cost-effectiveness was $89,200 for 40-year-olds, $47,700 for 60-year-olds, and $40,700 for 70-year-olds. For severe acute herpes zoster, the incremental cost-effectiveness was $29,700 for 40-year-olds, $18,000 for 60-year-olds, and $16,500 for 70-year-olds. The results for 60- and 70-year-old patients with mild acute herpes zoster were sensitive to changes in the antiviral treatment cost, the probability of developing PHN, and the decrease in PHN duration associated with antiviral therapy use.

Authors' conclusions
Antiviral therapy for herpes zoster seems economically justifiable for mildly symptomatic acute herpes zoster in patients aged 50 years and older, and for severely symptomatic acute herpes zoster in all adults.

CRD COMMENTARY - Selection of comparators
A justification was given for the comparators used, namely that they represented currently recommended strategies. You, as a user of the database, should decide if these health technologies are relevant to your setting.

Validity of estimate of measure of benefit
The authors did not state that a systematic review of the literature had been undertaken, but the methods and conduct of the review were satisfactorily reported. More information about the design of the review and the method of combining primary effectiveness estimates could have been reported. However, individual results of the primary studies were reported in detail and the differences between primary studies were investigated in the sensitivity analyses. Effectiveness estimates were combined using narrative methods. The estimation of benefits was modelled. Utility values were obtained from other published studies and were based on patients with other illnesses, so further research is required in this area.
Validity of estimate of costs

Positive features of the cost analysis were that all relevant cost categories were included, sensitivity analyses were conducted on costs and quantities, and quantities and costs were reported separately. The study also attempted to account for the indirect costs of patient time necessary to seek care. However, a more detailed explanation of the categories of costs included in the costs of PHN would have been useful. The price year was reported and no charges were used to proxy prices.

Other issues

The authors made appropriate comparisons of their findings with those from other studies and addressed the issue of generalisability to other settings. The authors did not present their results selectively. The study considered immunocompetent patients with herpes zoster and this was reflected in the authors’ conclusions.

Implications of the study

Antiviral therapy for immunocompetent patients with herpes zoster is economically justifiable in currently recommended clinical situations. Further research is needed around which antiviral treatment has the greatest effect on herpes zoster, concurrent corticosteroid use with antivirals, and the effect of antiviral therapy on herpes zoster costs.

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