Comparison of valaciclovir and acyclovir for the treatment of herpes zoster in immunocompetent patients over 50 years of age: a cost-consequence model

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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
Valaciclovir and acyclovir in the treatment of herpes zoster.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Immunocompetent patients aged over 50 years.

Setting
Community and hospital. The study was carried out in the USA.

Dates to which data relate
Effectiveness and resource use data were derived from a study published in 1995. Cost data were collected from 1992-1996 sources. The price year was 1995.

Source of effectiveness data
Effectiveness data were derived from a single study.

Study sample
Patients were entered into the trial within 72 hours of the onset of a shingles rash. The sample consisted of 1,141 patients. The study did not report if power calculations were used to determine sample size.

Study design
Effectiveness estimates were taken from a Phase III, multi-centre, double-blind, randomised trial of valaciclovir 1,000 mg three times per day for 7 or 14 days versus acyclovir 800 mg five times per day for 7 days. The process of randomisation was not reported. It was a multinational study conducted in 107 centres in 13 countries. Most patients were treated on an outpatient basis although in some countries patients were routinely hospitalised. The period of follow-up was 6 months. Loss to follow-up details from the trial were not reported.

Analysis of effectiveness
The analysis was based on intention-to-treat. The clinical outcomes used in the model were frequency of long-term pain, number and type of physician visits, number and duration of hospitalisations, and number of work days lost for patients still in paid employment. It is not possible to determine from the present study whether patient groups were comparable at baseline.

**Effectiveness results**
The effectiveness results were as follows:

The incidence of pain at 6 months was 0.26 with ACV and 0.2 with VACV.

The number of primary care physician visits was 0.89 with ACV and 0.78 with VACV.

The number of specialist visits was 0.73 with ACV and 0.58 with VACV.

The number of days in hospital was 1.011 with ACV and 0.911 with VACV.

The number of ocular complications was 0.037 with ACV and 0.031 with VACV.

The number of work days lost was 6.87 with ACV and 5.15 with VACV.

The proportion of patients in paid employment was 0.275.

**Clinical conclusions**
The clinical outcome results reported above were used as input parameters to the model in order to generate the benefit measures and cost-effectiveness results.

**Modelling**
A decision analytic model was used to determine the cost-effectiveness of the two treatment strategies.

**Measure of benefits used in the economic analysis**
Two measures of benefits were used: the duration of zoster-associated pain resulting from the intention-to-treat analysis for the clinical trial, and the number of days of zoster-associated pain for the subset of patients still suffering from pain after rash healing.

**Direct costs**
Except for lifetime costs of treating long-term pain, which were discounted at an annual rate of 6%, direct costs were not discounted given the short time frame of the study (less than 1 year). Quantities and costs were reported separately. Direct costs included drug costs, cost of treating long-term pain, physician visits, hospitalisation and treatment of severe ocular involvement. The quantity/cost boundary adopted was that of society. The estimation of quantities and costs was based on actual data. Drug prices were taken from the Red Book. Prices of generic drugs were obtained from IMS International. Costs of treating long-term pain were taken from a study published in 1996. The cost of staying in hospital for one day was taken from the US Statistical Abstract for 1994. The cost of treating ocular complications were taken from a 1995 source. Physician visit costs were based on 1992 Medicare payments. Costs were inflated using the Medical Care Consumer Price Index. The price year was 1995.

**Statistical analysis of costs**
Not reported.

**Indirect Costs**
Indirect costs reflected median weekly earnings for all workers in the United States in 1993.

**Currency**
US dollars ($).

**Sensitivity analysis**
Sensitivity analyses were conducted on the costs of acyclovir acquisition, pain drugs, long-term pain treatment, physician visits, hospitalisation, treatment of ocular involvement, productivity losses, and duration of pain.

**Estimated benefits used in the economic analysis**
The number of days to cessation of pain (intention-to-treat analysis) was 51 with ACV and 38 with VACV. The number of days to cessation of pain (subset analysis) was 59 with ACV and 40 with VACV.

**Cost results**
The total costs amounted to $544.29 with ACV and $437.74 with VACV.

**Synthesis of costs and benefits**
Reducing the cost of acyclovir by 50%, the incremental cost per day of pain avoided was $0.34 (intention-to-treat analysis). Reducing the cost of acyclovir to 0, the incremental cost per day of pain avoided was $5.3 (intention-to-treat analysis). These results were fairly sensitive to variations in the cost of treating long term pain (PHN).

**Authors' conclusions**
The authors concluded that 7-day valaciclovir treatment of acute herpes zoster is cost saving compared with 7-day acyclovir treatment in terms of direct medical costs and productivity losses as well as reducing the duration of pain.

**CRD COMMENTARY - Selection of comparators**
A justification was given for the comparator used, namely currently administered drugs. You, as a user of the database, should decide if this health technology is relevant to your setting.

**Validity of estimate of measure of benefit**
The authors employed the results from a large-scale multinational RCT and therefore the results are likely to be internally valid. Some details of the study's design were not provided in the present paper and the reader may need to refer to the original study for specific information as identified in this abstract. The authors did not derive a summary measure of health benefit and the study may therefore be regarded as a cost-consequences analysis.

**Validity of estimate of costs**
All relevant cost categories, for the cost perspective adopted, were included in the analysis. Hospitalisation costs were not included but were relevant for the data of some countries. No attempt was made to put a value on disruption of other activities or on home help by friends, and family and pharmacy dispensing fees were not considered. Given that some costs were omitted from the analysis, the authors' conclusions should be interpreted with this consideration in mind. Costs and quantities were reported separately and a sensitivity analysis was conducted on costs. Some cost estimates were based on Medicare payments.

**Other issues**
The authors did not make comparisons of their findings with those of other studies. The issue of generalisability to
other settings was not discussed, although it was implicitly addressed in the sensitivity analyses. The authors did not present their results selectively. The study enrolled patients suffering from herpes zoster and this was reflected in the authors' conclusions. The study considered costs from the perspective of the United States health care system.

**Implications of the study**
7-day valaciclovir is more cost-effective than 7-day acyclovir for the treatment of herpes zoster.

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