An economic analysis of norfloxacin prophylaxis against spontaneous bacterial peritonitis

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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
Norfloxacin prophylaxis for the treatment of spontaneous bacterial peritonitis (SBP) in advanced liver disease.

Type of intervention
Treatment; secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The population studied were high-risk (cirrhosis) patients with a previous history of SBP.

Setting
The practice setting was not clear. The economic analysis was carried out at the Department of Family Medicine, California, USA.

Dates to which data relate
Effectiveness data were obtained from a literature review (dates not given). Economic data were obtained from multi-speciality tertiary care US hospitals in 1997 (approximately). No prices were stated.

Source of effectiveness data
Estimates for the probability of 1-year recurrence for SBP (on norfloxacin) and of 1-year recurrence for SBP (no prophylaxis) and SPB-specific mortality were derived from a review of previous studies.

Modelling
A decision analysis model was used to estimate the expected charges of treating SBP for both norfloxacin prophylaxis and no prophylaxis strategies.

Outcomes assessed in the review
The primary health outcomes assessed in the review were the probability of 1-year SBP recurrence and SBP-specific mortality.

Study designs and other criteria for inclusion in the review
The principal findings were derived from a double blind, placebo-controlled trial.
Sources searched to identify primary studies
Medline was searched.

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

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

Number of primary studies included
Not stated.

Methods of combining primary studies
The review included 5 studies.

Investigation of differences between primary studies
Not stated.

Results of the review
The probability of 1-year recurrence for SBP (on norfloxacin) was given as 0.20, and of 1-year recurrence for SBP (no prophylaxis) was given as 0.68. 15 SBP-specific deaths out of 100 would result and antibiotic prophylaxis was estimated to prevent 11 deaths out of 100 cases. Life expectancy with norfloxacin was estimated to be 1.41 years and 1.22 years without.

Measure of benefits used in the economic analysis
Change in life expectancy (LE) figures were obtained from the expected 1-year mortality rate of each group (LE=1/m).

Direct costs
Direct costs were grouped as charges for a 1-year supply of norfloxacin, and charges associated with treating an episode of SBP. The cost perspective used was unclear. Quantities and costs were not analysed separately. No prices were stated.

Statistical analysis of costs
Not performed.

Indirect Costs
Not calculated.

Currency
US dollars ($).

Sensitivity analysis
One-way sensitivity analysis varied the 1-year SBP recurrence rate, and SBP-specific mortality improvement.
Estimated benefits used in the economic analysis
The life expectancy of prophylaxis patients was 1.41 years and for non-prophylaxis patients, 1.22 years (a difference of 69 days in favour of the prophylaxis patients).

Cost results
The total cost of treating an episode of SBP using norfloxacin was estimated to be $3,691 compared with $8,323 with no prophylaxis.

Synthesis of costs and benefits
Not performed.

Authors' conclusions
Using norfloxacin as a treatment for preventing SBP in high-risk patients is efficacious and results in cost savings of $4,632 per patient per year compared with no prophylaxis.

CRD COMMENTARY - Selection of comparators
The selection of treatment comparators appears to be justified.

Validity of estimate of measure of benefit
The estimates of measure of benefit are likely to be internally valid.

Validity of estimate of costs
No details of costing were provided, i.e. specific sources, year(s) collected, and prices used.

Other issues
No details of the study populations (age, sex, etc.) used in the primary sources were provided. External validity (to other countries or settings) was not discussed. Sensitivity analysis allowed the testing of the study's assumptions around recurrence rates and mortality improvement, concluding that norfloxacin is cost-saving as long as it reduces the SBP recurrence rate by 15% or more.

Implications of the study
The authors proposed that future prospective randomised controlled trials should be undertaken to establish whether reductions in disease recurrence results translates into reductions in SBP-specific mortality.

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