Role of initial NSAID choice and patient risk factors in the prevention of NSAID gastropathy: a decision analysis

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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
The use of nonsteroidal anti-inflammatory drugs (NSAIDs) in the prevention of NSAID gastropathy.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The hypothetical population comprised long-term users of NSAIDs without risk factors for NSAID gastropathy.

Setting
The setting was primary care. The economic study was conducted in the USA.

Dates to which data relate
The dates to which the data related were not reported.

Source of effectiveness data
The effectiveness data were derived from a review and synthesis of completed studies.

Modelling
A Markov model was used to estimate ulcer and symptom status and the costs for patients in a 1-year episode of care.

Outcomes assessed in the review
The outcomes assessed were:

- the ulcer healing rates with an H2 antagonist and with a proton-pump inhibitor (PPI);
- the ulcer prevention rates with an H2 antagonist and with a PPI; and
- the symptom prevention rates with an H2 antagonist and with a PPI.

Study designs and other criteria for inclusion in the review
The authors did not state whether a systematic review was carried out. The inclusion and exclusion criteria and the study designs of the literature used were not reported.

**Sources searched to identify primary studies**
Not reported.

**Criteria used to ensure the validity of primary studies**
Not reported.

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

**Number of primary studies included**
The authors used 24 primary studies.

**Methods of combining primary studies**
The authors combined the results of the primary studies for all parameter estimates. However, the methods used to combine the results were not reported.

**Investigation of differences between primary studies**
The authors reported that the published literature demonstrated considerable variation in the risk of ulcers and adverse events. These differences were discussed in the paper.

**Results of the review**
The effectiveness of antisecretory therapy on ulcer healing and symptoms was as follows:

- the ulcer healing rate was 0.52 with an H2 antagonist and 0.66 with a PPI;
- the ulcer prevention rate was 0.20 with an H2 antagonist and 0.72 with a PPI; and
- the symptom prevention rate was 0.43 with an H2 antagonist and 0.52 with a PPI.

**Measure of benefits used in the economic analysis**
The measures of benefits used were the reductions in ulcers and ulcer-related complications.

**Direct costs**
Discounting was irrelevant as the costs were incurred during one year. Since the perspective of the payer was adopted, only the direct medical costs were used in the model. The cost data were derived from the actual payments made for medical services by a large private insurer in the eastern USA. The drug costs were based on the average prices determined from an ongoing survey of retail pharmacies. The dates and price year were not reported.

**Statistical analysis of costs**
The costs were treated deterministically. The average costs were reported.
Indirect Costs
No indirect costs were included in the analysis.

Currency
US dollars ($).

Sensitivity analysis
Sensitivity analyses were conducted. These explored the uncertainty in all the clinical input parameters and also the cost inputs. One-way sensitivity analyses were used in all cases.

Estimated benefits used in the economic analysis
The number of symptomatic ulcers was 2.58 with strategy 1 versus 0.73 with strategy 2.

The number of ulcer-related complications per 100 patient-years was 1.18 with strategy 1 versus 0.23 with strategy 2.

The number of months with non-ulcer symptoms per 100 patient-years was 43.3 with strategy 1 versus 44.9 with strategy 2.

Cost results
The cost per patient was $239 with strategy 1 and $831 with strategy 2.

Synthesis of costs and benefits
The costs and benefits were combined to give a cost per symptomatic ulcer prevented and cost per complicated ulcer prevented. Under strategy 2, the cost per symptomatic ulcer prevented was $31,900 and the cost per complicated ulcer prevented was $56,700.

Authors' conclusions
Decisions about access to safer, more expensive nonsteroidal anti-inflammatory drugs (NSAIDs) depended on the cost-differential between agents, the relative safety of available agents, and the patients' ulcer risk. The model estimated that, for chronic NSAID users at average risk, unrestricted use of safer NSAIDs has the potential to decrease ulcer-related adverse events at an incremental cost that approximates to other published values. The sensitivity analyses revealed that, given the current differences in acquisition price, under no circumstances would the unrestricted use of a safer agent generate cost-savings in this average-risk population.

CRD COMMENTARY - Selection of comparators
The authors compared a strategy of only using safer, more expensive NSAIDs for treatment failures with a strategy of using safer, more expensive NSAID treatment in all instances. Neither of the alternatives was explicitly stated to be current practice. The comparators were appropriate for the objective of the study. You should decide if they are appropriate for your setting.

Validity of estimate of measure of effectiveness
The authors did not state that they had carried out a systematic review of the literature. In some cases data from the primary studies were combined, but the methods used to derive a final estimate were not discussed. The differences between the studies were discussed in the paper. In addition, to explore the impact of uncertainty in parameter values, a sensitivity analysis was performed on all parameters. The authors made some assumptions, based on the literature, and explained them well in the paper.
Validity of estimate of measure of benefit
The economic benefit was measured by the reductions in ulcers and ulcer-related complications. These were estimated using a Markov model. The model accounted for the various health states that patients could enter and the probability of moving between these states.

Validity of estimate of costs
The authors reported that the costs were estimated from the perspective of the payer and that only the direct medical costs were included. The source of the cost data was reported. A one-way sensitivity analysis was performed to explore the impact of changes in the costs. However, these results were not discussed in detail. The price year was not reported, which would make any price reflation exercise impossible.

Other issues
The authors compared their results with those from one other study. They commented that there was the potential to decrease ulcer-related adverse events at an incremental cost that approximates to published values for misoprostol. The issue of the generalisability of the study to alternative settings was discussed in terms of extending NSAID usage for users with moderate or mild risk of gastrointestinal toxicity. A sensitivity analysis was performed. The authors acknowledged the limitations of the study. In particular that, because of the variation in clinical inputs in the published literature, the results should only be viewed as a point estimate of relative cost-effectiveness between the strategies.

Implications of the study
The authors did not make any recommendations for policy or practice.

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