Cost-benefit analysis of testing for Helicobacter pylori in dyspeptic subjects

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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
Serological testing for Helicobacter pylori in dyspeptic subjects.

Type of intervention
Diagnosis.

Economic study type
Cost-benefit analysis.

Study population
A hypothetical cohort of patients with symptoms of dyspepsia.

Setting
Hospital. The economic study was carried out in New Mexico.

Dates to which data relate
The main effectiveness data were extracted from previously completed studies (1989-92). Resource and cost data were mainly derived from 1987-95 sources. The price year was not given.

Source of effectiveness data
Estimates of the probability of test results, the cure rate, the compliance rate, the consequences of the eradication of H. pylori, and benefits of prevention of gastric cancer and peptic ulcer were derived from a review of previous studies.

Modelling
A decision tree model was used to estimate the outcomes and costs of serological testing for H. pylori in dyspepsia.

Outcomes assessed in the review
The main outcomes were the probability of test results, the cure rate, the consequences of the eradication of H. pylori and the prevention of gastric cancer.

Study designs and other criteria for inclusion in the review
Previously completed studies. The inclusion/exclusion criteria were not stated.

Sources searched to identify primary studies

NHS Economic Evaluation Database (NHS EED)
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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
9 primary studies were included in the review.

Methods of combining primary studies
Narrative method.

Investigation of differences between primary studies
Not stated, even though it would have been applicable.

Results of the review
The probability of tests returning negative was estimated to be 70% and a positive result was estimated to be 30%. The cure rate was estimated to be 60% and the failure rate 40%. Eradication of H. pylori was estimated to lead to a resolution of the dyspepsia in 10% of all treated patients and to a permanent cure, or prevention of peptic ulcer, in 10% of all treated patients. The prevention rate of gastric cancer was estimated to be 0.12% of dyspeptic patients.

Measure of benefits used in the economic analysis
The measure of benefits was the net cost or benefit associated with cases of dyspepsia, peptic ulcer and gastric cancer.

Direct costs
The costs of H. pylori, of antibiotic therapy and physician visits were included in the analysis. The quantities and the costs were analysed separately. Discounting was not applied. The quantity/cost boundary adopted was that of the hospital. The date to which the price data refer was not stated.

Currency
US dollars ($).

Sensitivity analysis
A two way sensitivity analysis was carried out on the prevalence rate of peptic ulcer disease and the cure rate of H. Pylori. The three way sensitivity analysis included the benefit of ulcer prevention. Only if the benefit of ulcer prevention drops below $1,000 does testing for H. pylori in dyspeptic patients become more costly and less beneficial than nontesting. An ulcer prevalence rate of 10% in H. pylori-positive patients with dyspepsia requires a benefit of at least $4,000 associated with ulcer prevention for testing to be more beneficial than nontesting. This benefit rises to $6,000 under a cure rate of only 60%.

Estimated benefits used in the economic analysis
Based on monetary benefits from the literature of $7,000 for peptic ulcer prevention, $5,000 for the healing of...
dyspepsia and $30,000 for cancer prevention, the net benefit of H. pylori testing is $1,236.

Cost results
The costs of H. pylori, antibiotic therapy and physician visit were estimated to be $50, $150 and $50, respectively.

Synthesis of costs and benefits
The synthesis of costs and benefits was expressed as a net cost or benefit. The expected benefit associated with eradication was $1236. The baseline rates showed that the net benefit per patient was $112.

Authors' conclusions
As long as no unequivocal evidence exists that nonulcer dyspepsia responds to eradication of H. pylori, treating all dyspeptic patients who test positive for H. pylori cannot be recommended. At the present time, antibiotic therapy should be reserved for patients with proven ulcer or for patients with nonulcer dyspepsia for whom other measures have failed.

CRD COMMENTARY - Selection of comparators
The reason for the choice of comparator is clear. Since there is no clear evidence that all dyspeptic patients require a radiological or endoscopic confirmation of peptic ulcer, screening for H. pylori may provide sufficient evidence to allow therapy with antibiotics to commence. The present analysis examines the cost-benefit relationship of such an approach to dyspepsia. You, as a user of this database, should consider whether these are widely used health technologies in your own setting.

Validity of estimate of measure of benefit
Extensive sensitivity analysis was carried out on key parameters which showed consistent benefits for H. pylori testing. As such the results are likely to be valid.

Validity of estimate of costs
Adequate details of the methods of quantity/cost estimation were given. Important cost items were not omitted.

Other issues
The authors' conclusions were likely to be justified within the limitations of a modelled solution. The issue of generalisability to other settings, however, was not addressed although appropriate comparisons were made with other studies. The results were not presented selectively but the synthesis of benefits and costs could have been reported in a more detailed way.

Implications of the study
Further studies which itemize different diagnostic techniques or different treatment modalities of nonulcer dyspepsia, peptic ulcer and gastric cancer are required.

Source of funding
None stated.

Bibliographic details