Cost effectiveness of screening for and eradication of Helicobacter pylori in management of dyspeptic patients under 45 years of age


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
Helicobacter pylori (HP) screening and treatment using triple eradication therapy based on bismuth, in dyspeptic patients under 45 years of age.

Type of intervention
Screening and treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Dyspeptic patients under 45 years of age.

Setting
Primary care. The economic study was carried out in the United Kingdom.

Dates to which data relate
Effectiveness and cost data were obtained from literature published between 1990 and 1995. Resource use data and related dates were not reported. 1995 prices were used.

Source of effectiveness data
Effectiveness data were derived from a review of the literature and assumptions made by the authors.

Modelling
A Markov model was used to represent the costs and outcomes associated with the (empirical) treatment of recurrent ulcer versus a standard triple eradication.

Outcomes assessed in the review
The clinical probabilities assessed were:

(1) 4 week rates of healing of ulcer with cimetidine healing dose;

(2) 4 week rate of recurrence of ulcer from state of remission;

(3) 4 week rate of recurrence of ulcer with maintenance cimetidine;
(4) Yearly rate of reinfection with H. pylori;
(5) Success of eradication at first attempt;
(6) Success of eradication after 2 attempts;
(7) Prevalence of H. pylori among dyspeptic patients under 45 years;
(8) Prevalence of peptic ulcer disease among patients positive for H. pylori;
(9) Prevalence of peptic ulcer disease among patients negative for H. pylori;
(10) Sensitivity of the serology test (for detecting H pylori);
(11) Specificity of the serology test.

**Study designs and other criteria for inclusion in the review**
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**
A total of 15 studies were included, 10 of which were directly used as the references for the clinical probabilities incorporated in the model.

**Methods of combining primary studies**
Not reported.

**Investigation of differences between primary studies**
Not reported.

**Results of the review**
The values for the clinical probabilities were:

(1) 4 week rates of healing of ulcer with cimetidine healing dose, 80%;
(2) 4 week rate of recurrence of ulcer from state of remission, 6%;
(3) 4 week rate of recurrence of ulcer with maintenance cimetidine, 3%;
(4) Yearly rate of reinfection with H. pylori, 1%;
(5) Success of eradication at first attempt, 80%;
(6) Success of eradication after 2 attempts, 94%;
(7) Prevalence of H. pylori among dyspeptic patients under 45 years, 40%;
(8) Prevalence of peptic ulcer disease among patients positive for H. pylori, 25%;
(9) Prevalence of peptic ulcer disease among patients negative for H. pylori, 3%;
(10) Sensitivity of the serology test (for detecting H pylori), 77%;
(11) Specificity of the serology test, 89%.

Methods used to derive estimates of effectiveness
Assumptions on effectiveness were also made by the authors.

Estimates of effectiveness and key assumptions
The sensitivity and specificity of endoscopy (for detecting peptic ulcer disease) were assumed to be 100%.

Measure of benefits used in the economic analysis
The benefit measure was the percentage of time patients spent free of ulcer recurrence.

Direct costs
Costs were discounted. Quantities and costs were not analysed separately. The cost components were reported separately. The perspective of the cost analysis was that of the health care system. The cost components consisted of the costs of consultation, outpatient attendance, C-urea breath test, serology, endoscopy, formulation of eradication treatment, course of eradication treatment (average), four week healing course of cimetidine, and four week maintenance course of cimetidine. The sources of the cost data were the published literature or national health agencies. 1995 prices were used.

Indirect Costs
Not considered.

Currency
UK pounds sterling (€).

Sensitivity analysis
Sensitivity analysis varied all model parameters including HP prevalence, effectiveness of eradication treatment, and various cost elements. The sensitivity analysis identified the payback period for the initial investment in screening and eradication strategy.

Estimated benefits used in the economic analysis
The average time spent without ulcer and symptoms was 99% for triple treatment eradication, compared to 95% for conventional treatment.

Cost results
The average accumulated cost per patient with confirmed infection and peptic ulcer disease for conventional treatment (after 10 years) was 812 compared to 209 for those initially receiving eradication treatment. Costs were discounted at 6%.

Synthesis of costs and benefits
Since the difference in terms of benefit measure was regarded as negligible, the analysis concentrated on cost difference only. The intervention was shown superior to the conventional treatment in terms of cost saving over a 10 year period when it applied to patients with confirmed infection and peptic ulcer disease. When the strategy of screening and eradication was compared to conventional treatment, the cost saving required almost 8 years to accrue.

Authors' conclusions
Enthusiasm for introducing testing for, and eradication of, H. pylori for dyspeptic patients in general practice should be tempered by an awareness that cost savings may take many years to realise.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear.

Validity of estimate of measure of benefit
The internal validity of the estimate of benefit can not be fully assessed due to lack of information regarding the literature review and quality assessment of the primary studies included in the review.

Validity of estimate of costs
Resource utilisation was not reported separately from the costs. However, cost items were reported separately and adequate details of method of cost estimation were given. The accuracy and reliability of sources of cost data were not assessed.

Other issues
In view of the apparent lack of a systematic literature review and quality assessment of the primary studies included in the review, the results may need to be treated with some caution.

Implications of the study
Decision makers should be aware of the initial costs incurred involved in the implementation of such a programme.

Source of funding
None stated.

Bibliographic details

PubMedID
8646042

Original Paper URL
http://www.bmj.com/content/312/7042/1321

Other publications of related interest
Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Cost-Benefit Analysis; Costs and Cost Analysis; Decision Trees; Dyspepsia /economics /microbiology /therapy; Great Britain; Helicobacter Infections /economics /prevention & control /therapy; Helicobacter pylori; Humans; Mass Screening /economics; Middle Aged; Peptic Ulcer /economics /microbiology /therapy; Recurrence; Sensitivity and Specificity; State Medicine /economics; Treatment Outcome

AccessionNumber
21996008187

Date bibliographic record published
31/07/1999

Date abstract record published
31/07/1999