Helicobacter pylori test and treat versus proton pump inhibitor in initial management of dyspepsia in primary care: multicentre randomised controlled trial (MRC-CUBE trial)


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.

CRD summary
This study assessed the cost-effectiveness of an Helicobacter pylori test and treat strategy compared with empirical acid suppression in the initial management of adult patients with dyspepsia. The authors concluded that the strategies of test-and-treat and acid suppression were equally cost-effective and that general practitioners should discuss with patients the optimal strategy for the management of their dyspepsia. The analysis was well conducted and reported and uncertain areas were investigated and discussed. The authors’ conclusions appear to be valid.

Type of economic evaluation
Cost-utility analysis

Study objective
This study assessed the cost-effectiveness of a Helicobacter pylori (H. pylori) test and treat strategy in comparison with empirical acid suppression in the initial management of patients aged 18 to 65 years with dyspepsia (epigastric pain, heartburn, or both without alarm symptoms for malignancy).

Interventions
The two strategies were H. pylori 13C urea breath test with, for those who tested positive, eradication treatment (omeprazole 20mg once daily, clarithromycin 250mg twice daily, and metronidazole 400mg twice daily, for one week, followed by three weeks of omeprazole 20mg once daily), and proton pump inhibitor alone (omeprazole 20mg once daily for four weeks).

Location/setting
UK/primary care.

Methods
Analytical approach:
This economic evaluation was based on a single study. The time horizon was one year and the authors did not explicitly report the study perspective.

Effectiveness data:
The clinical data were derived from a randomised controlled trial (RCT), which enrolled 699 patients aged 18 to 65 years (343 were in the test and treat arm, 48% male, and 356 were in the treatment arm, 50% male) from 80 general practices in the UK. Randomisation was carried out at the level of the individual patient. The length of follow-up was one year. A subgroup analysis was performed for patients with predominant heartburn and predominant epigastric pain. The key clinical outcome was the percentage of patients with no dyspeptic symptoms (measured by the Leeds dyspepsia questionnaire).

Monetary benefit and utility valuations:
The utility valuations were derived directly from patients enrolled in the RCT using the EuroQol-5D (EQ-5D) questionnaire. Values were estimated at baseline and after one year.

Measure of benefit:
Quality-adjusted life-years (QALYs) were used as the summary benefit measure and were derived directly from the
RCT. The number of patients with no dyspeptic symptoms measured by the short form Leeds dyspepsia questionnaire was also assessed, but was not combined with costs.

Cost data:
The health services included drugs, consultations, treatments, and investigations. These items were costed using national reference data. A breakdown of cost items was provided. The resource use was derived from the sample of patients enrolled in the RCT. The price year was 2005 and all costs were in UK pounds sterling (£).

Analysis of uncertainty:
The issue of uncertainty was investigated by means of a stochastic analysis, which calculated mean incremental cost-utility ratios. The net monetary benefit approach was also used for different willingness to pay thresholds.

Results
The analysis showed that differences in benefits and costs between the two study groups did not reach statistical significance. For example, the expected QALYs were 0.834 in the test and treat group and 0.830 in the treatment group (difference: 0.004, 95% confidence interval, CI: -0.036, 0.044). The mean cost per patient was £132 in the test and treat group and £128 in the treatment group (difference: £4, 95% CI: -44, 53).

The incremental cost per QALY gained with the test and treat strategy over the treatment strategy was £1,000 but this figure was associated with a high degree of uncertainty because the differences in both costs and QALYs were very small.

Similar findings were reached in the subgroup analyses.

Authors' conclusions
The authors concluded that the strategies of test and treat and acid suppression were equally cost-effective and so general practitioners should discuss with patients the optimal strategy for the management of their dyspepsia. These findings supported the 2004 National Institute for Clinical Excellence (NICE) guidelines, which do not recommend a H. pylori test and treat strategy over a proton pump inhibitor strategy for the initial management of dyspepsia.

CRD commentary
Interventions:
The two comparators were appropriately selected in that they represented the two options for patients presenting with dyspepsia in the primary care setting. They are also likely to be relevant strategies in other health care systems.

Effectiveness/benefits:
The use of a RCT to derive clinical data represents a valid choice given the strengths of such a design. Details of the RCT, such as the inclusion and exclusion criteria, randomisation procedure, follow-up, the baseline comparability of study groups, and other methodological aspects were reported. The drop-out rate of the trial was low and both clinical and economic data were available from a high percentage of patients. Power calculations were conducted and an intention-to-treat analysis was performed. Appropriate statistical analyses were carried out in order to assess the differences in clinical and economic outcomes. The derivation of the benefit measure was appropriately reported. In general, the clinical analysis appears to have been carried out satisfactorily.

Costs:
The authors did not explicitly report the study perspective. Nevertheless, the sources used and the types of costs included suggest that the perspective was that of the third-party payer. The unit costs were reported for all items and information on resource consumption was provided. The sources of data were clearly presented. Statistical analyses of costs were performed to take into account the skewed cost distribution. Overall, the economic analysis was carried out transparently.

Analysis and results:
The synthesis of costs and benefits was appropriately carried out although the authors pointed out the uncertainty surrounding cost-utility ratios. This was due to the lack of statistically significant difference in clinical and economic...
endpoints between the groups. The issue of uncertainty was clearly addressed and the results of the sensitivity analysis were reported. The authors noted that the results of their study could not be transferred to countries with different prevalences of H. pylori. A further strength of the analysis was the use of power calculations for relevant clinical and economic outcomes of the study. Finally, the subgroup analysis showed that the findings of this economic evaluation were robust.

**Concluding remarks:**
On the whole, the analysis was well conducted and reported. Uncertain areas were investigated and discussed, and the authors' conclusions appear to be valid.

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