Cost effectiveness of screening for and eradication of *Helicobacter pylori* in young patients with dyspepsia

Analysis is easier with spreadsheets than decision trees

EDITOR,—A H Briggs *et al* provide an interesting perspective on the problem of what best to do for people with dyspepsia.¹ Clarification would be welcome of their analysis of the strategy for dyspepsia in figure 2. This figure uses an estimated population prevalence of *Helicobacter pylori* infection (40%), rather than the result expected after serological testing. If the prevalence from testing is used the false positive and false negative component of the results reduce the proportion of ulcers found (test positive *v* test negative) from 5:1 to 2:1. This means that one third of those with ulcers will not have had an endoscopy and would not receive eradication treatment. The practical problem facing general practitioners particularly is how best to deal with dyspeptic patients when the waiting time for routine endoscopy often exceeds three months. They may choose one of the main therapeutic groups of drugs—antacids, H₂ blockers, and proton pump inhibitors—or eradication treatment and stick to it unless there is no relief or a relapse occurs, hoping that by then endoscopy will be available. They could follow a sequence of treatments (of increasing costs)—for example, antacids, H₂ blockers, proton pump inhibitors, and eradication treatment. Or they may think it desirable to start by performing a serological test for *H pylori* and begin eradication treatment if the result is positive. We have compared these last two treatment plans by a spreadsheet Markov analysis of relative costs and utilities (details on request).

The comparison, by cost, favours no initial testing. The ratio of costs (initial test to no test) diminished from 2.7:1 after the first cycle to 1.1:1 after six cycles. We chose a cycle length of 30 days, but this can be varied as required. For cost to utility ratios, the difference is less and initial testing is to be preferred if the waiting list for endoscopy exceeds four cycles. When many options are available it can prove informative, and not very difficult, to construct models of the type Briggs *et al* describe. We have found spreadsheets easier to handle than decision trees.

G H HALL
Consultant physician

5A Victoria Park Road,
Exeter EX2 4NT

T K DANESHMEND
Consultant physician

Royal Devon and Exeter Hospital (Wonford),
Exeter EX2 5DW

A P ROUND
Senior registrar in public health

Department of Public Health,
Dean Clarke House,
Southernhay East,
Exeter

R AYRES
Consultant physician

Royal Devon and Exeter Hospital (Wonford),
Exeter EX2 5DW

1 Briggs AH, Sculpher MJ, Logan RPH, Aldous J, Ramsay ME, Baron JH. Cost effectiveness of screening for and eradication of *Helicobacter pylori* in management of dyspeptic patients under 45 years of age. *BMJ* 1996;312:1321-5. (25 May.) (Correction: 29 June, p 1647.)

Costs will probably vary according to local data

EDITOR,—A H Briggs *et al* used a decision tree to model the outcomes of treatment for the cost effectiveness of screening for and eradication of *Helicobacter pylori* in the management of dyspeptic patients under the age of 45 years.¹

I am sure that, although many gastroenterologists would not take issue with the model that they used, the problem with exercises of this type is that "the devil is in the detail." Small changes in base case estimates can radically alter the conclusions reached. For example, my experience of the accuracy of the Helisal rapid whole blood test and enzyme linked immunosorbent assay (ELISA) for the detection of antibodies to *H pylori* is somewhat different to that of Dougan *et al*.² The results of a study I conducted with others show much better sensitivity (88.2%) and specificity (93%).³

The cost effectiveness of the treatment options is considerably affected by the cost of endoscopy. Gastroenterologists who have set up open access endoscopy services would agree that the true total cost of a diagnostic upper gastrointestinal endoscopy is considerably more than the £76.38 quoted by the British Society of Gastroenterology. When all costs including equipment replacement, staff costs, building costs, and capital expenses were taken into account a figure of £288 was recently reached by accounting methods at my hospital. I am sure that these changes alone would alter the balance of the argument away from investigation by endoscopy towards eradication of *H pylori* without first performing endoscopy in patients with ulcer like dyspepsia who are positive for *H pylori*. I recently published with others a study that showed that giving eradication treatment on the basis of symptoms and *H pylori* serology in 121 patients would save 85 endoscopies at a cost of only 14 excess treatments.⁴

I think therefore that readers should put their own figures for testing for *H pylori*, costs of endoscopy, and success of eradication of *H pylori* into the model suggested by Briggs *et al*. They may find that their local estimates change significantly the conclusions that they draw from this paper.

STIRLING PUGH
Consultant gastroenterologist

Taunton and Somerset Hospital,
Taunton,
Somerset TA1 5DA

- 1 Briggs AH, Sculpher MJ, Logan RPH, Aldous J, Ramsay ME, Baron JH. Cost effectiveness of screening for and eradication of *Helicobacter pylori* in management of dyspeptic patients under 45 years of age. *BMJ* 1996;312:1321-5. (25 May.) (Correction: 29 June, p 1647.)
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Cost of eradication treatment may have been overestimated

EDITOR,—The paper by A H Briggs *et al* is a useful contribution to the debate about the management of dyspepsia.¹ However, some of their assumptions may have overestimated the cost of

eradication and underestimated the cost of treatment with H₂ receptor antagonists.

The costs of H₂ antagonists were based on cimetidine. Scottish prescribing data show that proprietary ranitidine has been more commonly used but that the use of proton pump inhibitors—for example, omeprazole—has been increasing. The cost of a four week healing course is in practice nearer to that of ranitidine, at around £28, or omeprazole, at £36, than the cost of £21 for cimetidine that was used.

The healing rate of 80% assumed for cimetidine is higher than the 70% found in the meta-analysis by McIsaac *et al*.²

The eradication regimen chosen was two weeks of treatment. There are now cheaper, more effective (90%) one week regimens.³

The cost of eradication included a check breath test, which is not necessary in most patients.⁴

All patients positive for *Helicobacter pylori* had endoscopy. A therapeutic trial of eradication in young dyspeptic patients who are positive for *H pylori* avoids the cost and discomfort of endoscopy.

The cost of endoscopy was given as £76. This is much lower than expected. The cost of day case endoscopy varies among Scottish providers from £127 to over £300.

The net effect of changing the assumptions is that cost savings are achieved much sooner. The cost of eradication is roughly halved and that of H₂ antagonists probably doubled (unless there was a dramatic shift to prescribing generic cimetidine).

The overall conclusion remains the same—eradication of *H pylori* is cost effective.

N R WAUGH
Director

Scottish Health Purchasing Information Centre,
Summerfield House,
Aberdeen AB15 0RE

- 1 Briggs AH, Sculpher MJ, Logan RPH, Aldous J, Ramsay ME, Baron JH. Cost effectiveness of screening for and eradication of *Helicobacter pylori* in management of dyspeptic patients under 45 years of age. *BMJ* 1996;312:1321-5. (25 May.) (Correction: 29 June, p 1647.)
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Studies' assumptions are removed from clinical practice

EDITOR,—A H Briggs *et al* assume that all patients with dyspepsia have maintenance treatment of cimetidine 400 mg twice daily.¹ In fact many receive maintenance treatment with other drugs, such as omeprazole 20 mg once daily, which is over five times more expensive in the most recent issue of the *British National Formulary*.

The authors recognise that the cost and accuracy of the serology test has an important effect on the payback period in their strategy, yet quote the sensitivity and specificity of a near patient testing method (Helisal), which seems to have significantly more technical problems than laboratory based methods.² Open access to labora-