

# Appropriate use of upper gastrointestinal endoscopy – a prospective audit

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## Abstract

**Work by this group has shown that there is a wide range of opinion as to patients' suitability for endoscopy. In a recent study, 1297 questionnaires were sent to a random selection of doctors, including 350 general physicians, 400 surgeons, 477 gastroenterologists, and 70 general practitioners. The respondent was asked to indicate whether or not he would refer the patient described by each case vignette for endoscopy. Depending on the indication, the positive referral rate varied from 4.5% to 99% overall, and from 4.5% to 63.8% for all those clinical situations that the working party felt to be inappropriate. A second study examined the appropriateness of 400 consecutive cases referred from four units within one health region; these cases were judged independently, and without conferring, by a panel of seven gastroenterologists. The same cases were rated by software that incorporated American opinion (the Rand criteria). Although only 45 (11%) of the cases were classed as inappropriate by the British panel, 120 cases (31%) assessed by the American software were rated inappropriate. These differences occurred largely because in the USA it is recommended that one month's antiulcer treatment be tried before considering endoscopy for dyspepsia and thus many referrals were seen as inappropriate by the American database. Of the 45 cases found to be inappropriate by the British doctors no important abnormality was found at endoscopy; whereas of 120 cases judged inappropriate by the Rand criteria, three duodenal and two gastric ulcers, and one gastric cancer were diagnosed at gastroscopy. This study attempts a quantitative assessment of inappropriate use and serves to encourage further work to define appropriateness.**

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It has been estimated that 1% of the population will eventually require an upper gastrointestinal endoscopy every year (2500 examinations in a district general hospital, assuming a district population of 250 000).<sup>1</sup> If these demands are to be met, endoscopy units will need to be expanded considerably. While the number of gastroscopies performed yearly grows rapidly, however, the increase in the diagnosis of serious abnormality has been marginal, and in some cases and for some

pathologies has fallen.<sup>2</sup> In order to maintain efficient use of resources the procedure must be used appropriately and any test justified. Moreover, upper gastrointestinal endoscopy is associated with a small but definite mortality and morbidity,<sup>3</sup> and inappropriate use means unnecessary risk to the patient.

Open access endoscopy has received both a good<sup>4-7</sup> and bad press.<sup>2 8 9</sup> For such a service to run efficiently all doctors concerned, and in particular those who are involved in referring patients directly, must have a clear idea of why they are referring patients and what benefits they expect as a result of a negative or positive result. With increasing availability of any test, if becomes easier for the technology to guide clinical practice. While anxious patients may need the reassurance of formal investigation, it has been shown that not all expect technological intervention when they first visit their doctor and some may be more satisfied by simple reassurance and explanations than by sophisticated investigations.<sup>10</sup>

Furthermore, work by this group has shown that only a minority of patients on visiting their general practitioner, expect to be referred for an endoscopy. The Royal College of Surgeons, The Research Unit of The Royal College of Physicians, The British Society of Gastroenterology, The Royal College of Anaesthetists, The Association of Surgeons of Great Britain and Ireland, and The Thoracic Society of Great Britain formed a working party to audit all aspects of upper gastrointestinal endoscopy (excluding endoscopic retrograde cholangiopancreatography and rigid oesophagoscopy); a major part of their work has been to examine how appropriately upper gastrointestinal endoscopy is being performed and to establish how consistently clinical opinion is held on the use of endoscopy for specific clinical situations.

## Method

A large prospective study of over 14 000 upper gastrointestinal procedures performed throughout East Anglia and the north west of England during a four month period provided background information on why gastroscopy was being performed. The main audit will be described elsewhere. Data were collected on why patients were being referred for the investigation, and this enabled referral rates to be compared for different symptom complexes between units, health districts, and health regions. In addition, the proportion of gastroscopies performed for specific symptom

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complexes or showing no pathology could be compared.

As well as these broad estimates for gastroscopy usage, the working party was also concerned to focus more specifically on the subject of inappropriate gastroscopy. It began by drawing up a list of a number of possible scenarios which it believed might be areas in which endoscopy was being used inappropriately. This was necessarily a wide-ranging list encompassing the many grey areas in which there was felt to be possible confusion and disagreement. The list included subjects such as:

- (i) Young patients with a short history of uncomplicated dyspepsia, who had not received a trial of treatment;
- (ii) Patients who were currently on H<sub>2</sub> antagonists for dyspepsia;
- (iii) Patients with mild, uncomplicated symptoms of gastro-oesophageal reflux;
- (iv) Patients who had already been investigated by barium meal or upper gastrointestinal endoscopy;
- (v) Patients with probable functional dyspepsia;
- (vi) Follow up of patients with reflux disease or duodenal ulcer/duodenal scarring;
- (vii) Follow up endoscopy after gastrectomy for cancer in an asymptomatic patient.

Questions based on these situations were formulated, and a questionnaire was drawn up and was distributed to a sample of gastroenterologists (both physicians and surgeons), in an attempt to establish where clinical opinion stood on these key areas of debate. For each situation the doctor was asked to indicate whether he would 'always' refer the patient for endoscopy; would do so 'in most cases'; was 'unlikely' to do so; and, finally, would 'never' refer such a patient. Because the working party was most interested to assess for each situation whether it was common practice or not to request gastroscopy, the answers were structured in an attempt to direct the respondents in one direction. It was not the intention to be left with a series of results which were all centred around equivocal answers. In each situation the clinician was asked to answer as the referring doctor and not as the service endoscopist. Respondents were also given the chance to list any other areas not covered by the questionnaire in which they felt gastroscopy was (a) inappropriate and (b) contraindicated. There was also a specific question which asked whether some groups of patients should receive a trial of antiulcer treatment before endoscopy.

The first sample comprised 48 doctors, all of whom had a particular interest in gastroenterology: clinicians from the Clinical Services Committee of the British Society of Gastroenterology (BSG); the Gastroenterology Committee of The Royal College of Physicians; the Committee of the Primary Care Society in Gastroenterology; and members of the Surgical Section of the BSG. Forty five completed questionnaires out of the possible 48 were returned and the results were analysed. Adjustments were made to the format, and for the purposes of validation a few extra scenarios describing situations for which gastroscopy is widely recognised as being appropriate (for example, haematemesis). A further answer option of 'no opinion' was also added.

This second and refined questionnaire was then sent out to a far wider sample (n=1297): a random selection of 350 doctors who did not have an interest in gastroenterology from the list of all physicians who are involved in a regular 'acute-on-call' duty rota kept at the Royal College of Physicians; 400 from the Associations of Surgeons; 477 from the BSG; and 70 from the membership of the Royal College of General Practitioners. This list included physicians and surgeons not specifically involved in gastroenterology, although many of them frequently referred patients to the endoscopist. Altogether 61% of the forms were returned within one month and after a reminder was sent out this figure increased to 66%.

The feedback from the second questionnaire was used to assess current clinical opinion; however, the working party also undertook to investigate more specifically why gastroscopy was being used and how much of this use was inappropriate. To this end, four endoscopy units throughout East Anglia were randomly selected. The researcher (MAQ) visited each unit and recorded detailed data on all patients endoscoped over a one month period, so that the reason for referral could be analysed at a later date by a panel of doctors away from the original clinical setting. Most data were obtained from the patients' hospital notes and referral letters, but in a small number of cases, where the information in the notes was particularly scanty, the researcher obtained additional information from the patient.

Information concerning a total of 390 cases (between 60 and 120 cases from each hospital), was collected and transcribed into case vignettes for assessment by a subdivision of the working party (n=7), representing physicians and surgeons with an interest in gastroenterology. Each panellist was asked to assign the referral as appropriate, inappropriate, or to comment that more data was required to make a decision.

One alternative method of studying appropriate use is the application of 'appropriateness' ratings to individual patients undergoing a medical investigation or procedure so that judgement can be applied as to whether the investigation was clearly indicated. Such a ratings system has been developed in the USA

TABLE 1 Incidence of upper gastrointestinal endoscopy by health region

	East Anglia	North west
Total population (1990)	2 059 000	4 016 100
Study population (that is, population served by those hospitals included in the audit)	2 059 000	3 474 225
No of OGD included in the audit	3 956	10 193
Estimated gastroscopies performed yearly	11 868	30 579
Incidence of OGD by region	0.58%	0.88%
Ratio of incidence of procedures performed	1	1.5
No of consultants practising gastroscopy (participating in study)	41	107
No of endoscopists/1000 population	2×10 <sup>-5</sup>	3×10 <sup>-5</sup>

OGD=oesophago-gastro-duodenoscopy.

TABLE II Findings in patients 40 years of age and under with dyspepsia with or without reflux and vomiting

	East Anglia (n=342) (8.65% of workload)	North west (n=964) (9.46% of workload)
Normal (%)	197 (57.6)	460 (47.7)
Findings of dubious significance* (%)	69 (20.2)	225 (23.3)
Duodenal ulcer (%)	16 (4.7)	89 (9.2)
Healed duodenal ulcer (%)	0	9 (0.9)
Gastric ulcer (%)	3 (0.9)	28 (2.9)
Oesophagitis (%)	37 (10.8)	98 (10.2)
Oesophageal ulcer	1 (0.3)	7 (0.7)
Duodenal erosions (%)	2 (0.6)	7 (0.7)
Gastric erosions (%)	2 (0.6)	12 (1.2)
Gastric polyps (%)	0	5 (0.5)
Duodenal scarring (%)	2 (0.6)	10 (1.0)
Barrett's oesophagitis (%)	2 (0.6)	1 (0.1)
Cancer	0	0
Abandoned/no result (%)	11 (3.2)	13 (1.3)

\*Gastritis, hiatus hernia, biliary reflux, duodenitis.

for a number of medical procedures including upper gastrointestinal endoscopy and via a computer is used routinely in an outpatient setting.<sup>11</sup>

The computer programme holds in its memory 1069 different indications for upper gastrointestinal endoscopy and each indication has an appropriateness rating based on the decision of a national panel of American experts. Ratings 1, 2, and 3 are deemed inappropriate (that is, the potential harm outweighs the potential benefit), ratings 4, 5, and 6 are deemed equivocal, and ratings 7, 8, and 9 are deemed appropriate (that is, expected health benefit exceeds potential harm). Nine American doctors formed the panel. All had diverse geographical backgrounds and expertise, representing the fields of gastroenterology, surgery, radiology, and primary care. All panellists were asked to ignore the costs of the procedure.

The computer programme asks a series of questions about a patient which is aimed principally at the physician who has requested the endoscopy. The questions appear on the computer screen and, depending on the answers (which are fed in after every question), a different set of subsequent questions is asked. As soon as the patient fulfils an appropriate or equivocal criteria, the computer approves the patient for the procedure, if not the procedure is deemed inappropriate.

All 390 cases collected from the four endoscopy units were assessed independently

by a panel of English doctors. In addition all cases were entered onto the American database (kindly loaned by the King's Fund), to compare English opinion with American. The computer criteria used were last revised in January 1989.

**Results**

Results from the main audit showed that in the four month period from February to June 1991 East Anglia performed 3956 upper gastrointestinal endoscopies and in the four month period April to August 1991, 10 193 examinations were performed in the north west region. The total number of procedures performed was 14 149 of which 13 036 (92%) were diagnostic and the remaining 8% therapeutic.

The percentage of the populations in the north west and East Anglia undergoing gastroscopy on an annual basis is shown in Table I. Whereas 0.88% of the population of the north west would be predicted, from the audit figures, to undergo endoscopy yearly, only 0.58% of the population of East Anglia would be expected to attend for the examination annually. The numbers of gastroscopies performed within each district health authority per year are depicted for East Anglia and for the north west in Table I. In the north west the figures varied from 0.12% to 2.4%, a 20 fold difference. (It is interesting that the numbers of gastroscopies performed yearly for each population of a 1000 patients in the north west was proportional to the numbers of consultant endoscopists practising per 1000 population.) Only four health districts out of a total of 26 (15%) operated complete open access policies; another five districts (19%) operated partial open access (only a certain percentage of the general practitioners could refer patients directly). There was no statistical correlation between the numbers of gastroscopies performed within each district and the presence or absence of open access policies. The three units in East Anglia with the highest rates, however, practised open or partial open access while those with the lower rates did not have an open access service. The 'negative rates' for these units varied from 41% (open access policy) to 28.5% (no open access policy).

Data from the main audit provided findings on gastroscopy for various reasons for referral, related to age, sex, and comorbidity. Table II shows the findings in patients aged 40 years or less who were referred with dyspepsia with or without reflux and vomiting. Altogether 58% of all gastroscopies performed for this reason were normal in East Anglia; 47% of those performed were normal in the north west. These data could be usefully compared with those relating to patients aged 50 years or above in whom normal rates fell to 37% in East Anglia and 36% in the north west (Table III). In patients with haematemesis, a condition likely to produce a positive gastroscopy, the proportions of gastroscopies that were normal were 18% and 16% respectively (Table IV).

For each of the questions posed in the proforma sent to 1297 doctors (reply rates

TABLE III Findings in patients 50 years of age and above with dyspepsia with or without reflux and vomiting

	East Anglia (n=691) (17.47% of workload)	North west (n=1766) (17.33% of workload)
Normal (%)	258 (37)	638 (36)
Findings of dubious significance (%)	173 (25)	396 (22.4)
Duodenal ulcer (%)	44 (6.4)	200 (11)
Healed duodenal ulcer (%)	5 (0.7)	10 (0.6)
Gastric ulcer (%)	29 (4.2)	80 (4.5)
Oesophagitis (%)	111 (16.1)	246 (14)
Oesophageal ulcer (%)	2 (0.3)	10 (0.6)
Duodenal erosions (%)	6 (0.9)	28 (1.6)
Gastric erosions (%)	9 (3)	32 (1.8)
Gastric polyps	6 (0.9)	20 (1)
Duodenal scarring (%)	21 (3)	32 (1.8)
Barrett's oesophagitis (%)	5 (0.7)	14 (0.8)
Gastric cancer (%)	7 (1)	19 (1)
Oesophageal cancer (%)	2 (0.3)	3 (0.2)
Leiomyoma (%)	2 (0.3)	1
Candida (%)	1 (0.2)	2
Varices (%)	1 (0.2)	3 (0.2)
Abandoned/no result (%)	9 (1.3)	32 (1.8)

TABLE IV Findings in patients presenting with haematemesis

	East Anglia (n=329) (8.32% of workload)	North west (n=784) (7.67% of workload)
Normal (%)	61 (18.6)	126 (16.1)
Duodenal ulcer and duodenal erosions (%)	49 (14.9)	187 (23.9)
Gastric ulcer and gastric erosions (%)	43 (13.1)	109 (13.9)
Oesophageal bleeding (%)	57 (17.3)	142 (18.1)
Varices (%)	29 (8.8)	31 (4.0)
Mallory-Weiss (%)	9 (2.7)	21 (2.7)
Gastric cancer (%)	2 (0.6)	9 (1.1)
Miscellaneous (%)	14 (4.6)	27 (3.4)
Findings of dubious significance (%)	57 (17.3)	116 (14.8)
Abandoned/no result (%)	8 (2.4)	16 (2.0)

for disciplines varied from 62%–69%), the numbers of doctors indicating that they would request gastroscopy is given in Table V. The figures for the answers 'always' and 'in most cases' have been added together to include all those who would commonly refer the patient in each situation.

Surgeons expressing an interest in gastroenterology replied that they would request endoscopy in 62.8% of the cases described whereas general practitioners replied that they would request gastroscopy in only 50.1% of cases. The request rates for other disciplines fell between these figures. These differences did not reach statistical significance ( $\chi^2$  test,  $p > 0.05$ ). When the cases considered to be highly appropriate were excluded from the calculations (that is, those cases included for the purposes of validation), the surgeons were more likely to request endoscopy than physicians or general practitioners by a factor of 1.4 (surgical gastroenterologists: 52.5%; physicians: 36.3%; general practitioners: 37.2%;  $p < 0.001$ ). Overall, the consultant use of endoscopy varied from 9% of the clinical scenarios to 98%.

The respondents were also asked to indicate whether they felt that it was appropriate to administer a trial of antiulcer treatment before referring patients with uncomplicated dyspepsia for endoscopy, and if so for which age groups. A total of 532 of 807 (66%)

answered that they usually tried some form of antiulcer treatment (usually  $H_2$  antagonists) before requesting gastroscopy; most (61%) felt that 40 years was a reasonable cut off point (range 30–65 years). Altogether 121 of 807 (15%) did not approve of any form of therapeutic trial, and 19% of respondents were unsure or left the question unanswered.

Five additional scenarios were regularly reported by the respondents as inappropriate; (i) where there was a clear history of a Mallory-Weiss tear; (ii) after trivial haematemesis; (iii) in young alcoholics presenting with dyspepsia; (iv) in investigation of acute abdominal pain in a fit young patient; and (v) where active intervention is not planned in elderly or terminally ill patients.

While the vast majority of respondents felt that there were no contraindications to upper gastrointestinal endoscopy, 4.6% of doctors reported that they would not perform elective endoscopy in one or more of the following situations: (i) within one month of myocardial infarction; (ii) in conjunction with severe respiratory disease or unstable cervical spinal disease; (iii) in investigation of dysphagia before barium meal studies; (iv) in persistent vomiting where there was a risk of aspiration, for example, pyloric stenosis; (v) when there is a pharyngeal pouch present; and (vi) in concurrent dementia.

Results of the assessed cases are given in Table VI and for the same cases assessed by the American software in Table VII. Of the 390 cases assessed by the English panel, only 11.5% were felt to be wholly inappropriate, whereas the American software calculated that 30.8% were inappropriately performed. Of those judged inappropriate by British opinion, no serious abnormality was found but of the 120 cases rejected by the computer, endoscopy showed one early gastric cancer, two gastric ulcers, and three duodenal ulcers.

## Discussion

Many previous forecasts have underestimated the growing need for upper gastrointestinal endoscopy.<sup>12,13</sup> In the Trent region the annual number of procedures doubled over a five year period from 1981 to 1986,<sup>15</sup> and the majority of health districts included in the audit reported a continuing rise in the number of gastroscopies performed yearly. If the procedure were entirely without risk and if cost were ignored, then few would question the need for endoscopy for most patients presenting with upper gastrointestinal symptoms. Work by our group has shown, however, that simple gastroscopy is associated with a significant mortality and morbidity and, in addition, that underfunded endoscopy units struggle to complete the work referred to them.

The audit figures show a remarkable difference between the number of procedures performed per 1000 of the population in the north west region and in East Anglia health region. Gastrointestinal disease is known to be more prevalent in the north west but this does not fully explain the discrepancy. The use of

TABLE V Percentages of doctors who would request endoscopy in the following situations

(1) Asymptomatic sliding hiatus hernia seen on barium meal	4.5
(2) Patient under 40 y, untreated dyspepsia for 6 weeks (asymptomatic at time of interview)	5
(3) Patient under 40 y with a single episode of dyspepsia lasting 2 weeks	5
(4) Uncomplicated heartburn responding to treatment	7.9
(5) Uncomplicated duodenal ulcer shown on barium studies which is responding to $H_2$ antagonists	11.2
(6) Duodenal scarring shown on barium studies; responding to $H_2$ antagonists	13.8
(7) Patient under 40 y with dyspepsia who had had a negative endoscopy within 2 y	22
(8) Follow up endoscopy after gastrectomy, patient is asymptomatic	23.3
(9) Patient under 40 y with mild to moderate symptoms of gastro-oesophageal reflux only	28.6
(10) Follow up to previous endoscopic findings of non-ulcer dyspepsia, patient is symptomatic	29.5
(11) Metastatic adenocarcinoma of unknown primary site	39
(12) Patient under 40 y with dyspepsia; has had a negative barium meal with 2 y	50.6
(13) Evaluation of occult blood in stool, before lower gastrointestinal workup performed	57.7
(14) Patient under 40 y, with a 2–6 month history of untreated dyspepsia	61
(15) Patient with chronic, non-progressive dyspepsia; probably functional in origin	63.8
(16) Patient over 60 y with anorexia, early satiety or weight loss; barium meal normal	71.1
(17) Patient over the age of 40 y with a 2–6 month history of untreated dyspepsia	87.2
(18) Patient with anaemia (Hb < 10 g), on long term non-steroidal anti-inflammatory drugs for chronic arthritis	88.9
(19) Patient with dyspepsia and large volume vomiting	92.8
(20) Patient over 60 y with anorexia, early satiety or weight loss; barium meal not performed	95
(21) Heartburn which failed to respond adequately to maximal medical therapy	96
(22) Patient with dyspepsia who continued to have symptoms despite $H_2$ antagonists, who has not had any investigations of the upper GI tract	96.8
(23) Patient with progressive dysphagia	97
(24) Follow up to double contrast barium meal showing a gastric ulcer	97.6
(25) Patient with haematemesis	99

TABLE VI *Reasons for not approving endoscopy in British judges (total number of cases=390; number of assigned to be appropriate by panel: 321 (82.3%); number assigned to be inappropriate by panel: 45 (11.5%); number assigned to be equivocal by panel: 24 (6.2%)*

Reasons for non-approval ('inappropriate cases only')	Frequency	% of total
Clear history of irritable bowel syndrome (no features of ulcer disease)	15	3.8
Recent investigation (OGD or barium studies)	9	2.3
Patient currently on H <sub>2</sub> antagonists (with good effect)	9	2.3
Mild dyspepsia symptoms, no trial of antiulcer symptoms	7	1.8
No response to H <sub>2</sub> antagonists (patient maintained on treatment)	4	1.0
Investigation of acute abdominal pain	3	0.8
Routine follow up of gastrectomy for cancer	1	–
Six monthly follow up of Barrett's oesophagitis	1	–
Elderly, ill patients	1	–
Total	50*	12.8

\*Some cases were assigned 'inappropriate' on the basis of more than one reason. Positive findings at endoscopy: three minimal oesophagitis; six findings of dubious significance (ie, minimal gastritis, duodenitis, hiatus hernia).

the procedure also varied from district to district within each region. It is not clearly understood whether a high utilisation reflects an overuse, or a low utilisation means a poor service; in the USA only a small amount of this variation has been explained by inappropriate use.<sup>16</sup> When the crude rate for negative endoscopies for each district (range 13.3%–41%) was compared against the percentage of population endoscoped there was no correlation between the two variables. Throughout the north west, however, the interdistrict difference was seen to depend upon the number of consultant endoscopists offering their services ( $r=+0.64, p<0.01$ ); this relationship is well recognised. The number of districts within East Anglia was too small for any clear relationship to be made. It might be assumed that the difference in referral rates between districts could be attributed to the practice of interdistrict referral but analyses by postcodes showed that this accounted for only a small percentage of the variance. Open access policies affected neither the rates of population endoscoped nor the incidence of a normal gastroscopy. Waiting lists tended to be higher, however, in those units operating open access. The unit with the longest waiting list of nine months was one of the four running an open access system.

At present there is no standard, research based guidance to justify the use of gastroscopy for specific clinical situations. It has been suggested that until the indications for endoscopy are based on vigorous systematic study rather than subjective assessment it will be unscientific to study the frequency of inappropriate use. Nevertheless, it would be irresponsible to ignore the unquestionable growth of gastroscopies and increased funding

may be stimulated by attempts to audit the use of upper intestinal endoscopy.

The UK panel identified significantly fewer inappropriate cases than the computer program (Tables VI and VII). In each case both outpatients and inpatients were included. The inclusion of inpatients is likely to have decreased the percentage of referrals found inappropriate using either method. The commonest cause of inappropriateness found by the computer was that the patient had not undergone adequate formal antiulcer treatment; British physicians seemed less likely to defer endoscopy until a trial of therapy had been given. The British panel was more likely to label a case inappropriate when a clear history of irritable bowel disease or a chronic functional disorder was described.

It is interesting that American and British opinion differed quite considerably in the assessment of cases. The computer criteria do not take into account patient comorbidity, although as the comorbidity rating is assumed to be zero, it is more likely that its inclusion would increase the inappropriate rate: two cases were found to be inappropriate by the British panel for this reason. The results from this study correlate well with the results from other audits in this country: work from Nottingham used the Rand criteria to judge 93 cases and found that 26 (28%) were inappropriate referrals. A British panel independently assessed 60 of the original 90 cases and judged five (12%) to be inappropriate referrals.<sup>16</sup>

An alternative method used to judge the worth of a specific investigation is to ask the clinician in charge of the individual to state whether or not the result of the examination had added to his management; this might include reassurance of an anxious patient. This is necessarily a subjective judgement and a comparison between districts would be difficult using this method (this study highlights the variance in clinical opinion on the use of endoscopy). Reassuring the patient is as important as investigating for suspected disease but it may not be necessary to perform elaborate tests to alleviate patients' anxiety. A study of 400 patients by our group, with the help of a medical sociologist, showed that most patients who visited their doctors for the first time with upper gastrointestinal symptoms, did not expect technical investigative intervention but that once it had been performed were very ready to admit that the negative test result has reassured them. Only 3% of those with negative examinations volunteered that the test had been unnecessary. In addition, another study<sup>11</sup> has shown that patients were just as effectively reassured by their doctors explanations of their conditions as by elaborate tests.

It would seem extravagant to help extend the use of endoscopy simply by claiming that patients require endoscopy to be reassured. A negative test may also be useful in determining clinical management, although a recent study found that up to one third of all negative endoscopies did not influence patients'

TABLE VII *Reasons for not approving of endoscopy in relation to computer programme (total number of cases analysed 390)*

Reasons for non-approval by computer	Frequency	% of total
Minimal or no treatment tried (regardless of age/severity)	77	19.7
Relief of symptoms before OGD	16	4.1
Investigation of lone anaemia	15	3.8
Recent barium meal/gastroscopy	6	1.5
Anorexia/weight loss in isolation	4	1.0
Inspection of asymptomatic varices	1	0.2
Insufficient information to approve	1	0.2
Total	120	30.8

Positive findings at endoscopy: one gastric cancer; three duodenal ulcers; two gastric ulcers.

treatment, compared with only 9% of those endoscopies which were positive.<sup>17</sup> Overall 16% of endoscopies were found to be unhelpful regardless of the result; despite the different methods used this figure was similar to that arrived at by the authors for an estimate of the proportion of unnecessary gastroscopies performed.

It is concluded that the variance of use of endoscopy between districts and regions cannot be explained by open access policies or interdistrict referrals; it may be partly due to the number and type of consultants operating within each district but also to varying opinions on the correct usage of investigative upper gastrointestinal endoscopy. It is therefore the belief that simple but comprehensive guidelines could help channel resources in effective ways across the country, and this is the final and most important concern of the working party.

**Members of steering group** were: Mr H Brendan Devlin, Chairman (Royal College of Surgeons (RCS)), Dr A T R Axon (British Society of Gastroenterology (BSG)), Dr G D Bell (BSG), D J E Charlton (Royal College of Anaesthetists), Dr P D Fairclough (BSG), Professor J D Hardcastle (RCS), Dr A Hopkins (Royal College of Physicians), Mr R J Leicester (BSG), Mr R F McCloy (BSG), Mr H R Matthews (The Thoracic Society of Great Britain), Mr D Watkin (Association of Surgeons of Great Britain & Ireland), D M A Quine (Research Fellow), Miss C McCourt (Administrative Assistant (BSG)), Miss C Brizzolara (Administrative Assistant (RCS)).

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Express), stating card number, expiry date, and full name. (The price and availability are occasionally subject to revision by the Publishers.)

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## NOTES

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### Colorectal disease

The Cleveland Clinic Foundation is sponsoring a continuing education programme on

Colorectal Disease in 1995: an International Exchange of Medical and Surgical Concepts on 23–25 February 1995 in Fort Lauderdale, Florida, USA. Further information from: The Cleveland Clinic Foundation, Department of Continuing Education, 9500 Euclid Avenue, Room TT-31, Cleveland, Ohio 44195–5241, USA. Tel: 800 762 8173; fax: 216 445 9406.

### Nuclear Oncology

The Johns Hopkins Medical Institutions are holding a course on Nuclear Oncology on 8–10 March 1995 in Baltimore, Maryland, USA. Further information from Jeanne Ryan,

Program Coordinator, Johns Hopkins Medical Institutions, Office of Continuing Education, Turner Building, 720 Rutland Avenue, Baltimore, Maryland 21205, USA. Tel: 410 955 2959.

### Correction

An authors' error occurred in the paper by Dr M A Quine *et al* (*Gut* 1994; 35: 1209–14). The last line of Table I should read:

No of endoscopists/1000 population  $2 \times 10^{-2}$   
 $3 \times 10^{-2}$ .