trial. In this way, as Franks¹¹ cogently observed to the United States Atomic Energy Commission in 1947, we shall not acquire as much knowledge but we shall be a little more certain that the "facts" we "know" might be correct.

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Appendix

There were two major problems inherent in analysing these data statistically.

Firstly, we had to decide whether to view the comparison between observer A (a consultant surgeon) and observer B (a more junior person) as comparisons between observers or as comparisons between one observer (B) and a standard (A). In the former case methods such as those advocated by Kendall and Stuart⁸ would have been applicable; in the latter measures such as those of Yerushalmy.⁹ We adopted the former method. Although the consultant had an advantage in terms of experience, we considered that no one individual is sufficiently authoritative to be regarded as "the standard." When the clinician and his findings are measured against the findings of a pathologist it may be more appropriate to use "standard-setting" methods.

Secondly, as often happens in clinical medicine, some features of breast lesions are judged to be absent much more often than they are present. The customary form of notation for expressing the outcome of dichotomous observations made by two independent individuals is as follows:

	Observer A		
	+	-	Total
Observer B			
+	P ₁₁	P ₁₂	P ₁₊
-	P ₂₁	P ₂₂	P ₂₊
Total	P ₊₁	P ₊₂	1

Here the "usual" means of measuring observer agreement ($po = P_{11} + P_{22}$) is totally inadequate. This has been characterised as the "index of crude agreement" by Rogot and Goldberg.¹⁵ We used in this case a combination of the methods of Dice¹⁶ and Rogot and Goldberg, and attempted to produce an index of agreement which reflects the chance of the "other" observer agreeing with a positive finding by either. We opted to avoid the chance-corrected agreement statistics of Scott¹⁷ and Cohen¹⁸ since the latter assume homogeneity and independence. We also ignored the statistic of Cichetti¹⁹ for assessing disagreement along a continuum—for example, tumour size—since we are by no means sure (on medical grounds) how to allot correct "weighting" to the gravity of the "error."

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Upper gastrointestinal endoscopy—a GP service

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Summary

Since 1974 there has been an open endoscopy service available to general practitioners in the Bournemouth and Christchurch area. Patients are referred directly with a standard form. A retrospective comparison of requests for barium-meal examinations and for endoscopy by general practitioners showed that the reasons

for referral were similar. Forty per cent of patients in each group showed no abnormality. Ulceration was found in 21.1% of patients who underwent endoscopy and 9.7% investigated by barium meal. Duodenitis or gastric erosions were found in a further 16% of endoscopies. More hiatus hernias and deformed duodenal caps were found at barium meal. Despite these differences the results of follow-up were similar.

Introduction

Fibreoptic instruments permitting upper gastrointestinal endoscopy have been available for routine use only in the past decade; their use has been largely confined to patients selected by hospital doctors. Direct referral by general practitioners for barium-meal examination has been widely available for several years, but there has been no report of a direct referral upper gastrointestinal endoscopy general practitioner service.

GPs have been able to request barium-meal examinations at

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TABLE V—Follow-up (five to eight months later) of 191 patients referred by GPs for barium meal

	Total	Symptoms settled	Symptoms continue	Referred for surgery	Lost to follow-up
Normal	80	68 (85)	11 (13.7)		1 (0.12)
Reflux or hiatus hernia or both	57	52 (91.2)	5 (8.8)		
Deformed duodenal cap or pylorospasm or both	24	23 (95.8)			1 (4.2)
Duodenal ulcer	11	10 (91)		1 (9)	
Oesophageal stricture {benign malignant	3 1	3 (100)			1 (Died)
Gastric ulcer {benign malignant	5 3	4 (80) 2 shown to be benign at gastroscopy		1 (20)	1 (Died)
Other	7	Oesophageal foreign body, duodenal diverticulae (3), volvulus of stomach, oesophageal diverticulae (?) and malabsorption			

Morbidity from these examinations was low; superficial thrombophlebitis at the site of diazepam injection being the most frequent complaint. No death could be attributed directly to endoscopy, although one patient died one week later from a myocardial infarct and another from complications of carcinoma of the oesophagus, two weeks after it was discovered at endoscopy.

Arrangements were made for most patients found to have ulcers to have another gastroscopy after about two months. No such arrangement was made after barium-meal examination. The results of follow-up endoscopy of the patients with ulcers is summarised in table IV.

Very few patients had both endoscopy and barium meal for the same symptoms. Of those who had, one patient was found to have a gastric ulcer at endoscopy after a normal barium meal, and another was not found to have a gastric ulcer at endoscopy after a barium meal had been suggestive. This patient subsequently had a haematemesis and was shown to have a gastric ulcer at operation. Two ulcers found at barium-meal examination were thought to be malignant but were biopsied at endoscopy and reported to be benign.

The results of follow-up are summarised in tables III and V. Most patients with ulcers settled with or without treatment. Some still needed treatment, mostly in the form of antacids at the time of follow-up. No patient developed complications from a lesion missed at the initial examination, except the patient discussed above who bled from a gastric ulcer missed at endoscopy after a barium meal. A high proportion of patients with oesophagitis continued to have symptoms. Lastly, both barium meal and endoscopy showed about 40% normal findings.

Discussion

Cotton,¹ using gastroscopy, found lesions of clinical importance in 32% of patients in whom barium-meal examinations within the past month had been reported as normal. We show that gastroscopy found two-and-a-half times as many peptic ulcers as radiology, and if we also include duodenitis and erosions the ratio is increased to over four times. The importance of macroscopically identified duodenitis in causing symptoms and the imperfect correlation with histology combined with the fact that in the survey duodenitis has been used to describe changes ranging from a mildly abnormal vascular pattern to multiple shallow ulcers makes interpretation of this finding difficult. Thomson *et al*² agree that symptoms may be correlated to duodenitis.

Not unnaturally doctors will be concerned about the dangers of gastroscopy when barium-meal examinations have been used with minimal complications for many years. Morbidity and mortality from endoscopy have been reviewed by Schiller and Prout³ and will of course vary with the experience of the endoscopist. We found no deaths directly attributable to endoscopy and GPs reported few troublesome side effects.

We believe that gastroscopy by having less false-negative results should reduce the complications of the patient's primary disease. In this small pilot study, however, most patients in both groups settled with or without specific treatment and only a few persisted in attending their GPs with the same complaint. No patient developed complications from a lesion missed at their investigations, except the one who bled from his gastric ulcer missed at endoscopy. The follow-up period for gastroscopy was longer than for radiology.

Of those patients reported as showing oesophagitis at endoscopy (61%), 33.9% continued to have symptoms at follow-up. Only 8.7% of patients diagnosed by barium meal to have hiatus hernias continued to have symptoms at follow-up. One explanation is that the demonstration of a hiatus hernia by barium meal may be irrelevant to symptoms—for example, duodenitis may be present.

The conclusions to be drawn from a pilot study such as this must be limited. No attempt was made to randomise the patients or match the two groups. Furthermore, the analysis is retrospective and the information available is limited by the brevity of the GPs' notes.

Few doctors would disagree that ideally one should use both radiology and gastroscopy to investigate the upper gastrointestinal tract in all patients with upper gastrointestinal symptoms. In this hospital about 550 GP-requested barium meals are performed a year and at the time of writing 600 GP-requested endoscopies a year. Neither department could take on the work-load of the other without drastically limiting the range of the service. Our practitioners are happy with both services and without them the waiting lists for an already overloaded gastroenterology outpatient clinic would lengthen.

We hope we have shown the feasibility of a direct referral GP gastroscopy service. Although we believe gastroscopy has a lower false-negative rate, we are unable to state whether the advantages to the patient of more accurate diagnosis will reduce the complications of the primary disease more than the increased risk of the diagnostic procedure. A properly controlled prospective trial with randomisation of patients might help to resolve this issue.

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WORDS Drugs, poisons, diseases, and injury that cause death are said to be fatal or lethal. Why fatal? In Greek mythology there were three Fates. These ladies controlled the thread of life. Clotho spun the thread and Lachesis mixed the strands of good and evil fortune. She passed it on to Atropos, who cut the thread of life. *A-tropos*, no turning; she could not be turned aside from her task. Hence, atropine from *atropa belladonna*, the deadly nightshade. The fates were concerned not only with death but with birth and the course of one's life. So perhaps fatal is not a suitable word for something causing death, and lethal (*L. letalis*; *letus*, death) is the better choice. Anything to do with the river Lethe?