the structure of practices. Most comparisons are drawn between a doctor's opinion of good practice and whether he measures up to his own standards. By contrast, Fleming and I looked at practice performance by auditing records and found a correlation between small list size and good performance for each procedure examined other than the recording of smoking behaviour.[2]

As an example, Butler found that 99% of doctors matched up to their standards for cervical cytology —so it is hardly surprising that there was no difference by list size. Fleming and I found an inverse association between list size and recording rate for cervical cytology statistically significant at the 1% level.

Butler did note that "doctors with smaller lists have longer booking intervals and it is easier for their patients to see them quickly," a finding confirmed by Wilkin and Metcalfe.[3] They found that 42% of doctors with lists of under 2000 had a consultation rate of over 3·5 per patient per year, while only 9% of doctors with a list of over 2500 had a rate of over 3·5 and 41% had a rate below 2·5. A third of those with lists below 2000 spent over 30 minutes per patient per year, while only 13% of those with lists of over 2500 did; and only one doctor with a list size of over 2500 spent over 35 minutes per patient per year, a figure attained by almost a quarter of doctors with smaller lists.

There is therefore evidence that doctors with smaller lists spend more time with patients and do a better clinical job. Because reported differences in structure and process cannot be shown to be statistically significant it should not be concluded that differences are not present.

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1 Butler JR, Knight R, Belton J, Wall B. *List size, standards and performance in general practice; a pilot study*. Aberdeen: Health Services Research Unit, 1984. (Report No 55.)
2 Fleming DM, Lawrence MS, Cross KW. List size, screening methods, and other characteristics of practices in relation to preventive care. *Br Med J* 1985;**291**:869-72.
3 Wilkin D, Metcalfe DHH. List size and patient contact in general medical practice. *Br Med J* 1984;**289**:1501-5.

Gastrointestinal investigation of iron deficiency anaemia

SIR,—Fourteen of the patients of Dr Ian J Cook and others (24 May, p 1380) had colonic cancers. Seven colonic cancers were right sided. Eight patients with colorectal cancer had no specific colonic symptoms. Were the proximal colonic cancers those in patients with no colonic symptoms?

In other words, as a radiologist investigating symptomless iron deficiency anaemia, do I have to perform barium enema examinations on all these patients, or will a barium meal and follow through examination identify most of the important lesions?

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SIR,—It is worrying that Dr Ian J Cook and others (24 May, p 1380) can find 15 colorectal cancers in 14 out of 100 elderly patients with iron deficiency anaemia. A study at this hospital found nine colorectal cancers in eight out of 214 patients over 65 years at necropsy.[1] Thus iron deficiency anaemia would appear to confer a threefold increase in the chance of discovering large bowel cancer in elderly folk, largely irrespective of intestinal symptoms.

It would have been helpful if Dr Cook and his colleagues had been able to say that diagnosis of colorectal cancer in his 14 patients led to successful surgical treatment with acceptably low mortality and morbidity. Until we know that the colonic assessment which they advise will divert an appreciable group of patients from what may indeed be a horrible death to health and vigour we should not embark on a zealous programme of colonic assessment in elderly patients with iron deficiency anaemia. The price of such diagnostic zeal is not so much the diversion of medical resources as the submission of large numbers of elderly patients to the indignity and discomfort of barium enema or colonoscopy and the turmoil of attendant purgation.

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1 Williams AR, Balasooriya BAW, Day DW. Polyps and cancer of the large bowel: a necropsy study in Liverpool. *Gut* 1982;**23**: 835-42.

SIR,—I agree with Dr Cook and colleagues that patients with iron deficiency anaemia should be carefully investigated. However, I was disappointed that they omitted urine analysis for blood and a coagulation screen from their list of investigations.

Two of their patients with no gastrointestinal source of bleeding were later diagnosed as having transitional cell carcinoma of the bladder. This might have been the cause of their anaemia and might have been detected by urine analysis, thus avoiding extensive gastrointestinal investigations. Some of their 14 undiagnosed patients might also have had a coagulation disorder. I have previously described an otherwise asymptomatic patient with Crohn's disease who had a gastrointestinal bleed due to vitamin K malabsorption.[1]

Urine analysis and coagulation studies are less invasive and much cheaper than barium or endoscopic studies. They should be performed in all cases of bleeding of obscure origin.

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1 Braddick MR. Bleeding in Crohn's disease through vitamin K malabsorption. *Br Med J* 1984;**288**:1498.

AUTHORS' REPLY,—Dr D F Reynolds asks whether the patients with proximal colonic cancers were those with no colonic symptoms. Five of those seven with right sided colonic cancers had no symptoms. The other two had symptoms, probably related to diverticular disease or irritable bowel syndrome, but these were classified as "colonic symptoms." We do not believe that a barium meal and follow through examination is as good as double contrast barium studies for the colon.

Dr Austin T Carty's comment about a necropsy study at his institution is interesting. Differences may be attributed to the older age of our patients and the male bias. We have not followed up our patients for long enough to be able to provide long term follow up data after colonic resection for cancer. However, most of the tumours were either Dukes's stage A or B, suggesting good overall prognosis.

Mr M R Braddick mentions routine urine analysis as important in detecting renal blood loss in patients with iron deficiency anaemia. Routine urine analysis was performed on all our patients, and the two with transitional cell carcinoma did have haematuria. Coagulation studies were not routinely performed.

We thank Dr S Freestone (28 June, p 1738) for his reported case of double pathology. The previous report of two cases of double pathology in the gastrointestinal tract reported in the *BMJ* in 1981 was written by one of us and was the initial stimulus for this prospective study.

Dr M V Tobin and I T Gilmore (p 1738) report a higher incidence of chronic duodenal ulceration in their patients. We can only repeat that our findings were uncommon and in our practice duodenal ulcers are an uncommon source of chronic iron deficiency anaemia. We agree with them about the importance of duodenal biopsies in young patients with unexplained iron deficiency anaemia.

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Comprehensive bibliography database using a microcomputer

SIR,—I write in support of Mr David Sellu's article commending the use of a database on a microcomputer for storing, cross indexing, and retrieving references (21 June, p 1643). I am using such a system to cope with keeping track of some 300 references for my surgical mastership. I would like to propose a more economic package. A significant disadvantage of dBase II, as mentioned, is its cost of £360.

After looking at dBase II and another database, Cardbox (published by Caxton Software Ltd), I bought the latter for £135. I run this on a Sanyo MBC 550 computer using the MS-DOS operating system. CPM/80 versions are available.

The programs dBase II and III are beloved of computer software salesmen because they are so flexible and can be tailored to so many different applications. This increases the complexity of the instruction manuals, and one pays extra for many of the facilities of this database that would never be used in archiving references. The Cardbox manual is 54 pages long, including examples. One can read the whole thing from end to end and have it working in about three hours.

It can perform all the selections mentioned for dBase II, including searching for any named author within a field, not just the first or all authors. It has a similar capacity for 65 500 records per file. The ability to index individual words within an "entry space," or field, with a single key stroke, is useful, rather than to have to index all words within a key field. This means one can highlight words within the title to search for subsequently without having to index the whole title or type the key words into a separate field.

Cardbox has its limitations. It does not have the ability to sort references into alphabetical order. One record is limited to the amount of information that can be displayed on the screen at one time. This is about the dimensions and has the capacity of a 127 × 203 mm record card, hence the name. This means that the appearance of the screen is just like the traditional reference card, which those not totally at home with computers may find reassuring. Cardbox Plus, a more expensive version, will allow storage of two screenfuls of data per record but it requires an IBM graphics capability and costs almost as much as dBase II.

There are almost certainly other suitable databases on the market. Where financial constraint is a

factor, the cost can be kept down by not buying facilities that will not be used.

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SIR,—I read with interest the report by Mr David P Sellu on computer storage and retrieval of references (21 June, p 1643-5). Although the cost of computer hardware has fallen recently,[1] the system described remains beyond the reach of most individuals. The use of a central departmental computer is inconvenient for those who write at home, and staff on short term contracts have little incentive to contribute to the system.

Over the past year members of the department of pathology at the General Infirmary at Leeds have been using a cheaper system based on the Amstrad CPC6128 microcomputer running the MasterFile database program (Campbell Software Systems). Such a system can be bought for less than £350 (less than the cost of dBase II alone), and even with the addition of a printer the total cost is less than £600. Obviously such a system provides less on line storage than the Winchester drive used by Mr Sellu, but we can store roughly 1000 references, including abstracts, on a single 3 inch disk, and large databases can be split over several disks. The incorporation of a "search by sound" facility is actually quite simple, and needs only a phonetically spelt author box in the database design or the coding of a Roussel Soundex routine; I have no experience of dBase II, but it is simple in MasterFile.

Mr Sellu states that few research workers have access to mainframe computer facilities. All university staff (clinical and non-clinical) have access to the computers on their home campus and, via the JANET system, to other university computers in Britain, Europe, and the USA. Such access may be from a terminal on site, or from home via a modem. I use MasterFile on my home CPC6128, with occasional access to the Leeds University Amdahl computer and the Leicester VAX. The entire set up could be duplicated for under £500.

Any individual wishing to use dBase II would be well advised to consider the Amstrad PCW8256 and PCW8512 computers. A version of dBase II is available for these machines at a total cost (machine, printer, and software) of under £700. As yet no hard disk system is available for these machines, and users who expect to store a large amount of data should consider using dBase III (Ashton Tate, USA), which will run on any IBM PC compatible microcomputer.

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1 Harkin PJR, Dixon MF, Reid WA, Bird CC. Computer assisted learning systems in pathology teaching. *Medical Teacher* 1986;8:27-34.

Serious adverse gastrointestinal reactions to non-steroidal anti-inflammatory drugs

SIR,—As one once closely concerned with monitoring adverse reactions to drugs on behalf of the Committee on Safety of Medicines, I would like to comment on the recent CSM Update (3 May, p 1190).

The writers have been careful to avoid and disclaim comparisons between drugs, yet their table II invites the reader to make them. Cumulation of reports of serious gastrointestinal reactions is not proportional to cumulated prescriptions, and the fraction serious gastrointestinal reactions/prescriptions usually tends to diminish with time, even at a constant rate of reporting because of the rate difference. This means that the expression "so many reports per million prescriptions" also changes and has little meaning unless it is related directly to that number of prescriptions—that is, x reports at (not per) one million prescriptions. Proportionate extrapolation up or down from a lesser or greater number of prescriptions leads to inaccuracy.

Cumulated reports and cumulated prescriptions are linearly related by their natural logarithms,[1] and it is therefore possible to calculate cumulated reports at any specific prescription total from an equation derived from four or five points representing observed corresponding report and prescription totals. Yearly point intervals are most often convenient but shorter ones may sometimes be necessary. The method requires that r^2 be at least 90%, and its accuracy has been confirmed many times by comparing calculated and observed report totals at observed prescription totals.

If we apply it to Osmosin, for instance, at 1 000 000 prescriptions, on an equation based on six monthly intervals between February and July 1983 we obtain a point estimate total of 268 serious gastrointestinal reactions, with $r^2=99{\cdot}6\%$ and a 90% confidence interval of 226-318. Proportionate extrapolation, as given in table II of the Update, gives 386. On the other hand, for piroxicam, on four yearly totals from 1980 to 1983, the total of serious gastrointestinal reactions at one million prescriptions is 102 ($r^2=99{\cdot}9\%$ and 90% confidence interval 96-108). Proportionate reduction gives only 59 reports.

If mathematics is to be used to calculate report totals at one million, or any other number of prescriptions, for comparative purposes (and it is difficult to see any other reason for doing so) it seems desirable to get the point estimates as accurate as possible.

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1 Weber JCP. Mathematical models in adverse drug reaction assessment. In: D'Arcy PF, Griffin JP. *Iatrogenic diseases*. 3rd ed. Oxford: Oxford University Press, 1986:102-7.

CSM'S REPLY—Dr Weber's approach will be unfamiliar to many readers, and the interpretation of the measure which emerges as a result of his calculations may therefore not be immediately clear. He obtains what he describes as a "point estimate" of the number of adverse reactions reported "at one million prescriptions." That is, he has estimated the ratio of the number of adverse reactions to the number of prescriptions for the first million prescriptions of the drug. The figures which were presented in table II of the CSM Update are also ratios of the number of adverse reactions to the number of prescriptions but for the first five years of marketing of the drug. The two measures are thus alternative and equally valid expressions of the same ratio for a particular drug, but averaged over what will usually be different periods.

As stated in the Update, adverse reaction reporting rates for a drug tend to be high during the first year or two of marketing and then decline. Thus if a drug attains a million prescriptions within five years of marketing Dr Weber's measure is likely to exceed ours (as in his example with piroxicam). If a drug does not reach as many as a million prescriptions after five years our measure would be likely to exceed his. Thus neither measure can be regarded as inherently more "accurate" than the other, although Dr Weber makes this claim for the measure based on the first million prescriptions.

The reason for limiting the measure of the ratio of adverse reactions to prescriptions to an initial period (whether this is defined in terms of a specified initial total of prescriptions or a specified duration of marketing) is to assess the ratio for each drug over a standard initial period during which the reporting rate for that drug is high. The declines in the reporting rates for different drugs appear to be more closely related to the duration of marketing than to the total number of prescriptions issued, and this is a reason to prefer a measure based on duration to one based on total prescriptions.

An additional difficulty arises with Dr Weber's measure for a drug with fewer than a million prescriptions. His method estimates the number of adverse reactions which will have been reported by the time a million prescriptions have been issued. This will always be a hypothetical figure and, for a discontinued drug formulation like Osmosin, is so unrealistic as to be meaningless. In contrast, we consider it better to report only what has actually been observed for each drug. Drugs marketed for less than five years are identified in table II of the Update by an asterisk, as an indication that their ratios of reactions to prescriptions are likely to be enhanced in comparison with those of drugs marketed for five years or more. We consider that table II provides the best available basis for comparing adverse reactions to different non-steroidal anti-inflammatory drugs, and the Update clearly indicates the three necessarily broad conclusions that can legitimately be drawn from these data.

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Resuscitation in the accident and emergency department

SIR,—We have followed with interest the articles in the ABC of Resuscitation, and we must congratulate Mr Andrew Marsden and Dr Alastair McGowan for presenting the wide ranging topic of resuscitation in the accident and emergency department in such a concise and readable manner (17 May, p 1316). In attempting to cover all aspects of this diverse subject their approach was by necessity pragmatic. We were therefore surprised to read their dogmatic claim that "in cardiac arrest due to hypotension the treatment is immediate thoracotomy (to allow internal cardiac massage and cross clamping of the aorta)." In expert hands such a manoeuvre may undoubtedly be life saving. We would, however, doubt the wisdom of advocating this as a routine procedure in every accident and emergency department.

Firstly, the fundamental principle of resuscitation in the hypovolaemic patient who has arrested is the rapid transfusion of volume replacement through large bore cannulas, in combination with effective cardiac massage. Thoracotomy by inexperienced operators can waste precious time and may lead to delay in achieving these aims.

Secondly, "blind" cross clamping of the aorta can cause catastrophic haemorrhage, either from clamp damage to the aorta itself or from tearing of intercostal vessels. Dissection of the aorta to ensure safe clamping again may waste valuable minutes.

Thirdly, in our experience, casualty officers and other junior staff seem reluctant to perform thoracotomy for penetrating thoracic trauma even in conditions when this is of proved benefit. We find it hard to believe they would be any more enthusiastic in a situation where the results are of dubious value.

We would be interested to know if the authors' claim is merely a counsel of perfection or if it is based on their own practice and experience. If the