

preferences with regard to treatment. There is a shortage of studies of clinical effectiveness. Little attention has been given to patients' desires or perceptions of the effects of treatments. Limited importance has been placed on evaluating routine clinical practice.

Medical audit is about continuous improvement. To achieve its stated objectives audit must, of course, give valid, meaningful results, which must be powerful enough to prompt changes in practice, where necessary. Bogus results, based on ill thought out questions or derived from haphazardly collected information or inappropriately analysed data, should convince no one, whether obtained through audit or research.

Medical audit is fostering a climate of review and evaluation: to measure quality of practice it is necessary to know the evidence on which clinical interventions are based. One of the objectives of audit is to get clinical staff to consider the justification for the interventions that make up their clinical practice. The link between medical audit and medical education and training is crucial for this and for the development of approaches to audit.

Considerable improvements have been achieved through national audits such as the confidential inquiry into perioperative deaths. But so much more can be achieved by applying these ideas locally through the development of local clinical audit, whether within departments in hospitals or in general practices or between specialists from different hospitals.

Locally organised audit projects concerned with specific issues, using small datasets, over limited periods of time have the potential radically to influence approaches to practice. Where standards have been set audit can rely on quite small samples, particularly where improvement is needed. The finding that a single patient with acute severe asthma has not received oral or parenteral corticosteroids should prompt action.

Clinicians owe it first and foremost to patients to measure and reflect systematically and critically on the quality of clinical care that is given and also received. The paucity of outcome measures, the difficulties of relating process to outcome and of identifying intermediate outcomes, and the complexity of clinical decision making all contribute to the enormity of this task. Nevertheless, it is a challenge that can no longer be avoided.

Research workers do not hold a monopoly on objective ratings, unbiased measures, and prospective design. Medical audit demands that the lip service paid to the scientific roots of medical practice and to quality assurance should now be converted into action.

FIONA MOSS

Editor, *Quality in Health Care*,
Central Middlesex Hospital,
London NW10 7NS

Physiotherapy exercises and back pain

SIR,—We would like to reply to Mr Dave Roberts's comment¹ on our review of 16 published reports of exercise therapy for back pain.² He suggests that our search of the literature (Medline and screening of additional journals) had missed a number of eligible randomised controlled trials. We asked Mr Roberts to send us his list of 46 references from his CATS/AMED search, which he kindly did.

Of the 46 publications, six were included in our review, which leaves 40 new citations to which we applied our inclusion and exclusion criteria. Of these, four were published in 1991 and thus could not have been included in our review. In addition, 28 were not randomised trials. The others concerned the efficacy of back schools (four trials), laser therapy (one trial), and magnetic energy and shortwave diathermy (one trial); one trial included

healthy subjects only. There was one trial on exercise therapy, but both groups included received the same exercises and the only contrast seemed to be whether the exercise programme was supervised or not.

Dr Roberts's search missed 10 of the 16 eligible randomised controlled trials, and it did not add new randomised trials to our list. Computerised bibliographic databases (no matter which one is used) cannot be expected to provide a complete list of eligible randomised controlled trials.

BART KOES HELEEN BECKERMAN
LEX BOUTER GEERT VAN DER HEIJDEN
PAUL KNIPSCHILD

Department of Epidemiology and Biostatistics,
University of Limburg,
PO Box 616,
6200 MD Maastricht,
Netherlands

- 1 Roberts D. Physiotherapy exercises and back pain. *BMJ* 1991; 303:314. (3 August.)
- 2 Koes BW, Bouter LM, Beckerman H, Heijden van der GJMG, Knipschild PG. Physiotherapy exercises and back pain: a blinded review. *BMJ* 1991;302:1572-6. (29 June.)

Computers in audit: servants or sirens?

SIR,—Dr A N Hamlyn¹ suggests that in our article we denigrated the role of information technology in audit.² In fact, we agree that computers are indispensable for processing and analysing large data sets. We also agree that sample size calculations should always be taken into account in audit studies.

We argued that routine data collection systems should not be established to carry out audit, not least because they take no account of sample size but continue to collect data indefinitely. The real dangers of information technology, however, are the temptations to collect too many data on each patient and to combine too many other activities with audit. Dr Hamlyn recognised this with his comment that audit "must be divorced from the need to produce discharge letters, theatre lists, or other housekeeping routines."³ What we pointed out is that computer systems for audit are marketed with these features as a major selling point³ and official advice is that such integrated clinical systems should be established.⁴ The problem is that setting up computer systems for these varied activities will detract from the conduct of audit.

Dr Hamlyn concludes by pointing out that Ulysses resisted the seduction of the Sirens. He should have added that Ulysses achieved this by having himself lashed to the mast so that he could not act and by filling the ears of his crew with wax so that they would be immune to the lure of the song. Is he suggesting that we should adopt this approach to the blandishments of information technology?

I K CROMBIE
H T O DAVIES

Department of Epidemiology and Public Health,
Dundee University,
Ninewells Hospital and Medical School,
Dundee DD1 9SY

- 1 Hamlyn AN. Computers in audit: servants or sirens. *BMJ* 1991;303:649. (14 September.)
- 2 Crombie IK, Davies HTO. Computers in audit: servants or sirens? *BMJ* 1991;303:403-4. (17 August.)
- 3 West Midlands Regional Health Authority. *Computers in medical audit: a guide for hospital consultants to personal computer (PC) based medical audit systems*. London: Royal Society of Medicine Services, 1990.
- 4 Department of Health. *Medical audit: guidance for hospital clinicians on the use of computers*. London: HMSO, 1990.

SIR,—In their attempt to separate the processes of audit and clinical research Drs Iain Crombie and Huw Davies ignore a growing body of opinion on both sides of the Atlantic that draws attention to the value of computerised clinical databases.¹

Before dismissing such sources of information it would seem prudent to fully evaluate its usefulness. The clinical trial scenario has been subjected to much criticism in recent years because of the atypical way in which populations are recruited, handled, and analysed.² One of the important characteristics of clinical databases is that the patient events recorded are a reflection of actual clinical practice—there has been no treatment effect or selection bias. Observations made on such a population may prove more relevant to clinicians and patients than conclusions based on a selected group of patients from a formal clinical trial.

Our American colleagues have already shown the value of using computerised data to answer specific clinical questions.^{3,4} This is a cheaper, more effective, and almost instantaneous way of addressing the clinical dilemmas that we encounter in everyday clinical practice. The clinical trial, they argue, should be reserved for those questions that cannot be answered by a database analysis.

Possession of such a database allows clinicians to ask questions that otherwise would not be possible. An established computerised database will permit clinicians to take part in the process of comparative audit.⁵ This method of audit is in its infancy at present but meaningful participation almost certainly requires a computerised format for the data.

Rather than express worries about "orphan" data we should make sure that we do not find ourselves in the less favourable position of having no data at all.

MARK EMBERTON

Department of Surgery,
Hammersmith Hospital,
London W12 0HS

- 1 Crombie IK, Davies HTO. Computers in audit: servants or sirens? *BMJ* 1991;303:403-4. (17 August.)
- 2 Pollock AV. The rise and fall of the random controlled trial in surgery. *Theoretical Surgery* 1989;4:163-70.
- 3 Wennberg JE, Mulley AG Jr, Hanley D, Timothy RP, Fowler FJ Jr, Roos NP, et al. Assessment of prostatectomy for benign urinary tract obstruction: geographic variations and evaluation of medical care outcome. *JAMA* 1988;259:3027-30.
- 4 Wennberg JE, Roos N, Sola L, Schorri A, Jaffe R. Use of claims data to evaluate health care outcomes. *JAMA* 1987;257:933-6.
- 5 Emberton M, Ellis BW. Comparative audit—a new method of audit delivery. *Annals of the Royal College of Surgeons* (in press).

SIR,—We read with interest both the article by Dr Iain K Crombie and Mr Huw T O Davies, in which they argued that the role of computer systems in audit has been overplayed,¹ and the letter by Dr A N Hamlyn, who counters their arguments and states that a basis for successful audit is the personal computer and database package.²

Though we agree with elements of both arguments, we believe that the problems extend beyond the computer system to the attitudes of doctors and their ability to use such systems. Currently many units are developing computer based audit, with medical staff, often house officers, having to enter data. It has been our experience in attempting to set up such a system that such junior staff rarely feel happy about having to use a microcomputer. It is tempting to believe that modern youth is highly computer literate compared with older generations, but we do not believe this is necessarily the case for medical students and junior doctors.

We recently carried out a survey of final year medical students and house officers who trained at our institution to assess their training and attitudes to audit and computer skills. Only 11% of the house officers owned a computer and only 28% considered themselves to be able to use one. When asked about audit, however, 96% of those who replied considered clinical audit to be either important or very important but only 20% had had any formal training or teaching in audit methods.

These findings suggest that results from computer based audit, when used by untrained juniors away from centres with a special interest in audit, will be poor. The results of computer based