injury the neck must be immobilised and an x ray film obtained.

Several guidelines are now available for use in accident and emergency departments—for example, on advanced cardiac life support, paracetamol poisoning, and asthma. Unfortunately, the more posters that adorn the walls of the department the less will be their individual impact. Great care needs to be exercised in drawing them up, especially as there is an increasing fear that they will also end up adorning the walls of lawyers' offices.

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Authors' reply

EDITOR,—The aim of our study was to propose a method of reinforcing clinical guidelines. The outcome that was measured showed a significant change in referral patterns and supports the conclusion that carefully designed posters are effective in reinforcing guidelines. Reductions of 75% for abdominal radiographs and 50% for skull radiographs were achieved. Data on the overall change in referral patterns (that is, for all four areas combined) were not presented as we regarded this statistic as meaningless.

Several other possible reasons for the reduction in referral for radiography were considered, including the experience of the doctors and changes in staff. No other guidelines, including the Royal College of Radiologists' booklet, were used during the period studied. No request was refused because it fell outside the guidelines. Editorial limitations on the length of our paper precluded a full discussion of these issues.

We agree with R D Hardern and D W Hamer that this should not necessarily be regarded as a study of outcome. Clearly, if guidelines are poor and based on dubious evidence then the outcome in patients may well be adversely affected, particularly if the method of reinforcing the guidelines is as successful as in this study. Our guidelines were devised, after an extensive analysis of the literature, in conjunction with local clinicians.

We agree with Mr Dudley that the presence of a vault fracture is associated with an increased risk of intracranial injury. What Dudley does not make clear is that the figure of 1 in 4 refers to adults with both a skull fracture and an altered level of consciousness. In patients with skull fracture who are oriented the incidence of intracranial abnormality is eight times less.¹ Furthermore, as many as 60% of patients with intracranial abnormality after head injury will not have a fracture.² The important finding, the intracranial lesion, may be overlooked if focus is put on skull radiographs. For these reasons, there is now an extensive literature arguing against routine skull radiography after admission in favour of a more open policy of using computed tomography.^{3,4} The advanced trauma life support guidelines, mentioned by Dudley, also support this view. Used correctly, this policy can be cost effective,⁵ but, clearly, local modifications will be necessary where computed tomography and neurosurgical advice are not available.

Patients who cannot be adequately assessed, whether because of unconsciousness or diminished

consciousness or after severe head injury, should be assumed to have a cervical spine injury until proved otherwise. This point is adequately covered in our guidelines.

Devising guidelines alone is insufficient; the real challenge is making them work. Dudley expresses concern regarding the increasing trend towards use of clinical guidelines. We trust that Dudley does not regard the challenge of devising and testing methods for ensuring that policies for good practice are implemented as one to be resisted and use this as an excuse for doing nothing.

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Genetic testing in the classroom

EDITOR,—Recent advances in molecular genetics permit simple genetic testing; this has raised the possibility that such testing may be used to show genetic techniques as part of medical education. Indeed, in a biochemistry class in one medical school first year medical students have undergone collective testing for the most common genetic defect causing cystic fibrosis ($\Delta F-508$). The results were presented collectively, not individually, so the anonymity of carriers of the mutation will probably have been preserved. However, little genetic counselling was offered about the implications of testing. No student objected to the testing, but the students were not told that they had a choice.

Given that anonymity must be difficult to ensure in a classroom and that the stringent quality controls practised in service laboratories would not apply, serious problems could arise. What if no one in a class was found to have the mutation? Should the students rely on this finding if they (or a partner) had a family history of cystic fibrosis? This procedure comes close to breaching the guidelines laid down by the Nuffield Council on Bioethics, which recommend that "adequately informed consent should be a requirement for all genetic screening programmes."¹

A similar situation might easily have arisen in another postgraduate course with which one of us has been involved. In this course a class carried out tests for apolipoprotein E, which could produce results with serious implications for susceptibility to ischaemic heart disease or Alzheimer's disease. During discussions some members of the class expressed a strong desire to know their individual results of the test, though this option was not offered.

We wonder whether other medical schools or teaching institutions carry out classroom testing on their students that could elicit medically important information for which the students have not been prepared. We are disturbed by both the lack of pretest counselling and the potential lack of confidentiality in this context. It would be unfortunate

if testing of students for genetic disorders becomes widespread in the classroom because a potentially powerful opportunity to promote careful thought about the ethical issues will have been lost. Furthermore, students may be encouraged by such experiences to trivialise these issues, and they may then fail to recognise their importance in clinical practice.

Perhaps this example has wide implications for the organisation of teaching about laboratory studies of inherited disease. In such classes should not anonymous DNA samples be used rather than samples from members of the class? Are guidelines required?

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Medical audiovisual organisation continues

EDITOR,—Minerva's comment on the future of Graves Medical Audiovisual Library is ill informed.¹ In 1993 Graves Educational Resources transferred its audiovisual distribution services to Concord Video and Film Council, based in Ipswich, from where the Graves medical audiovisual programmes are still available. The national medical slide bank, which was established by Graves in 1988, is now housed at the Wellcome Trust and is being further developed to meet wider needs for high quality pictures in all branches of medicine. The curator of the bank can be contacted at the Wellcome Centre Medical Photographic Library, 210 Euston Road, London NW1 2BE (telephone 0171 611 8746).

The savings from winding up the base in Chelmsford have been placed by the University of Wales College of Medicine in a special fund known as the Graves Educational Resources Development Fund, which will be used to support pioneering work in computer based learning in medicine. The important contribution that John and Valerie Graves made to medical education will be perpetuated.

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Haemophilus influenzae vaccines for infants in Spain

EDITOR,—*Neisseria meningitidis* is the commonest cause of bacterial meningitis in Spain. The overall ratio of meningococcal meningitis due to *Haemophilus influenzae* type b in children aged 0-15 in the past 15 years was 10:1. Many doctors in Spain believe that *H influenzae* type b is a rare or minor pathogen because of the high incidence of invasive disease due to *N meningitidis*. They also believe that invasive disease due to *H influenzae* type b is less prevalent in Spain than in other European countries that have licensed a vaccine against the organism. Until now, *H influenzae* type b vaccine has not been included in any immunisation programme in Spain.

The Basque region in northern Spain has a

population of 2 101 252 (1991 census data, Basque Institute of Statistics) with about 80 000 children aged less than 5 in 1993-4. During 1993-4 *H influenzae* type b was isolated from cerebrospinal fluid and blood from 42 children aged less than 5 with invasive disease, 29 of whom had meningitis. The annual incidence of bacteriologically confirmed invasive type b infections was 53, 59, and 26 per 100 000 children aged <1, <3, and <5 years respectively. If there is any bias in our figures it is likely to be due to underdetection, as several small hospital centres do not have appropriate facilities for culturing bacteria.

Of the 42 cases, 29 were recorded by the two main paediatric hospitals in the area. These hospitals saw 88 other cases of invasive disease in children aged less than 5 from 1986 to 1992; 49 of the children had meningitis. The proportion of the strains of *H influenzae* type b isolated from these children in Gipuzkoa and Bizkaia that produced β -lactamase was 59% and 53% respectively. More than a third of these strains, which are resistant to ampicillin, were also resistant to chloramphenicol.

The incidence in the Basque region is similar to the incidences estimated for most western European countries before the introduction of conjugate vaccines.^{1,5} The high proportion of strains of *H influenzae* type b that are resistant to antibiotics emphasises the need for the *H influenzae* type b conjugate vaccine to be given to Spanish infants, even when a regional variation in incidence within Spain is allowed for.

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Orthopaedic and trauma surgery

Best method of anterior cruciate ligament reconstruction is debated

EDITOR,—Christopher J K Bulstrode's article on recent advances in orthopaedic and trauma surgery suggests that long term research into the treatment of injuries to the anterior cruciate is not being undertaken.¹ Many of these injuries improve with conservative treatment, with only 21-43% of patients (18-36 out of 84) in one study ultimately requiring reconstruction.² Reconstruction is now widely accepted to be the best treatment in patients in whom conservative treatment has failed. There is much debate, however, about the best method of reconstruction. Synthetic materials have fallen out of favour with some surgeons following the failure of carbon fibre and Dacron grafts. Polyester now seems to be the preferred material for synthetic grafts, good results having been reported in 80%

(20/25) of patients at five years of follow up.³ Autografts of patella tendon are becoming increasingly popular, with good results having been reported in 92% (68/74) of patients at six years, although loss of extension was present in 23% (17/74) of patients.⁴ One prospective randomised trial comparing polyester and patella tendon grafts in 60 patients has reported results at two years.⁵ No difference in symptom scores or functional scores was found. The group given polyester grafts, however, showed greater laxity on Lachman's test, and a greater proportion of this group had a positive result of a pivot shift test; the group given patella tendon grafts had an increased incidence of extension lag. A similar long term randomised controlled trial is being undertaken at Royal Preston Hospital.

The debate over the best method of reconstruction in patients in whom conservative treatment has failed is likely to continue. It has not been helped by the plethora of procedures available and the wide variety of methods used to evaluate patients. These problems are being addressed and trials are under way, but the long term results of these will not be available for many years.

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Review by Thromboembolic Risk Factors Consensus Group was misquoted

EDITOR,—Christopher J K Bulstrode suggests that "the risk of death from pulmonary embolus after total hip replacement has been overestimated and anticoagulants should not be used routinely."¹ He misquotes the review by the Thromboembolic Risk Factors Consensus Group, which did not "try to persuade surgeons that all patients undergoing major surgery should receive prophylactic anticoagulation"; it recommended that patients at moderate or high risk of venous thromboembolism should receive specific antithrombotic prophylaxis of proved efficacy (either antithrombotic drugs or mechanical prophylaxis).² Neither did the review argue that "the complications of anticoagulation are both rare and of no significance"; it specifically noted the increased risk of bleeding with prophylactic anticoagulants as well as the concern of some orthopaedic surgeons that bleeding due to prophylaxis with anticoagulants may occasionally result in deep joint infection and failure of the implant.²

Bulstrode quotes Collins *et al*'s meta-analysis of randomised trials of prophylactic heparin as support for the notion that death rates are low in unprotected patients undergoing total hip replacement operations.³ In fact, in the trials in elective orthopaedic surgery, prophylaxis with heparin not only reduced the frequency of deep vein thrombosis by about 50% (17.2% v 36.2% in patients not receiving heparin) but also effectively prevented fatal pulmonary embolism (0% v 1.6%), in keeping with the results in all types of surgery.³ Heparin increased the risk of bleeding in elective orthopaedic surgery (3.0% v 1.8%).

The two other studies of mortality after total hip replacement that Bulstrode quotes merit addition to the literature but do not replace it. The overall literature suggests that, in the absence of specific antithrombotic prophylaxis, the risk of fatal pulmonary embolism after elective hip replacement is about 1% and that this risk is substantially reduced by prophylactic heparin. In crude terms, prophylactic heparin will prevent one fatal pulmonary embolism per 100 patients as well as preventing deep vein thrombosis in another 20 patients. These preventive effects should be compared with the risk of one extra episode of wound bleeding per 100 patients. Orthopaedic surgeons who wish to avoid the risk of wound bleeding can achieve similar efficacy in preventing deep vein thrombosis by giving mechanical prophylaxis, but the efficacy of this in preventing fatal pulmonary embolism has yet to be shown in randomised trials.

The continuing importance of preventing venous thromboembolism in hip surgery is emphasised by the audit report by Todd *et al* of the management of hip fracture in East Anglian hospitals.⁴ They observe that use of prophylactic antithrombotic drugs reduced the risk of fatal pulmonary embolism from 4% to zero. The efficacy of anticoagulant prophylaxis in virtually abolishing pulmonary embolism in this group of patients was shown 36 years ago in a randomised trial by Seviitt and Gallagher⁵ but has had to be "rediscovered" in an audit study. Todd *et al* reinforce the recommendations of the Thromboembolic Risk Factors Consensus Group that prophylaxis against thromboembolism is indicated in patients having hip surgery, as in other high risk groups in hospital, and that it should be ensured by the development and implementation of written policies.

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Anaesthetists in training do not want new deal

EDITOR,—In December 1993 all 25 anaesthetic registrars and senior house officers at Glasgow Royal Infirmary answered a questionnaire after working shifts compatible with the new deal for three months. The trainee department was fully staffed. Only two respondents wished to continue working such shifts, which were consequently rejected.

In November 1994 a similar questionnaire was sent to the 1725 members of the group of anaesthetists in training of the Association of Anaesthetists of Great Britain and Ireland. Altogether 758 (44%) responded. Only 73 were working partial or full shifts alone or in combination with an on call rota; 305 were working a rota that exceeded the limits on the length of shifts or on average hours; 346 routinely exceeded their contracted hours; and 339 had slept 0-4 hours, while only 40 had slept over eight hours, during their last night on call. Of 191 trainees whose