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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1 Reinert P, Liwartowski A, Dabernat H, Guyot C, Boucher J, Carrere C. Epidemiology of Haemophilus influenza type b disease in France. *Vaccine* 1993;11:S38-42.
2 Brewster D. The epidemiology of Haemophilus influenzae invasive disease in Scotland prior to immunisation. *Health Bull* 1993;51:385-93.
3 Desgrandchamps D, Schmid R, Zimmermann HP, Imahorn P, Kabus K, Schubiger G. Auswirkung der konjugierten PRP-Impfstoffe auf die Inzidenz invasiver Erkrankungen durch Haemophilus influenzae Typ b im Kindesalter. *Schweiz Med Wochenschr* 1994;124:575-82.
4 Howard AJ, Dunkin KT, Musser JM, Palmer SR. Epidemiology of Haemophilus influenzae type b invasive disease in Wales. *BMJ* 1991;303:441-5.
5 Severien C, Lehners TH. Epidemiology of invasive Haemophilus influenzae disease in a German city. *Klin Padiatr* 1994;206: 108-11.

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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1 Bulstrode CJK. Recent advances: orthopaedic and trauma surgery. *BMJ* 1995;310:917-9. (8 April.)
2 Noyes FR, Matthews DS, Mooar PA, Grood ES. The symptomatic anterior cruciate deficient knee. *J Bone Joint Surg [Am]* 1983;65:163-74.
3 McLoughlin SJ, Smith RB. The Leeds-Keio prosthesis in chronic anterior cruciate deficiency. *Clin Orthop* 1992;283: 215-22.
4 Rackemann S, Robinson A, Dandy DJ. Reconstruction of the anterior cruciate ligament with an intra-articular patellar tendon graft and an extra-articular tenodesis. *J Bone Joint Surg [Br]* 1991;73:368-73.
5 Engström B, Wredmark T, Westblad P. Patellar tendon or Leeds-Keio graft in the surgical treatment of anterior cruciate ligament ruptures. *Clin Orthop* 1993;295:190-7.

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 Sevitt and Gallagher[5] 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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1 Bulstrode CJK. Recent advances: orthopaedic and trauma surgery. *BMJ* 1995;310:917-9. (8 April.)
2 Thromboembolic Risk Factors (THRIFT) Consensus Group. Risk of and prophylaxis for venous thromboembolism in hospital patients. *BMJ* 1992;305:567-73.
3 Collins R, Scrimgeour A, Yusuf S, Peto R. Reduction in fatal pulmonary embolism and venous thrombosis by perioperative administration of subcutaneous heparin. *N Engl J Med* 1988;318:1162-73.
4 Todd CJ, Freeman CJ, Camilleri-Ferrante C, Palmer CR, Hyder A, Laxton CE, *et al*. Differences in mortality after fracture of hip: the East Anglian audit. *BMJ* 1995;310:904-8.
5 Sevitt S, Gallagher NG. Prevention of venous thrombosis and pulmonary embolism in injured patients. A trial of anticoagulant prophylaxis with phenindione in middle-aged and elderly patients with fractured necks of femur. *Lancet* 1959;ii:981-9.

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