chair is deficient; it may have 11 inch pneumatic tired rear wheels but if the front wheels are not swivel castors propulsion by the attendant is very difficult. Also model 9L chairs do not have detachable sides, making sideways transfer difficult. Fourthly, the use of polyurethane foam and its hazards have been highlighted recently in the national press. Dr Malcolm Ellis in his article on easy chairs (5 March, p 701) considered the use of fire resistant materials desirable. Fifthly, mention is made of the use of a plywood base board to improve the cushioning effect; plywood is too hard a substance; chip foam is far more suitable. Finally, Dr Young says that electric wheelchairs are heavy, do not fold, and require space. But both models 109 and 103 will fold easily once the batteries have been removed. The same applies to the powered carter's chair, but removing the batteries is more difficult.

It was disappointing to find in the references no mention of the booklet on wheelchairs produced by Mary Marlborough Lodge, which covers both DHSS chairs and those which may be bought privately.¹ Rookwood Hospital and the Royal Hospital and Home, Putney, have both produced excellent booklets aimed at the professionals and disabled people.

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1 Cochrane GM, Wilshire ER, eds. *Equipment for the disabled. Wheelchairs*. 5th ed. Oxford: Oxfordshire Health Authority, 1982.

AUTHOR'S REPLY,—Dr Tudor is misinformed about who can authorise a DHSS wheelchair prescription. Inquiries to staff within the artificial limb and appliance centres confirm that form AOF5G can be signed only by a medical practitioner.

Since I wrote my article the appliance services have started reorganising in preparation for their integration into regional and district health authorities on 1 April 1991. The proposed restructured wheelchair service will place greater emphasis on joint assessments of individual patients by doctors and therapists in district based wheelchair clinics. A new wheelchair prescription form is being produced designed to encourage combined doctor-therapist assessments. There are no plans, however, to change the current practice for the instigating signature being that of a medical practitioner.

Describing wheelchairs is difficult because extensive modifications are available to the basic DHSS wheelchair carcasses. The written descriptions of the general purpose wheelchairs highlighted in the article were necessarily brief and confined to essential information about standard wheelchairs. They were amplified by illustrations, one of which clearly shows the swivel front wheel castors and the small thick 12½ inch diameter rear tyres of the 9L wheelchair commented on by Dr Tudor. The fixed front wheels about which Dr Tudor is so concerned are non-standard and available only on request. Detachable sidearms to facilitate sideways transfers are standard on the 8L models (as stated in the article) and are also readily available if required for the 9L series.

Fire risk for wheelchair users is an important aspect but should be placed in context. An inquiry sent to chief fire officers in England and Wales indicated that there were only 30 deaths among seated disabled people (chairs and wheelchairs) over five years (EW, personal communication). Most of these fires had been caused by lighted materials from tobacco smoking falling on clothes or blankets. Thus a fire resistant wheelchair cushion

would provide only minimal additional protection. Of greater value would be a fire proof apron or, especially for disabled people with weak or ataxic arms, a variation of the hookah, both items being commercially available.

It is correct that the electric wheelchairs 109 and 103 can be folded; it would perhaps be more accurate to say that they seldom would be folded as to do so requires removal of the heavy batteries mounted under the chair.

There are several wheelchair booklets available and I selected one, *People in Wheelchairs*, as being the most useful for the generalist.

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Psychiatric illness among British Afro-Caribbeans

SIR,—In their leading article Dr Roland Littlewood and Dr Maurice Lipsedge (2 April, p 950) misquoted the findings of our study on self poisoning among people of West Indian origin. We found that from 1979 to 1982 for those aged under 25 the incidence of self poisoning was similar among whites and West Indians, whereas for those aged over 25 West Indians were significantly under-represented.¹

The West Midlands poisons unit has been monitoring trends in self poisoning since 1976.¹⁻⁴ Compared with English born people, Irish and Scottish people of all ages have consistently been overrepresented whereas among those aged over 35 West Indians and Asians (Indian, Pakistani, Bangladeshi) have always been underrepresented. Of current concern is the incidence of self poisoning among young Asian women (aged under 35), which is now over double that among young white women and continues to increase annually by 30%.

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- 1 Merrill J, Owens J. Ethnic differences in self-poisoning: a comparison of West Indian and white groups. *Br J Psychiatry* 1987;150:765-8.
- 2 Wright N, Trethowan WN, Owens J. Ethnic differences in self-poisoning. *Postgrad Med J* 1981;57:792-3.
- 3 Merrill J, Owens J. Ethnic differences in self-poisoning: a comparison of Asian and White groups. *Br J Psychiatry* 1986;148:708-12.
- 4 Merrill J, Owens J. Self-poisoning among four immigrant groups. *Acta Psychiatr Scand* 1988;77:77-80.

The need to make rugby safer

SIR,—Mr N W Valentine and Dr M A De Lary (2 April, p 1005) state that in their spinal injuries unit there have been only two admissions in the past 10 years because of injuries from rugby. There are no records here of a major cervical injury before 1977, but since then we have had one each season and in 1983-4 we had six schoolboys with radiological evidence of cervical damage.¹

Since reports from rugby playing communities throughout the world have drawn attention to the increased incidence of cervical injury with paralysis, changes have been made in the laws related to forward play. A surprisingly fatalistic attitude has, however, been adopted to injuries among backs. The problem is usually shrugged away with the remark, "This is a bodily contact game and it isn't possible to remove tackling from it." No explanation is given why the game has changed character.

The Maori side step, known hereabouts as "bursting the tackle," is a highly dangerous manoeuvre where the runner aims himself directly at his tackler. Schoolboy three quarters of my generation were taught to elude the tackle by swerve, side step, dummy, or hand off. All these are safe procedures and involve a move away from the tackler. Nowadays the ball carrier is coached to run deliberately at the tackler, who is coming in with his neck flexed. If the impact of thigh or pelvis is on the flexed neck the result will be catastrophic. The Maori side step is more dangerous than the high tackle and should be banned from schoolboy rugby immediately. Adult rugger could also do without it.

To make matters worse, the changes in the rules in the early 1970s ordained that the backs should stand further apart at scrum and line out. As a result the momentum at impact is greater. This change places greater emphasis on the size and weight of the centres and there has been a gradual disappearance of the lightly built centre who was quick off the mark. Initial acceleration is less important now than size and weight.

An important difference between sustaining a major spinal injury when "diving into shallow water on holiday while inebriated" and becoming paralysed in a school game is the responsibility of the school for the accident. Even in New Zealand some schools have given up rugby. The aim of education is meant to be "Mens sana in corpore sano" not tetraplegia.

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1 McCoy GF, Piggot J, Macafee AL, Adair IV. Injuries of the cervical spine in schoolboy rugby football. *J Bone Joint Surg [Br]* 1984;66:500-3.

Hypoglycaemia in patients with insulin dependent diabetes

SIR,—The article by Dr Stig Pramming and colleagues (5 March, p 665) on the effects on the electroencephalogram of hypoglycaemia confirms previous results, but the finding of a blood glucose threshold at 2.0 mmol/l for electroencephalographic changes cannot be taken as it stands from this study.

The authors state that glucose was measured in plasma; if there was no correction then a plasma glucose value of 2.0 mmol/l corresponds to a blood glucose value of about 1.5 mmol/l. Secondly, the authors state that a blood glucose value of 2.0 mmol/l was aimed for and maintained for 60 minutes during the insulin infusion (although in 10 of the 13 patients blood glucose values fell lower than this). Surely this approach will tend to skew the results in favour of finding the glucose threshold of 2.0 mmol/l? In our earlier and similar study¹ in both subjects with diabetes and those without (a point which Dr Pramming and his colleagues omit to point out) a "threshold" for changes in the electroencephalogram and visual evoked responses was found to be a plasma glucose concentration of 2.6 mmol/l.

The finding of no correlation between threshold and haemoglobin A_{1c} values may well be a result of a type 2 error. Studies with animals rendered chronically hyperglycaemic show a reduction in the number of glucose transporters at the blood-brain barrier,² with a reduction in the maximum transport capacity for glucose.³ At normoglycaemia glucose transport across the blood-brain barrier is not rate limiting for cerebral glucose metabolism; if the number of glucose transporters is reduced, however, it could become so. This may explain why some diabetics have symptoms of

hypoglycaemia with apparently normal blood glucose values, which Dr Pramming and others allude to in their final paragraph. It is therefore feasible that neuroglycopenia, and thus presumably electroencephalographic changes, could occur at different blood glucose concentrations in diabetics with differing levels of control. To be sure that this is not the case would require a much larger and more refined study than that outlined by Dr Pramming and colleagues.

We cannot accept the analogy between hypoglycaemia and hypoxia, which is based purely on similar electroencephalographic changes. Firstly, the electroencephalogram has a limited repertoire of changes in metabolic derangements. Therefore similar electroencephalographic changes do not necessarily reflect similar neuronal insults. Secondly, hypoxia gives rise to increased cerebral lactate concentrations, causing tissue acidosis and an increase in neuronal loss, which in animals can be protected against by pretreatment with 1,3-butanediol,⁴ which increases the β -hydroxybutyrate concentration and inhibits glycolysis. Hypoglycaemia tends to cause a rise in cerebral pH and it is of interest to note that there is some evidence that mild hypoglycaemia provides partial protection of mitochondrial respiration in animal models of cerebral ischaemia.⁵

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- Harrad RA, Cockram CS, Plumb AP, *et al.* The effect of hypoglycaemia on visual function: a clinical and electrophysiological study. *Clin Sci* 1985;69:673-9.
- Matthaei S, Horuk R, Olefsky JM. Blood-brain barrier glucose transfer in diabetes mellitus: decreased number of glucose transporters at blood-brain barrier. *Diabetes* 1986;35:1181-4.
- Gjedde A, Crone C. Blood-brain glucose transfer. Regression in chronic hyperglycaemia. *Science* 1981;214:456-7.
- Kirsch JR, D'Alecy LG. Role of tissue lactate and substrate availability in 1,3-butanediol enhanced hypoxic survival in the mouse. *Stroke* 1983;14:971-6.
- Strong AJ, Miller SA, West IC. Protection of respiration of a crude mitochondrial fraction in cerebral ischaemia by control of blood glucose. *J Neurol Neurosurg Psychiatry* 1985;48:450-4.

Körner, nomenclature, and SNOMED

SIR,—Mr Richard Earlam (26 March, p 903) highlights the advantages of multiaxial coding systems for recording diagnostic and procedure information. He notes the lack of an international coding system for operations and points to the fact that the new revision 4 of the classification of surgical operations (Office of Population, Censuses, and Surveys 1987) is a single axis system. In fact it is far worse than that. Revision 4 is a single axis system that tries to be multiaxial. Many procedures, especially in orthopaedic surgery, need two codes for one operation. In other areas there are attempts to incorporate at least three axes in serial blocks of codes.

While the new codes incorporate many procedures that were not thought about at the time of revision 3, their structure and complexity are such that our medical record clerks believe that accuracy of coding will deteriorate and the process will become more time consuming.

In developing a computer based surgical management system¹ we used a hierarchical menu system to enter diagnostic and procedure information and generate the appropriate diagnostic (WHO) and procedure (OPCS) codes. Such an approach can be tailored to a multiaxial structure. Indeed I would argue that multiaxial systems need such a technique to render them "user friendly."

We are now constrained by an ill conceived system which hinders rather than enables addressing by "expert systems." Did those responsible at OPCS not recognise the need for automation in generating their codes? The use of revision 4 will make budgeting more difficult at a time when accurate information on costs is needed.

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- Ellis BW, Michie HR, Esufali ST, Pyper RJD, Dudley HAF. Development of a microcomputer based system for surgical audit and patient administration. *J R Soc Med* 1987;80:157-61.

Interview for medical student selection

SIR,—With regard to the paper by Dr D A Powis and others (12 March, p 765) I have three questions.

Firstly, could the correlations between initial interview and subsequent performance be related to the statements in the paper that the qualities sought at interview (including "compatibility with the innovative style of studies at the university") are similar to those sought in assessment of the students at the end of their course? Thus "incompatibility with the curriculum" is given as one of the reasons for failure to complete the course. In other words, does like beget like, whether in the case of the "academically successful, conservative, purposeful" faculty and students or in the contrasting "motivated, spontaneous, and communicative" style "with an orientation towards power and status"? In this case failure to correlate academic ability (or otherwise) with success (or failure) could be related to a system which discriminates against the former of the two groups mentioned above.

Secondly, is it possible to quantify more precisely the degree of correlation between interview rating and subsequent performance for comparison with the data obtained for correlation elsewhere between academic qualifications at entry and subsequent performance? Are students at the end of the Newcastle course awarded a numerical score which could be related to, for example, the composite interview score?

Thirdly, by not giving "more specific details of the content of the interview because we are still using it" is it possible to avoid "coaching" by someone who has compared the philosophy of the school with the feedback from interviewed candidates?

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AUTHORS' REPLY.—We offer the following answers to Professor Wallace.

Firstly, we hope that in this case "like does not beget like." Our curriculum is structured towards the production of a graduate fitted in all dimensions to the requirements of modern medical practice. Our interview is structured to seek qualities in applicants that we expect would predict success in our course: we aim to select candidates best suited to the curriculum that we offer. Since our assessment procedures throughout are tailored accordingly it is not unexpected that a larger proportion of candidates who do not meet the criteria of our interview fail to graduate meritoriously, or at all, by failing also to meet the related criteria of our assessments or imperatives of the curriculum.

It is perhaps not unreasonable to extrapolate this reasoning to any medical school. The most appropriate selection system is one that matches the

applicant to the curriculum offered. If such a curriculum requires only academic abilities for its successful completion then it is reasonable to select medical students on academic criteria alone. It is worth noting, however, that success in such an academically orientated curriculum will not necessarily mean graduation of a good, or even adequate, doctor. This match between selection, curriculum, and graduation of good doctors was recently explored in detail in Newcastle, New South Wales, at a workshop on selecting medical students attended by representatives of all but one of the Australian and New Zealand medical schools (the edited proceedings are available on application, £20 post paid).

Secondly, the Newcastle medical school has an ungraded pass system of assessment in the first four years of the five year course. Only in the final year is a form of grading used in which a mark of 0, 1, 2, or 3 is given for performance in each of the five "domains" of assessment.¹ Honours are awarded on the basis of a total domain score greater than 12 but with no individual domain score less than 2. Analyses are currently in progress to assess the degree of correlation between final domain and initial interview score.

Finally, it is, of course, not possible to avoid "coaching" of candidates by experienced interviewees, but the nature and conduct of our interview makes rehearsed answers, or those not based on innate attitudes, relatively easy to detect. The presence of two interviewers with different viewpoints facilitates such detection. While the characteristics sought are clearly specified, interviewers may seek and investigate these characteristics in depth by posing specific questions of their own creation, within broad guidelines. Unsuccessful candidates who reapply and again reach the interview stage rarely perform better, even though the style and format of the interview remain unchanged.

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Achieving a balance

SIR,—Last summer the Association of Surgeons in Training carried out a small survey among registrars in general surgery that confirmed the impression of a current lack of career movement raised by your correspondents (5 March, p 717; 2 April, p 1006).

We defined the three main criteria for promotion into the senior registrar grade as possession of postfellowship experience (so called middle grade), possession of research experience, and having a thesis submitted or awarded. In the 12 regions in England and Wales and Northern Ireland from which we received satisfactory data there were 199 registrars with middle grade experience, 105 with middle grade and research experience, and 26 with both these and a thesis submitted or awarded.

Only a radical and sustained expansion of consultant numbers and a rationalisation of training can correct the imbalance represented by these numbers.

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