jogging or brisk walking three times a week), yet only 15% of the population of the United Kingdom do this. The real benefits of exercise have not yet been emphasised, either by this campaign or by previous attempts, and the few hazards of exercise have been overemphasised. Mass screening and drug treatment are costly, exercise is cheap, and all that is required is a positive attitude by health authority managers and general practitioners. For these reasons and the financial state of the NHS exercise deserves a higher priority.

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- 1 Oliver MF. Should we not forget about mass control of coronary risk factors? *Lancet* 1983;ii:37-8.
- 2 Paffenbarger RS. A natural history of athleticism and cardiovascular health. *JAMA* 1984;252:491-5.
- 3 May GS. Secondary prevention after myocardial infarction. *Progress in Cardiovascular Disease* 1982;24:331-51.

Antenatal, perinatal, or postnatal brain damage

SIR,—I was pleased to see Professor E M Symonds reiterating the important information that cerebral palsy is rarely a result of birth asphyxia (25 April, p 1046), a subject recently well reviewed by Dennis.¹ However I was struck by the absence of any reference to the woman who bears the baby and who in most cases, with or without her partner, will care for any handicapped child who is born.

Surely the importance of better identification in utero of the fetus who is already acidotic is that by appropriate care one might reduce the risk of the joy of parenthood being followed by the tragedy of neonatal death or severe disability? As Dr Marsden Wagner said in 1986, "If the doctor plays God he must expect to be blamed for natural disasters"; and part of the feeling by parents that there must be some action or some omission to explain why their child is "brain damaged" stems from the way that women have been persuaded that attending regularly for antenatal check ups and having their babies in hospital "guarantee" a successful outcome.

I believe that genuinely sharing our knowledge, and the lack of it, with women; not applying routine investigations without adequate scientific evidence of their value; and giving a straightforward explanation when things do not turn out as hoped will "free the obstetrician from the unwanted attention of the lawyers."

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- 1 Dennis J. Longterm effects of intra-partum cerebral damage. In: Crawford JW, ed. *Risks of labour*. Chichester: Wiley, 1985.

Evaluating mass training in cardiopulmonary resuscitation

SIR,—Mr A I Glendon and others (9 May, p 1182) will be glad to know that the coordinating committee of the Save a Life Campaign entirely agrees with them about the importance of evaluating the effectiveness of any campaign of mass education in emergency aid. The committee always intended to monitor the effectiveness of the campaign, and its most generous benefactor insisted on this. The campaign is 85% funded by donations from charity and industry.

The campaign commissioned the BBC broadcasting research department to evaluate the campaign over 18 months. This will include the number of viewers who watched the programmes and their sex, age, and social class distribution;

their reactions to the programmes and what they learnt; what motivated people to attend an emergency aid class; and what elements of the campaign were most effective in teaching people emergency aid and helping them to retain this knowledge, with particular regard to the leaflet sent to inquirers, the classes, and the booklets given to class attenders.

Obviously this research project cannot measure such things as competence or success rate at the time of resuscitation, nor can it place a value on the saving of a human life. We hope, however, that this research will prove useful not only to the campaign but to others working in health education. The preliminary results of a prelaunch survey and a survey after the first transmission of the BBC *Save a Life* programmes were presented at a meeting of the section of occupational medicine at the Royal Society of Medicine earlier this year, and the results of the long term study will be published in due course.

As a postscript we have been notified of 82 000 attendances at the public two hour course. Many more have been stimulated to attend by local coordinators, but we do not yet know the numbers. We have also been notified of 16 claims of successful resuscitation by those who have been reached by the campaign.

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Drug formularies in hospitals

SIR,—Judging by recent contributions to your columns (9 May, p 1226), the hospital formulary is in danger of being misunderstood. Its main value is not to contain costs, which it may or may not do, but to inform medical staff of the drugs considered to be most effective by consultants in whose specialist disciplines they are used. A second, but equally important, aspect of the formulary is to encourage staff to think hard about what drugs they should use for treating a particular condition, taking into account drug cost, efficacy, and fashion.

To be successful the formulary needs to be updated frequently. Our hospital formulary is updated every six months. Consultants are reminded of the drugs that they favoured six months ago and are asked if there are any that they wish to see changed. The formulary is used in conjunction with the *British National Formulary*. Receipt of an advance copy of the *Formulary* means that the same colour may be used for the hospital one and the corresponding page numbers are included so that our formulary can be used as an index to the *British National Formulary*. Advice on antimicrobial treatment based on current local sensitivities is also included and updated every six months.

Doctors are encouraged to use drugs from the formulary, but auditing and policing are not enforced as many patients are admitted to hospital already taking drugs prescribed by their general practitioners, some of which may not be included in the hospital formulary. These are not changed unless there is a specific reason for doing so.

The hospital formulary is used mainly to guide new prescribing. It may also encourage thought about the use of drugs and prevent automatic prescribing of every new drug marketed by the pharmaceutical industry before proper evaluation. As pointed out by Professor James C Petrie and Dr Andrew K Scott (11 April, p 919), cost is of secondary importance, and Dr M C Bateson (9 May, p 1227) correctly states that any savings made cannot be quantified. These are minor considerations compared with the increased prescribing

awareness that may be generated during the setting up and use of a formulary.

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Lower oesophageal contractility as an indicator of brain death in paralysed and mechanically ventilated patients with head injury

SIR,—The reported observations of Drs A R Aitkenhead and D I Thomas (16 May, p 1287) in recording spontaneous lower oesophageal contractions in three out of four patients who fulfilled the present criteria of brain stem death deserve our urgent attention.¹ If it is established that such activity is mediated through the vagal brain stem nuclei and connections with higher cortical centres²⁻³ further doubt is cast on the adequacy of the clinical tests of brain stem death to determine that "all functions of the brain have permanently and irreversibly ceased."⁴ There is already ample evidence of the persistence of electroencephalographic activity in the higher centres, even with "normal waking rhythms in the presence of an irreversible brain stem lesion."⁵⁻⁸ Hypothalamic pituitary function is also reported to be maintained.⁹ Cardiovascular responses—tachycardia and hypertension—consistent with residual brain stem function have been reported in 10 out of 10 paralysed but unanaesthetised "brain dead" patients in response to the surgical incision.¹⁰

The criteria for brain stem death were introduced in 1976 "to establish diagnostic criteria of such rigour that on their fulfilment, the mechanical ventilator can be switched off in the secure knowledge that there is no possible chance of recovery,"¹¹ but not that the patient is already dead. This refinement was introduced in the 1979 memorandum in response to the need to obtain vital organs from "beating heart donors."¹²

The cerebral and brain stem activity reported may not represent life in all its fullness, but neither does it equate with death, even as defined by the conference memorandum itself. Our first duty must remain to the dying patient, and that duty should not be compromised for the benefit of a third party, however deserving.

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- 1 Conference of Medical Royal Colleges and their Faculties in the United Kingdom. Diagnosis of brain death. *Br Med J* 1976;iii:1187-8.
- 2 Evans JM, Davies WL, Wise CC. Lower oesophageal contractility: a new monitor of anaesthesia. *Lancet* 1984;ii:1151-4.
- 3 Sinclair ME, Suter PM. Lower oesophageal contractility as an indicator of brain death in paralysed and mechanically ventilated patients with head injury. *Br Med J* 1987;294:935-6.
- 4 Royal Colleges and Faculties of the United Kingdom. Memorandum on the diagnosis of death. *Br Med J* 1979;ii:332.
- 5 Pallis C. Defining death. *Br Med J* 1985;291:666.
- 6 Legg NJ, Prior PF. Brain death. *Lancet* 1980;iii:1378.
- 7 MacGillivray B, Pallis C. Brain death and the EEG. *Lancet* 1980;iii:1086.
- 8 Walton J. *Essentials of neurology*. 5th ed. London: Pitman, 1982.
- 9 Hall GM, Mashiter K, Lumley J, Robson JG. Hypothalamic pituitary function in the "brain dead" patients. *Lancet* 1980;iii:1259.
- 10 Wetzel RD. Haemodynamic responses in brain dead donor patients. *Anesth Analg* 1985;64:125-8.

SIR,—In reply to Drs A R Aitkenhead and D I Thomas (16 May, p 1287), the five patients in our study who did not have spontaneous activity at any time had not received any sedation as there was no clinical indication for this.¹ I totally agree with Drs Aitkenhead and Thomas that to perform any test of brain death in a sedated patient would be