The assumption is his practise of denying citizens their prerogative, of which they are likely to be unaware during the stress of unexpected death, whereby they decide whether or not a relative's organs are used for transplantation, research, or teaching (Human Tissue Act, 1961).

Mr Andrew points out that a willing kidney donor should carry a donor card. We agree with this view. However, to our knowledge, only two United Kingdom donors suitable for kidney transplants have been recognised by this method. The value of the kidney donor card is clearly limited and may well be indirect; relatives carrying kidney donor cards are likely to give permission for kidneys to be used for transplantation if given the opportunity by consultants and junior colleagues.

Nowadays most transplant units use only kidneys from donors with brain death supported by ventilators. In this circumstance there is no significant difference between asking relatives to remove kidneys for transplantation and requesting a necropsy. Permission for tens of thousands of necropsies are granted by bereaved relatives each year in the belief that other citizens and doctors will benefit from this examination. It is our view that the majority of citizens would, for the same reason, allow kidneys to be used for transplantation.

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Whooping-cough vaccination

SIR,—Dr A Mithal (8 November, p 347) resuscitates the concept of "viral whooping cough." Although the range of symptomatology of whooping cough overlaps that of respiratory illnesses caused by adenoviruses and other viruses affecting the respiratory tract, I see no evidence that the classical illness to which experienced senior clinicians would give the unequivocal accolade of "whooping cough" is ever due to viruses. No "bordetella-negative, virus-positive" group of cases was found in the Scottish survey.¹⁻³

I regard whooping cough as a serious specific infectious disease against which our current "ragic bullets" are woefully ineffective and for the specific prevention of which we depend on the vaccine.

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¹ Calder, M. C., et al, *Lancet*, 1970, **2**, 1079.

² Grist, N R, and Ross, C A C, *Lancet*, 1971, **2**, 1100.

³ Grist, N R, *Communicable Diseases, Scotland, Weekly Reports*, 1971, No 45, p 1.

Treatment of Wilson's disease

SIR,—Dr J M Walshe (20 September, p 701) advocates the continued use of triethylenetetramine dihydrochloride (trien 2HCl), a compound that has not been subjected to any formal toxicity tests, as a treatment for Wilson's disease in patients who suffer adverse toxicity with penicillamine. Clearly a consideration in granting either a production or a clinical trials licence for trien 2HCl

would be an assurance that no other therapeutic substance could be substituted for penicillamine. We would like to draw attention to the copper chelation properties of methisazone,¹ aspirin via its major metabolite salicylic acid,² isoniazid,³ and metronidazole.⁴

The indications for the potential use of metronidazole in the treatment of Wilson's disease are: (1) Copper chelation occurs without chelation of tin, nickel, cobalt, iron, zinc, and magnesium. Since it does not chelate magnesium and zinc, metronidazole is highly unlikely to chelate ionic calcium, which has a lower electrochemical potential. (2) It is readily absorbed when given orally. (3) High oral doses (2.4 g) are well tolerated and it is widely used as a trichomonicide. (4) The incidence of toxicity is low when given in therapeutic doses.⁵ (5) It is excreted unchanged in the urine. (6) From structural considerations the metabolites of metronidazole could also chelate copper. Similar considerations (2-5) also apply to aspirin.

In view of the above we suggest that metronidazole should be evaluated as a therapeutic agent for the treatment of Wilson's disease.

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¹ O'Sullivan, D, and Sadler, P, *Nature*, 1961, **192**, 341.

² Perrin, D, *Nature*, 1958, **182**, 741.

³ Albert, A, *Nature*, 1956, **177**, 525.

⁴ Chien, Y W, Lambert, H J, and Sanvordeker, J, *Journal of Pharmaceutical Sciences*, 1975, **64**, 957.

⁵ Jennison, R F, Stenton, P, and Watt, L, *Journal of Clinical Pathology*, 1961, **14**, 431.

Student views on continuous assessment

SIR,—As a recent graduate of Birmingham University, at present employed as a short-term lecturer in the anatomy department of the same medical school, I read the students' views on continuous assessment at Birmingham (Dr K Cruickshank and others, 1 November, p 265) with great interest. It requires just a little perspective on the course from a teacher's point of view to realise the immense problems of passing on an increasing amount of essential knowledge. It is this volume of material that makes the concept of "core" knowledge, as expressed in the article, appear desirable. And yet this is merely compounding the problem of exam-oriented learning, which is already encouraged by 60 assessments in five years. If the student himself cannot discern the "core" of a subject, then he has not even begun to grasp the fundamentals.

I find it surprising that students should be uncritical of any system which includes several personal assessments. Consultants come in all shapes, sizes, and personalities, as do housemen and ward sisters. Most students who qualify here have suffered a wide range of personal assessment and many can quote injustices. It is not the student who is the variable in these instances.

Certain ideas in the article seem curious. Five-day gaps between exams can only encourage cramming, the very thing that continuous assessment hopes to avoid. Faster feedback in the form of computer printouts is suggested. Only the most self-deluded fail to understand the cause of an exam failure. In Birmingham one failure in clinical

subjects is quite likely to bring the student back for a pass-fail viva in his final year. A computer printout would be small consolation following such a failure.

A feature not brought out in the article is the very different style of both teaching and learning required in clinical and pre-clinical years. A tutorial at 2 am in the hospital mess, amid flat beer, fag ends, and newspapers, can indelibly imprint on the student's mind a particular patient, his problem, and his disease. Preclinical material, less emotive and less interesting but no less voluminous, is harder to get across by any method.

MARK GOLDMAN

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Adrenaline in treatment of anaphylaxis

SIR,—In my letter (13 September, p 649) I suggested that the cautious intravenous administration of adrenaline might still be the best choice of therapy for a patient suffering from profound anaphylactic shock. Dr A W Frankland and Professor R Abdel-Maguid (18 October, p 162) have rightly drawn attention to the side effects of this treatment, but it seems unlikely that a profoundly shocked patient, unconscious owing to a sudden loss of circulatory volume, will either notice the subjective effects they mention or suffer a cerebral haemorrhage. As I said in my letter, the risk to the heart is a real one and this is confirmed by Lawrence.¹ Nevertheless, for the treatment of anaphylaxis his reasoning and conclusions are similar to my own, and he recommends the slow intravenous administration of 0.5 ml of 1/1000 adrenaline, diluted 1/10, when the patient is gravely shocked. Lawrence also adds the valuable suggestion that for the less shocked patient adrenaline can be given intramuscularly. In the most recent edition of *Martindale's Extra Pharmacopoeia*² it is suggested that in an extreme emergency caused by anaphylaxis up to 0.25 ml of 1/1000 adrenaline, well diluted, should be injected intravenously.

Dr Frankland and Professor Abdel-Maguid believe that it would be irresponsible for general practitioners to give intravenous adrenaline, but this stricture would seem unwise since severe anaphylaxis can lead to death in a few minutes. Goodman and Gilman,³ whom they cite, do not mention the special problem of anaphylactic cardiovascular collapse in their sections on the treatment of allergic reactions (pp 157 and 642-4).

L M MCEWEN

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¹ Lawrence, D R, *Clinical Pharmacology*, 4th edn, pp 6 and 59. Edinburgh, Churchill Livingstone, 1973.

² *Extra Pharmacopoeia: Martindale*, 26th edn, ed N W Blacow, p 5. London, Pharmaceutical Press, 1972.

³ Goodman, L S, and Gilman, A, *The Pharmacological Basis of Therapeutics*, 4th edn. London, Macmillan, 1970.

Contraceptive practice and unplanned pregnancy in students

SIR,—I should like to comment on the remark of Dr J B Cole and his colleagues (25 October, p 217) that in their sample of students at an Australian university "both the

proportion of women experiencing intercourse and the proportion of sexually active women who used contraceptives were greater than those found in Britain and America."

In an unpublished survey of both university (undergraduate) and non-university (for example, secretarial) students in Cambridge in 1973 we found the proportion of sexually experienced women in both groups (57%) to be close to that of the Australian sample (62%). On the other hand, Dr Cole's data on the relationship of age to sexual experience (15% having had intercourse by the age of 16 and 95% by the age of 21) correspond to our non-university group only, for whom the figures were 14% and 88% respectively compared with 3% and 67% for undergraduates.

When one looks at contraceptive use the contrast between Britain and Australia is not just modified but reversed in our survey, since 86% of our undergraduates (and 72% others) who were sexually "active" during the four-week period of study had used a reliable method of contraception (pill, IUD, cap, or sheath) on every occasion of intercourse and another 4% less consistently. Dr Cole's figures are 49% for consistent and 38% for intermittent use. Particularly striking was that 74% of our women undergraduates (and 64% of our other group) were on the pill in contrast to only 30% of Aberdeen undergraduates studied 18 months previously¹—maybe because of the great publicity given to the scheme for free contraception under the NHS during this time.

The aspect of our data that prevented us feeling complacent was that even among these groups of successful contraceptive-users only 60% of the experienced women and 35% of the men felt that contraceptive advice was adequately available, and 18% of the experienced women (20% of the men) felt that their own knowledge was inadequate. Dr Cole's reference to "iatrogenic" pregnancies endorses our experience that use of the pill does not necessarily imply "contraceptive sophistication" and that for many people contraception means the pill or nothing. In fact, I fear that emphasis on the pill as the reliable contraceptive—at the expense of other methods—may "encourage" rather than prevent unwanted pregnancy, given that there are circumstances (medical contraindications, unexpected or infrequent intercourse) in which the pill may not be suitable or available.

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¹ McCance, C. and Hall, D. J., *British Medical Journal*, 1972, 2, 694.

Cryosurgery for piles

SIR,—We feel we should respond to the letter from Mr R E B Tagart (18 October, p 165), who reports an unfavourable assessment of his results with a liquid nitrogen probe. It is our submission that liquid nitrogen produces far more intense freezing than is necessary for satisfactory results in piles. In discussing cryosurgery we feel it must be clearly stated which type of probe is used, as the lesion produced differs according to the rapidity of freezing, the degree of lowering of tissue temperature, and of course the size of the ice ball. Although the method has been made very clear by Mr Tagart, it

has not been by other authors—for example, Lloyd Williams *et al.*¹ If the method of cryosurgery is not specified it is likely that a satisfactory method of treatment produced by one type of probe may be overshadowed by bad results produced by another type.

We have treated more than 200 patients with a cryoprobe using nitrous oxide, which causes less intense freezing but appears to be adequate to produce satisfactory results without causing the unpleasant side effects detailed by Mr Tagart. Our experience with the nitrous oxide type of probe for internal piles leads us to believe that, provided each pile mass is treated for at least two minutes and that the whole of the pile mass is frozen, the short-term results are comparable with those of haemorrhoidectomy, whether the piles are minor or major. In most patients the technique can be used without anaesthesia, and the morbidity and side effects are less than those produced by elastic band ligation.^{2,3}

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¹ Lloyd Williams, K., Haq, I. V., and Elem, B., *British Medical Journal*, 1973, 1, 66.

² Jones, C. B., and Schofield, P. F., *Proceedings of the Royal Society of Medicine*, 1974, 67, 51.

³ Wilson, M. C., and Schofield, P. F., *British Journal of Surgery*. In press.

Access by GPs to physiotherapy services

SIR,—I read with interest the article by Dr P Norman and others (25 October, p 220) referring to access by general practitioners to the physiotherapy department of a district general hospital. For 25 years we have employed a similar system in a unit administered by the British Red Cross Society and local GPs, subsidised by the Oxford Regional Hospital Board (now the area health authority). Although immaculate records as shown in the article referred to have not been kept, our findings and comments are very similar. Our area has no general hospital, and this policy has resulted in much saving of time and money which would otherwise have been expended on treatment and transport. The system has not been abused, which can be shown by the fact that since a consultant in rehabilitation medicine was appointed with responsibility for Milton Keynes, so that we now have someone of this clinical specialty to whom we can refer, our numbers and manner of working have not changed in any way. Of course it is better that clinics are now held on our premises, but such good relations have always prevailed between the consultants and the GPs with whom we work that physiotherapists have welcomed the extra responsibility offered, and we have never been short of competent and enthusiastic staff.

We have also run a minimal domiciliary service, another aspect rejected by the Tunbridge Report. We consider that, carefully employed, this is a vital part of any physiotherapy service. Visits are made only for assessments, general guidance, the immediate treatment of patients with hemiplegia not admitted to hospital, and acute chest conditions.

In conclusion I would hope that this system could be employed more widely in order to sift patients from long waiting lists

and to reduce time lost from work and the prolonged discomfort suffered by all those with musculoskeletal disorders which can be cured, or at least very much alleviated, by prompt and carefully chosen physiotherapy.

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HLA antigens in haemochromatosis

SIR,—HLA antigen studies have been carried out on six patients with haemochromatosis and one patient with a high serum iron and marked iron deposition on liver biopsy attending this department. The results of HLA typing in these cases are shown below.

Patient	Age (years)	HLA
1	56	1, 3, 7, W15
2	56	3, 7
3	53	1, 3, 7, W14
4	34	3, 11, 7, 12
5	49	1, 3, 7, 8
6	44	2, 3, W10, W27
7*	68	3, 7

*Haemosiderosis

The incidence of the combination of HLA-3 and HLA-7 in these cases is 85.7%, whereas in a control group of 86, composed of 36 members of staff and 50 general medical outpatients, the incidence of the combination was only 20.9%. The difference is highly significant ($\chi^2=12.136$, $P<0.001$). Applying the correction for Bonferroni inequality as suggested by Bodmer to avoid problems of sampling in view of the large number of variables (antigens) being tested,^{1,2} a significant increase in the incidence of HLA-3 and HLA-7 is still found in the group with haemochromatosis. (Patients with coeliac disease or suspected ankylosing spondylitis were not included in the control group.)

Recently, Simon *et al.*³ found a highly significant increase in the incidence of HLA-3 in 20 patients with haemochromatosis compared with a control group of 120 (HLA-3 present in 85% and 31%, respectively). Our study, while confirming their findings, suggests that there is a corresponding increase in the incidence of HLA-7.

Although the numbers of patients with haemochromatosis and controls were small, it seems possible that our results represent another disorder associated with HLA-type.

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¹ Vladutium, A. O., and Rose, N. R., *Immunogenetics*, 1974, 1, 305.

² Bodmer, W. F., in *National Cancer Institute Monographs*, 1973, 36, 127.

³ Simon, M., *et al.*, *Nouvelle Presse Médicale*, 1975, 19, 1432.

Overprescription of psychotropic drugs

SIR,—Dr W J Reilly (25 October, p 223) is right to draw attention to the possibility that many road accidents happen as a result of impaired judgment caused by psychotropic drugs. However, his article exposes a much