me with my current dilemma concerning a patient with a history of lithium toxicity with normal concentrations¹ who has recently been put back on lithium by local psychiatrists.

I question the assumption that an audit of patients taking lithium can reliably be based on those having blood tests. Surely the patients should have been identified by prescriptions for lithium preparations generated in local practices. Only one study that had done this is quoted; could the similar point prevalence of patients taking lithium be a coincidence?

My four partner practice was approached six months ago by the local psychiatric service, which asked if we would like to send any patients taking lithium to it as it was establishing a new lithium clinic. No possible benefits of this clinic for these patients were mentioned. I checked on our patients receiving lithium. Only four were taking lithium regularly; in addition, two men had received lithium in the recent past for migrainous neuralgia, one with no benefit while the other had been relieved of his symptoms and his clusters of headaches had not returned. Of the four patients receiving lithium for manic-depressive illness, two were attending the psychiatric service and two were receiving their care in general practice. The patients attending the psychiatric service had last had their lithium concentration estimated 20 months and 12 months previously and those cared for within the practice three months and two months previously.

I realise that the numbers are small, but this audit coloured my practice's view of a lithium clinic. The clinic seems to be necessary to improve the care of the patients attending the psychiatric service, but the practice prefers to carry on seeing the two others as whole people rather than send them off to become "lithium cases."

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1 Kehoe RF, Mander AJ. Lithium treatment: prescribing and monitoring habits in hospital and general practice. *BMJ* 1992;304:552-4. (29 February.)

2 Spiers J, Hirsch SR. Severe lithium toxicity with "normal" serum concentrations. *BMJ* 1978;3:815-6.

Organ donation from intensive care units

SIR,—Sheila M Gore and colleagues suggest that kidney donation from intensive care units could be increased if there were a reduction in the non-performance of tests of brain stem function.¹ This assumes that patients who did not undergo formal testing of brain stem function were actually brain dead and suitable organ donors. We analysed our data collected during the confidential audit and cannot agree that there is necessarily an opportunity to increase kidney donation substantially in Britain.

Question 9 in the audit [was brain stem death a possible diagnosis?] was ambiguous and we suggest that some of the variability in the non-performance of testing may be due to differences in the interpretation of that question. For instance, we included all patients in whom brain stem death was a possibility, yet many of these did not undergo formal testing. One patient, for example, had had a prolonged cardiorespiratory arrest and had elective ventilation and subsequent laparotomy for a perforated viscus. Although she was comatose and apnoeic and might have had brain stem death, she died of hypotension due to septicaemia. A total of 122 patients died in our unit during the audit period; of these, 36 were classified as having a possible diagnosis of brain-stem death, although two patients were incorrectly categorised as a result of clerical errors. Only 15 of the 34 patients with a possible diagnosis of brain stem death had formal testing, and analysis of the data on the remainder

shows that four were too old to donate organs on accepted criteria, three died within two hours of admission to the intensive therapy unit, and 12 had medical conditions which made them unsuitable as organ donors. All of these 19 were severely hypoxaemic, hypotensive, and resistant to treatment, or had active supportive treatment withdrawn once it was appreciated that they were unsuitable as organ donors. Consequently formal tests were performed in 100% of those patients who were suitable for testing and who were also potential kidney donors.

Although it may be possible to increase the number of organ donors from Britain's intensive therapy units, we suggest that the potential increase is modest and that the 25% reduction in non-testing suggested by Gore and colleagues may not be achievable.

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1 Gore SM, Cable DJ, Holland AJ. Organ donation from intensive care units in England and Wales: two year confidential audit of deaths in intensive care. *BMJ* 1992;304:349-55. (8 February.)

Morphine for pain in infants

SIR,—G K Gourlay and R A Boas's paper is a reminder of the danger of respiratory depression after the administration of opiates to infants.¹

In recent years there has been renewed interest in analgesia for young infants. When neonates are referred to regional surgical units, to prevent discomfort in the ambulance it has become fashionable for junior paediatricians in the south east of England to give potent opiates. When these are given intravenously transfer is inevitably delayed while the immediate respiratory arrest is treated, but when they are given intramuscularly respiratory failure progresses relentlessly during the journey so that the infant arrives in a moribund state. Of 135 neonates referred to my care at one hospital since 1988, six have suffered severe depression of respiration or respiratory arrest as a result of this pernicious act of kindness.

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1 Gourlay GK, Boas RA. Fatal outcome with use of rectal morphine for postoperative pain control in an infant. *BMJ* 1992;304:766-7. (21 March.)

Measles, mumps, and rubella vaccine: time for a two stage policy?

SIR,—I strongly support Harden Carter and Dermot Gorman's views on the need for a two stage immunisation programme for measles, mumps, and rubella.¹ I recently returned from New Zealand, and the measles epidemic there is fresh in my mind.

Some 37% of the 9239 cases of measles reported in New Zealand in the second half of 1991 were among adolescents and young adults (that is, 10 to 19 year olds) and 6% of all cases were in those over 19.² Evidence suggests that failure to seroconvert or waning immunity, or both, contributed to the epidemic, particularly in these older age groups.¹ Largely as a result of this epidemic the Department of Health in New Zealand recently announced a two stage vaccination policy for measles, mumps, and rubella,² the second dose for all schoolchildren in form 1 replacing rubella vaccine for girls in form

Percentage of cases of measles in those aged 15 and over in Argyll and Clyde Health Board, 1982-91 (with least squares regression line)

1—the same regimen that Carter and Gorman advocate.

The case for a two stage policy is formidable, being based on epidemiological facts and principles and on the experiences of other countries that have had a high uptake of immunisation for longer than the United Kingdom and are experiencing an upward shift in the age distribution of patients.⁴ The ever growing list of countries that have adopted the two stage policy makes the United Kingdom's position increasingly anomalous. Action must be taken soon if we are to defuse the "timebomb" of future epidemics of measles (and mumps) among adults⁵ with the consequent higher morbidity.^{6,7} Even now figures from Argyll and Clyde Health Board show the upward trend in the proportion of patients with measles aged 15 and over (figure).

The case for a two stage policy is, I believe, so strong that the Joint Committee on Vaccination and Immunisation should publicly give its reasons for not recommending the introduction of such a policy without delay.

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- 1 Carter H, Gorman D. Measles, mumps and rubella vaccine: time for a two stage policy? *BMJ* 1992;304:637. (7 March.)
- 2 Galloway Y, Stehr-Green P. Measles in New Zealand, 1991. *Communicable Disease New Zealand* 1991;12:167-9.
- 3 Fink JK, Ealing CA. Estimate of vaccine efficacy in a measles outbreak, College House, Palmerston North. *Communicable Disease New Zealand* 1991;12:109-12.
- 4 WHO. Expanded programme on immunisation—measles outbreak, 1989-1990, Poland. *WHO Weekly Epidemiological Record* 1992;67:50-4.
- 5 Cherry JD. The "new" epidemiology of measles and rubella. *Hosp Pract* 1980;15:49-57.
- 6 Centres for Disease Control. Update on adult immunisation. Recommendation of the immunisation practices advisory committee (ACIP). *MMWR* 1991;40(RR-12):19-20.
- 7 Giladi M, Schulman A, Kedem R, Danon YL. Measles in adults: a prospective study of 291 consecutive cases. *BMJ* 1987;295:1314.

Missing women

SIR,—The registrar general's statistics for 1841 to 1890 show that between the ages of 10 and 34 females had a higher mortality than males. Though mortality from childbearing may have played a part, deaths from tuberculosis at that time accounted for between a quarter and a fifth of all deaths and mortality from tuberculosis was much higher in women than men between the ages of 15 and 30.

The higher mortality for females in countries such as India and China, discussed in Amartya

Sen's editorial,¹ may well be due to tuberculosis; rates there now are comparable with those in the United Kingdom during part of the last century. Tuberculosis is, to a great extent, a disease of social deprivation, and thus Sen's point is valid. For some reason, however, young females have a higher mortality from tuberculosis than their male peers; this phenomenon is not yet understood and may account for at least some of Sen's missing women.

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1 Sen A. Missing women. *BMJ* 1992;304:587-8. (7 March.)

Tibial fixation

SIR,—The tibial hardware shown in a radiograph on Minerva's page¹ is almost certainly a Parham's band, well described as "the sort of clamp used to tie up electrical cables." I remember being shown it in a surgical instrument seminar as a medical student at Aberdeen Royal Infirmary in the late 1930s. One elderly surgeon still used it for oblique shaft fractures in long bones, but most of our teachers regarded it as a museum piece.

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1 Somerville DW. [Tibial x ray.] *BMJ* 1992;304:650. (7 March.)

Starting date of house officer posts

SIR,—It always strikes me as inefficient and dangerous that house officer posts start on the first day of the month, even if this falls on a Friday or a weekend, when there is likely to be least supervision of these inexperienced doctors.

Since there is more support from middle grade doctors and consultants during a weekday and since we tend to think about the week as running from Monday to Sunday, would it not be much more sensible to have house officers starting their posts on, say, the Monday after the first day of the relevant month? Bank holiday Mondays would not interfere with this plan for February and August, when the bulk of job changes occur, but would be awkward in May. No doubt local arrangements could be made in that case.

This plan has met with approval from the paediatric department at this hospital, but we would be unable to introduce it without cooperation from other hospitals from which doctors are likely to come since this may introduce a gap or overlap between appointments. Hence I write to you as a wider forum for suggesting this simple but useful change in the employment of house officers.

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SIR,—1 February has been and gone; hospitals around the country have coped with the influx of new doctors. For a good proportion of the doctors who have changed jobs the start of February will have meant a change of specialty or of hospital, or both.

1 February was a Saturday. I doubt that many hospitals managed to run an induction course that day, so many juniors will have found themselves on call for a strange unit in a strange hospital, relying on the good will of those around them to cope with the routine and emergency tasks put before them.

Little wonder that mortality figures in hospitals show a small blip in February and August.

The safety of patients aside, the Saturday changeover had one advantage. Apart from those poor souls who spent the weekend on duty, the rest of us had the whole weekend in which to move our home. Admittedly, few doctors move an appreciable distance between jobs, but for them the usual state of affairs—when the first of the month falls in the middle of the week—is to finish in one hospital at (they hope) 5 pm and have just 16 hours before starting the new job elsewhere. It is difficult to move home, spouse, and two small children from Plymouth to Glasgow on a Tuesday night, but somewhere out there will be a junior doctor who had to manage it.

There is a better way. Why could we not all start new jobs on the first Monday of the month? This would guarantee that the new juniors arriving at a department would have five full days to get used to things before they had to cope with a weekend on call, the weekend being the time when the average hospital provides the least back up for junior staff. It would allow most doctors the whole weekend in which to move. Induction courses would always be on a Monday, making planning simpler. Domestic staff would have more time to clean rooms. Staff would arrive with time to spare and might even look around the wards to find out what awaited them on Monday morning.

It is time that this illogical, inconsiderate, and inconvenient tradition was replaced. A single directive from the General Medical Council or Department of Health could have the new system in force in time for August: why not?

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Outcome measures should be relevant

SIR,—The measurement of health outcomes is necessary for research, the assessment of innovations in services, and audit of established services. This is especially true for chronic conditions, for which traditional measures of success or failure in management, such as death or cure rates, are inappropriate, and for strategic management, in which the relative effects of widely differing conditions and interventions must be compared.

Alison Frater and David Costain's editorial is to be welcomed for reiterating these points,¹ but caution is needed. The medical outcomes study short-form general health survey, which Frater and Costain describe, is only one of a growing number of generic general health measures.² Although it is able to discriminate between different medical conditions, a more pressing need is to show sensitivity to change due to intervention.

The scale in the medical outcomes study describes a "profile" with six different scores being given for physical functioning, role functioning, mental health, and so on. The purchaser who wants to compare psychiatric inpatient care with hip replacement operations may have to trade off effects in different dimensions. Is a 10 point improvement in social functioning better than a five point improvement in health perceptions? A valid summary score to resolve this remains elusive, for this or any other general health scale.

Outcome measures need to be relevant to the objectives of the intervention. The four point New York Heart Association classification was used successfully to show improved functional abilities in the cooperative north Scandinavian enalapril survival study (a trial of enalapril in heart failure)³ but would have been inadequate for a trial of a new antidepressant agent. An unsuitable generic scale

used in a trial of NHS nursing homes failed to detect important differences shown by more suitable scales.⁴ The management of many chronic medical conditions depends on rehabilitation. This entails reducing disability by helping patients to reacquire lost skills and teaching new ones, providing aids and adapting patients' environment, psychological readjustment, involving the family and carers, and appropriate resettlement in suitable accommodation. These activities can be summarised as the reduction of handicap, the disadvantage that results from ill health.⁵ No adequate measure of handicap exists. Generic outcome measures may be insensitive to the effects of such interventions or may be only proxy measures while in fact measuring depression.⁶

Measurement of health outcomes will be a useful advance so long as valid, reliable, sensitive, and relevant scales are used. Some disease specific scales will remain useful.

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1 Frater A, Costain D. Any better? Outcome measures in medical audit. *BMJ* 1992;304:519-20. (29 February.)

2 McDowell I, Newell C. *Measuring health. A guide to rating scales and questionnaires*. New York: Oxford University Press, 1987.

3 CONSENSUS Trial Study Group. Effects of enalapril on mortality in severe congestive heart failure. *N Engl J Med* 1987;316:1429-35.

4 Donaldson C, Atkinson A, Bond J, Wright K. QALYs and long-term care for elderly people in the UK: scales for assessment of quality of life. *Age Ageing* 1988;17:379-87.

5 World Health Organisation. *The international classification of impairments, disabilities and handicaps*. Geneva: WHO, 1980.

6 Ebrahim S, Barer D, Nouri F. Use of the Nottingham health profile with patients after a stroke. *J Epidemiol Community Health* 1986;40:166-9.

Rationing health care

SIR,—Contrary to Chris Heginbotham's assertion the proportion of gross domestic product spent on health care has not increased steadily in all countries of the Organisation for Economic Cooperation and Development.

Three countries (Sweden, New Zealand, and Denmark) were able to reduce the percentage of their gross domestic product spent on health care between 1980 and 1987, and two other countries (Italy and Spain) increased their spending by only 0.1 percentage units, which is less than the mean increase of 0.5 percentage units according to Heginbotham's figures (table I). Was this achieved through rationing health care or another way, such as changed accounting?

Although in 1987 the United States had the highest spending on health care in relation to its gross domestic product, between 1980 and 1987 the relative increase in spending was greater in Greece and Iceland than in the United States. If the United States and Greece are considered as statistical outliers then the spread in health care expenditure is narrow and has changed little, from 5.9 to 9.5 in 1980 to 6.0 to 9.0 in 1987. Heginbotham draws attention to the danger of relying on percentage of gross domestic product, and in his table II (where, oddly, the figures for Sweden are missing) excluding outliers the "medical care purchasing power parity" centres around \$1000. Thus, the optimal spending on health care seems to be 7-9% of gross domestic product or \$1000 medical care purchasing power in 1980's value.

The cost of caring for an individual rises greatly in the higher age groups. Short sightedly, the income tax raised in the halcyon days of the '50s and '60s when the British "never had it so good" was used to correct accumulated neglect from the years of the depression and the war; none was invested for the future. Hence, the problem facing the health service is that it has been using and still