ference between groups would indeed have been unethical. Inevitably, however, the patients remaining on placebo at six months form a select group, with those with more severe disease having dropped out.

We did not set out to detect differences between gold and sulphasalazine. The gold group was included to assess whether patients randomly allocated to sodium aurothiomalate behaved in the way which might be expected with an established second line drug. The presumption then was that the group as a whole was capable of a second line response. Much larger numbers would, of course, be required to compare the relative methods of gold and sulphasalazine. It seems reasonable, however, to establish in the first instance whether or not a drug exerts a second line effect before embarking on a large scale study: this we have done.

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Leukaemia and radiation

SIR,—The defence advanced by the nuclear industry and quoted by Dr Tony Smith (12 November, p 1464) is a double edged weapon. "From what is known of the relation of leukaemia to the amount of radiation received . . . the children in Seascale have been exposed to far too little radiation to account for the numbers of cases of leukaemia that have occurred." This is an argument from theory to observation. It is, of course, possible that the cluster is a pure statistical freak and that the presence of long lived radionuclides in house dust is a purely coincidental finding. It is equally possible that children are far more susceptible to doses of radiation than previously thought. Factors such as body mass, metabolism, diet, and especially permeability of the gut barrier may be radically different in the case of infants from the rule of thumb assumptions made in the 1960s when annual levels of intake were set up.[1] It is also possible that the carcinogenicity of radiation is not a crude function of absorbed dose but varies according to the particular radionuclide and the type of radiation delivered.

Furthermore, the presence of clusters of leukaemia found elsewhere—for example, Dale End, Hertfordshire—may not be assumed to be unconnected to radiation. When "routine" emissions of radioactive gases are made from nuclear power stations the assumption is that turbulent mixing in the air rapidly dilutes the radioactivity to unimportant levels, and this is indeed the case under some meteorological conditions. On days when unstable atmospheric conditions prevail, however, it would be possible for a discharged gas to be taken up to form a single cumulus cloud later to be deposited on a relatively small area as a shower. Six years or so after this event a cluster of radiosensitive tumours could be expected, but all evidence of the causative agent would have leaked away.

There are many uncertainties, and the problem of ascribing causation to these associated events is difficult if not impossible, but in the meantime it is not unreasonable to call for continuous district by district monitoring of the environment so that power station fallout hot spots, if and when they occur, can be identified and avoided appropriately.

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Arteriovenous haemofiltration

SIR,—We agree with Dr N J Dodd and others (8 October, p 1008) that continuous arteriovenous haemofiltration by the use of polysulphone membrane (Amicon XM 50) can play a useful part in the management of patients with acute renal failure and fluid overload. The concept is simple: continuous production of "glomerular ultrafiltrate," coupled with simultaneous intravenous replacement of fluids, electrolytes, and, if desired, nutrition enables precise regulation of fluid balance without sudden electrolyte shifts and their associated cardiovascular instability.

Experience with this technique in the past year, however, has taught us that the practicalities need to be carefully monitored, even if the patient is in an intensive care unit. For appreciable removal of urea, creatinine, and other waste substances large volumes of fluid must be exchanged continuously, and for better control of this we have developed a modification of the haemofiltration system, whereby a calibrated one way electric pump on the ultrafiltrate line replaces the gate clamp currently supplied. This allows the filtrate removal rate to be controlled accurately and avoids the danger of accidental unrestricted ultrafiltration due to human error or failure of the gate clamp. The nursing staff have found this modification extremely convenient and we have not experienced any complications.

This is only the first step towards the development of a fail-safe system of fluid balance control for use in continuous arteriovenous ultrafiltration. We would like to emphasise the importance of careful monitoring of the cardiovascular state and fluid exchange rate in extremely ill patients with multiorgan failure. Continuous haemofiltration of large volumes should be carried out only in an intensive care unit or special renal unit, where meticulous care can be exercised in biochemical control and fluid balance.

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Prevalence of hepatitis B among staff in a mental subnormality hospital

SIR,—Dr G I Hackett and Dr M J Wheeldon (29 October, p 1264) may be right in some circumstances to conclude that the wholesale vaccination of nursing staff in mental subnormality hospitals is unwarranted, but their conclusion cannot be made from the results presented. It would not be surprising to find a low prevalence of hepatitis B antigen (HBsAg) in a group of nurses tested *before* employment in a mental subnormality hospital, and even after exposure to this environment for a prolonged period HBsAg as a marker of previous infection would not be expected to persist in more than 5% of clinically infected cases. Hepatitis B antibodies (anti-HBs and anti-HBc) are more reliable markers of previous hepatitis B virus infection and are consequently more useful in ranking the risk category of the occupational groups exposed.

In a large mental subnormality hospital in Glasgow with 14 patients known to be HBsAg carriers and a number of clinical cases of hepatitis B virus infection having developed in staff in recent years, a recent study of prevalence of hepatitis B antibody showed the presence of anti-HBs and anti-HBc in two of four physiotherapists (50%), 21 of 332 of day duty nursing staff (6%), one of 60 catering staff (2%), and no domestic services staff (out of 153). Prevalence in blood bank controls in Glasgow is estimated at 1·5%.

Although mental subnormality hospitals are generally considered to be "high risk" for hepatitis B, the degree of risk may vary considerably and be dependent on the number of HBsAg carriers among resident patients. Within such hospitals there will also be variations in the degree of risk to different groups of staff depending on their degree of contact with carriers, and assessment of this risk should not be restricted to nursing categories.

On the basis of our study, combining clinical and immunological findings, we feel justified in offering hepatitis B vaccine to selected groups of antibody negative staff in the occupational categories with higher antibody prevalence. The decision to vaccinate a particular group in a particular mental deficiency hospital should be made only after a full appraisal of the degree of risk in that hospital. The generalised recommendation from Cranage Hall Hospital may deprive groups genuinely "at risk" from protection, including possibly some of their own employees.

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Control and prevention of tuberculosis

SIR,—The excellent report of the Joint Tuberculosis Committee (15 October, p 1118) covers the relevant advice for the NHS employee but does not cover the practical implication.

The article suggests a shift to home care for patients with tuberculosis, thereby making the primary care team responsible for the necessary care. All NHS hospital workers likely to be in contact with such patients, or tuberculous material, are expected to subject themselves to measures protecting them against tuberculosis. Unfortunately, there is no proper occupational health service for the employees associated with the primary care team, who are concerned with the care of these patients before they begin chemotherapy and who are at higher risk of contracting the disease. It is essential that all those associated with the primary care team should receive adequate protection against tuberculosis as suggested for hospital employees.

In theory it is easy to classify the NHS staff into minimal risk and higher risk groups. In a recent survey 43 newly diagnosed cases of tuberculosis in a hospital were found in "minimal risk" wards such as trauma; neurosurgery; coronary care unit; ear, nose, and

throat; psychological medicine; orthopaedic; geriatric day unit; radiotherapy, etc.[1] Tuberculosis was not diagnosed before their admission. This re-emphasises the occupational risk in hospital staff irrespective of their wards.

The Joint Tuberculosis Committee states that those employees at minimal risk do not require pre-employment chest *x* ray examination. The chest *x* ray examination is taken not only to screen the employee for pulmonary tuberculosis, but to interpret the tuberculin skin test (Heaf) and the decision to give BCG vaccination. It is reassuring that the authors emphasise that the risk of a single *x* ray examination is negligible. In our review of 2501 pre-employment assessments in a hospital, 587 (24%) individuals had no evidence of BCG, nor were they aware of having had a tuberculin skin test.[1] Fifty (8·5%) of these individuals were found to have a grade 4 Heaf reaction before their employment within the hospital. This suggests the need to rescreen the adult community, especially those who are at higher risk, for prevention of tuberculosis, including a pre-employment chest *x* ray examination.

The mechanism for screening foreign visitors to NHS hospitals is far from satisfactory. It is important that all these professional visitors are screened and protected adequately before starting their clinical attachment.

In our review of 1568 occupational contacts of tuberculosis patients, we observed that no further follow up was necessary if the contacts had had a BCG or a positive tuberculin test result.[1] We recommend similar measures to all primary care team members for their protection.

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[1] Jachuck SJ, Bound CL, Price P. The importance of tuberculin retesting in the adult community at risk. *J R Coll Gen Pract* (in press).

Business management for the NHS?

SIR,—I feel that there is no chance for a major improvement in NHS management (5 November, p 1321) until organisation and management become part of the explicit training for all junior hospital staff, with a section in the membership and fellowship examinations for this subject.

Practice management has been part of the vocational training scheme for general practitioners for some years, and this is tested in the MRCGP examination. This has led to a revolution in expectations about practice organisation by ex-trainees, and they are slowly but surely bringing their ideas into action in the practices where they have become principals.

In the appointment of a new hospital consultant his published scientific papers carry considerable weight. Would the junior hospital doctor stand much chance of advancement in his career if he wrote on organisation and management problems and their solution? Medicine is largely about the delivery of care from resources that are not limitless.

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SIR,—I was interested to read an account of the latest inquiry into NHS management (5 November, p 1391) and your leading article on the same subject (p 1321). Among the various recommendations and conclusions health authorities are advised to identify a general manager (regardless of discipline) at authority level who should be given freedom to organise the management structure to best suit local requirements and to clarify the roles of chief officers. There is much play on unit management and the involvement of clinicians therein but nowhere in the account as published is there any mention of the district management team. Does this omission perhaps signal the eventual demise of such teams?

Having previously stated with colleagues the case in favour of sparing clinicians the time, grind, and frustration of serving on management teams,[1] I was later persuaded to serve on such a body for three years. After this experience I remain ambivalent about the place of the clinician in district management. Instead of positive management, consensus (often no better than a weak compromise) too often resulted in negative thinking and lack of proper decision taking; one can readily see why the managing director of Sainsbury's and his colleagues would prefer the more direct and crisp approach of the general manager or chief executive.

In my experience most busy clinicians are largely apathetic in such matters and perhaps now is the time (if it is not already too late) for them to sit up and take notice. They should consider whether or not they wish to be "generally managed" or whether they wish district management teams to be preserved and reformed so that they can act in a more positive and dynamic way. Dr J Stuart Horner (12 November, p 1473) and Dr Mary White (19 November, p 1554) have both sounded warnings: will they be heeded?

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[1] Creery RDG, Hart CT, Fox GC, Trickey SE. Management functions of clinicians. *Lancet* 1979;i: 217.

Assessing and allocating beds in acute medicine in east London

SIR,—Readers of the paper by Professor Duncan W Vere (17 September, p 849) will have noted that although the data from the survey of acute admissions in part of 1983 covered the whole of Tower Hamlets, the data on lengths of stay was from one firm based at the London Hospital, Whitechapel, which contains our regional specialty beds. As it could be assumed that the change in admission pattern over the past 10 years in such a hospital might differ from that of a general hospital in the locality without regional commitments, I undertook a similar study of admissions of my general medical firm at the Mile End branch, which has no specialty beds.

Table I shows that for 1974, 1976, and 1982 similar changes have taken place to those at Whitechapel.

Table II and the figure show admission data for patients with overdoses, myocardial infarction, and stroke. The increase in the percentage of patients with overdoses staying one to five days is close to that noted by Vere (34·5% in 1982). There were also increases in the percentage of patients with myocardial infarct staying for six to 20 days and in the percentage of patients with strokes staying for more than 26 days, despite the overall fall in such long stay admissions by 1982. There were no noticeable changes in the overall proportion of patients staying for six to 20 days between 1976 and 1982.

It is clear that the use of my beds for long stays (>26 days) has been reduced slightly but would be measurably more efficient if the increased number of patients suffering strokes could be moved into appropriate long term rehabilitation or care earlier. As the number and percentage of admissions for stroke has increased, provision for such patients in a district with pronounced social deprivation is especially necessary if erosion of acute general medical care is not to increase.

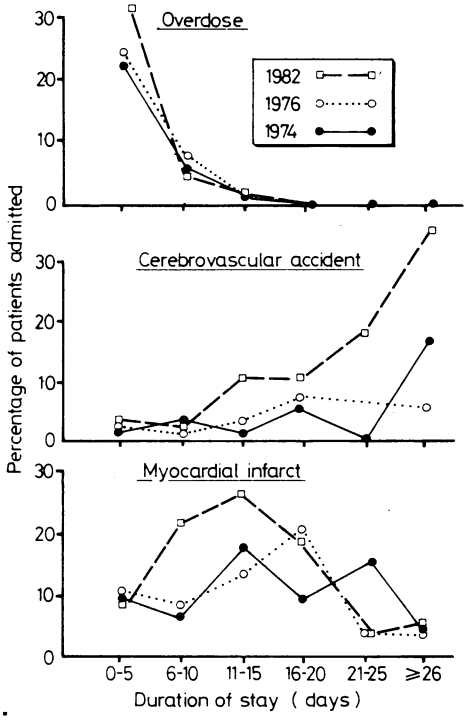
The longer stays in patients suffering

TABLE I—*No (%) of admissions in 1974, 1976, and 1982 by duration of stay*

Duration of stay (days)	1974	1976	1980
0-5	127 (34·7)	105 (30·8)	152 (37·1)
6-10	74 (20·3)	74 (21·7)	90 (22·0)
11-15	58 (15·9)	55 (16·1)	64 (15·6)
16-20	31 (8·5)	28 (8·2)	35 (8·6)
21-26	19 (5·0)	25 (7·3)	22 (5·4)
>26	56 (15·3)	54 (15·8)	46 (11·2)
Total of admissions	365	341	409

TABLE II—*No (%) of patients with overdoses, myocardial infarcts, and cerebrovascular accidents admitted in 1974, 1976, and 1982*

	1974	1976	1982
Overdoses	35 (9·5)	33 (9·6)	57 (13·9)
Myocardial infarcts	40 (11·0)	36 (10·6)	64 (15·6)
Cerebrovascular accidents	17 (4·7)	13 (3·8)	40 (9·7)
Total No of admissions	365	341	409



Duration of stay of patients admitted with overdoses, cerebrovascular accidents, and myocardial infarcts.