clinics or orthopaedic lists are dealt with in the other two weeks of the rota; during that time there is no commitment to new trauma. In this way there is no risk of night work leaving the surgeon jaded for routine work the following day. This is not a unique system, but this and other methods will have to be evolved to improve on safety of care.

P C MAY

Telford Hospital, Telford,
Shropshire TF6 6TF

1 Wilson AM, Weston G. Application of airline pilots' hours to junior doctors. *Br Med J* 1989;**299**:779-81. (23 September.)
2 McCoy DR. Application of airline pilots' hours to junior doctors. *Br Med J* 1989;**229**:974. (14 October.)
3 Kennedy B. Application of airline pilots' hours to junior doctors. *Br Med J* 1989;**299**:974. (14 October.)
4 Duncan JAT. Application of airline pilots' hours to junior doctors. *Br Med J* 1989;**299**:974. (14 October.)

Prevalence of antibody indicating Lyme disease in farmers in Wigtownshire

SIR,—We found the recent paper by Dr A G Baird and colleagues on *B burgdorferi* antibodies in Wigtownshire farmers[1] confusing. The methods state that patients with a serum antibody titre of ≥128 in the initial commercial assay were further analysed by enzyme linked immunoassay (ELISA) in a second laboratory. Table I suggests that 12 patients had a positive test result. However, five of these patients had a titre of only 1 in 64, showed low titres on ELISA, and had undetectable titres of specific IgG and IgM. This must represent a negative assay result and suggests that seven out of the 108 subjects (5·6%) had positive results on antibody tests. It is of interest that none of the patients suspected clinically of having Lyme disease had positive results on antibody tests.

The title of the article suggests that the authors have determined the prevalence of *B burgdorferi* antibodies in Wigtownshire farmers, but the initial test population was not selected specifically by occupation. Indeed, we are not told how many farmers are included in the 108 subjects. Although all the positive test results were obtained in farmers, this observation gives no indication of the true prevalence of *B burgdorferi* antibodies in the Wigtownshire farming population.

M A BAXTER
A D WRIGHT

General Hospital,
Birmingham B4 6NH

1 Baird AG, Gillies JCM, Bone TJ, Dale BAS, Miscampbell NT. Prevalence of antibody indicating Lyme disease in farmers in Wigtownshire. *Br Med J* 1989;**299**:836-7. (30 September.)

AUTHORS' REPLY,—We too were confused by the differences in the interpretation of a positive result between the Zeus immunofluorescence test and the ELISA tests. The reference laboratory where all the ELISA tests were performed suggested that a titre of 20 units could be considered as a weak positive, with a titre of 30 units clearly positive. We included some patients the results of whose screening fluorescence tests might have been considered negative at a titre of 64 but whose ELISA results were clearly positive. Repeat screening tests in cases 3 and 5 showed higher fluorescence titres.

Fluorescent antibody tests require a certain amount of subjective interpretation, and we suggest that a difference in titre between 64 and 128 may not be important. All of the interpretations challenged were based on serum samples that showed ELISA results >30 units with the exception of case 12, in which the serum showed a titre of 25 units. Unless evidence not available to us at the time of writing the article is presented we would confirm our original interpretation that all 12 patients had a positive assay result.

Patients chosen because their symptoms could have been attributable to Lyme disease all had other established diagnoses. None of these diagnoses were suspected of being inaccurate, and they were not challenged by our results. That was not true of our index patient, whose changed diagnosis and subsequent successful treatment for Lyme disease led to our interest.

Although the patients in our survey were not selected specifically because they were farmers, in fact 82 were. All seven patients whose results are accepted by Drs Baxter and Wright fell into this group and indeed five were dairy farmers. Our interpretation of these results would suggest that the prevalence of antibody indicating Lyme disease is 16·3% in dairy farmers.

A small survey such as ours in a thinly populated area indicates a greater incidence of positive results in dairy farmers than has been published. If our paper has drawn attention to the need for a reappraisal of current diagnostic methods and for a clearer definition of serological evidence of infection then we have succeeded in our aims.

A G BAIRD
J C M GILLIES
N T MISCAMPBELL

Sandhead and Glenluce,
Stranraer

B A S DALE
F J BONE

Dumfries and Galloway Royal Infirmary,
Dumfries

Colposcopy services in the West Midlands region

SIR,—Drs C B J Woodman and J A Jordan in discussing the wide ranging types of colposcopy services in the West Midlands[1] bring to our attention the implications for hospital services of call and recall schemes for cervical cytology. Owing to the lack of literature on this important aspect of prevention of cervical carcinoma the North Western Regional Health Authority designed a stochastic mathematical model to estimate resource requirements of various operational and clinical policies for management of cervical smear testing.[2] This model is now available as a computer package. The model is based on the current knowledge and recommended treatment of cervical intraepithial neoplasia and invasive carcinoma and accommodates a wide range of possible policy options. The output concentrates on the comparative changes in clinical activity, services, and costs resulting from call and recall schemes. Additional (marginal) costs and screening effectiveness indicators (numbers of lives and life years saved per year, the cost of each life saved, and the cost of each life year saved) have been estimated for different scenarios in which screening intervals, response rates, and treatment procedures are varied. In looking at the most cost effective method of running a cervical cytology screening programme the model has been used in a variety of ways.

Altering the management of women with minor cytological abnormalities seems to have little effect on the numbers of lives saved, but the cost per life saved is very sensitive to policies regarding clinical management. For example, if all women with cytological abnormalities are initially examined by colposcopy the costs of the service are greatly increased but with little apparent effect on saving lives. Other policies have also been examined. The extra cost of screening is very sensitive to the interval between screening tests, but the number of lives saved falls only gradually with more frequent testing. This agrees with the finding that with a screening interval of less than three years for women aged 20-64 the incidence of invasive cancer falls only slightly.[3]

Increasing the response rate to cervical cytology screening appears to have the greatest effect on saving lives and to be the most cost effective way of reducing mortality and the incidence of cervical cancer—the ultimate aims of the service. There are many inefficiencies in the current service, leading to inappropriate use of resources. All parts of the cervical cytology screening programme must endeavour to make more efficient use of resources; otherwise, the costs should be put to better use. In other words, the opportunity costs will become unacceptable.

L A DAVIES

Department of Public Health Medicine,
Manchester Royal Infirmary,
Manchester M13 9WL

1 Woodman CBJ, Jordan JA. Colposcopy services in the West Midlands region. *Br Med J* 1989;**299**:899-901. (7 October.)
2 Boyd A, Davies LA, Bagust A. Modelling the implications for hospital services of cervical cytology screening: a case history. *Journal of the Operational Research Society* 1989;**40**:529-37.
3 Intercollegiate Working Party on Cervical Cytology Screening. *Report*. London: Royal College of Obstetricians, 1987.

Training for general practice

SIR,—Dr Robin Hull in his leading article rightly emphasises the disparate needs of those entering vocational training for general practice.[1] Learners require space in the curriculum to develop their own skills with the help of imaginative teachers.

This situation is little different from that applying to the 5 year olds entering my local first school. As a school governor with special responsibility for overseeing curriculum development I should like to reassure Dr Hull that it is possible, even within the constraints of a national curriculum, to maintain the features of education that clearly we both value. It is the attainment targets of the curriculum that dictate the constraints on teachers. If the Joint Committee on Postgraduate Training in General Practice were to introduce a clinically based assessment (including items such as counselling skills) at the end of vocational training it would instantly ensure the place of communication skills and empathy in the curriculum.

I believe that we need an appropriate national curriculum in medicine in this country at the undergraduate level. If these skills were learnt by all and assessed early in undergraduate life and reinforced regularly throughout medical training our patients would be much better served.

GEOFF ROBERTS

Camberley,
Surrey GU15 2HJ

1 Hull R. Training for general practice. *Br Med J* 1989;**299**:996. (21 October.)

C reactive protein in the detection of deep venous thrombosis

SIR,—Dr E A Thomas and colleagues described an application of C reactive protein in the detection of deep venous thrombosis.[1] In their study 32 patients had a raised concentration of C reactive protein, with 14 of these having a normal phlebogram.

Deep venous thrombosis commonly occurs in the postoperative period, particularly after hip, prostatic, and pelvic surgery. Surgery itself is a potent stimulus for the production of acute phase proteins, including C reactive protein.[2]

We monitored C reactive protein daily in 20 patients who had major abdominal surgery with bowel resection. In common with other authors[3,4] we found that the C reactive protein response peaked on the second and third postoperative days. Subsequently, in the absence of a postoperative complication, the C reactive protein concentrations fell exponentially to preoperative levels or nearly

so. In the presence of a septic or non-septic complication (for example, deep venous thrombosis) the C reactive protein concentration either failed to fall exponentially as part of the normal response to trauma or rose again to a second peak. Hence an isolated raised C reactive protein measurement, say on the eighth postoperative day, could well be part of the normal response to trauma rather than an indication of a possible complication (for example, deep venous thrombosis). If these patients have serial postoperative measurements of C reactive protein then the normal response to trauma can be analysed, and should a second peak occur it can thus be interpreted as a sign of a possible complication.

This fact, coupled with clinical suspicion of deep venous thrombosis, may help in selecting patients who will need a confirmatory phlebogram.

A F DA SILVA
S SAGAR
K BARNES

Department of Surgery,
Clatterbridge Hospital,
Wirral,
Merseyside L63 4JY

1 Thomas EA, Cobby MJD, Davies ER, Jeans WD, Whicker JT. Liquid crystal thermography and C reactive protein in the detection of deep venous thrombosis. *Br Med J* 1989;**299**: 951-2. (14 October.)
2 Pepys MB, Blatz ML. Acute phase proteins with special reference to C-reactive protein and related proteins (pentaxins) and serum amyloid A protein. *Adv Immunol* 1983;**34**: 141-212.
3 Mustard RA, Bohner JMA, Haseeb S, Kasina R. C-reactive protein levels predict postoperative septic complications. *Arch Surg* 1987;**122**:69-73.
4 Sentag JJ, O'Keefe D, Marmion M, Wels PB. C-reactive protein as an indicator of infection relapse in patients with abdominal sepsis. *Arch Surg* 1984;**119**:300-4.

The GPs' contract

SIR,—I know I am not alone in being angry and disillusioned by the General Medical Services Committee's capitulation over our new contract. Here in mid-Surrey 60% of local general practitioners were prepared to resign if a large scale, properly coordinated campaign had been organised. In other areas this figure has been higher, but unfortunately there are many doctors who are resigned to increased and unnecessary work, loss of professional freedom, probable loss of income, and increasing interference from unqualified administrators. Many believe that resignation will hurt patients.

I believe that by not resigning we will be hurting patients more. The health service has always been underfunded and now is cash limited as never before. Our role as general practitioners is increasingly to ration services not provide them. Patients have to wait longer than is acceptable and often longer than they did before. Many are therefore going privately but only to our consultant colleagues, who are reaping the benefits. Unfortunately only the richest can afford this route and so, as with education, the less well off have no choice but to accept a second rate system. There is no mechanism by which they can contribute more to the health service to improve it to their benefit. If we do not resign we will be forcing the majority of patients to accept this second rate system, which reacts to cash limits and not demand.

Having capitulated we have also signalled our willingness to be dictated to, not only administratively but clinically. It is obvious that many doctors value the security of their job for life more than their independence, their integrity, or their professionalism. They will even accept more unnecessary work for less money and as a result will have the respect of neither the Department of Health nor our consultant colleagues, who must wonder why we want to be medical social workers rather than proper doctors.

If there was mass resignation of general practitioners, and thus effectively no government run primary health care system, we could set realistic fees such as those suggested by the BMA of £75 per patient per year. In combination with small additional fees this would provide more than enough finance to enable general practitioners to offer physiotherapy, minor surgery, blood tests, electrocardiography, and improved facilities and thus operate as proper doctors. Real competition would arise and hospital referrals should drop, thus enabling our hospital services to provide a proper service to those who really need it while we general practitioners coped better with the ones who do not. Patients could top up their contribution by small amounts to enable new or increased services to be offered within the primary health care environment, which I am sure they would be willing to do, particularly in rural areas, where travelling to district hospitals is so inconvenient.

To do nothing, as the GMSC has advocated, is to make general practice a medical backwater, restrict health care for patients, and pander to a cash limiting government.

TIM RICHARDSON

Epsom KT17 4QB

One law for the self governing . . .

SIR,—Newcastle Health Authority manages three acute hospital units—Royal Victoria Infirmary, Newcastle General Hospital, and Freeman Hospital—and the mental health unit. The unit general managers of the last three units have all "declared an interest" in self governing status with the approval of what appears to be only a minority of their consultant staff. The Royal Victoria Infirmary held a secret ballot of both consultant and junior medical staff resulting in a significant majority of both against a declaration of interest. No such interest was therefore expressed.

Nevertheless, we are not opposed fundamentally to change in the NHS. Indeed, we recognise that some change is necessary to reflect workload and quality standards. Because the Royal Victoria Infirmary is a major teaching hospital with over half its patients referred from outside its own catchment population the medical staff voted unanimously in favour of conducting a pilot trial on contracting and costing for such complex referral patterns. We applied formally to the Department of Health through the regional health authority for funding for such a trial and submitted a detailed protocol. So far there has been no official response from either the region or the department.

By contrast, the district health authority was recently allocated £318 000 by the regional health authority for distribution to its constituent hospitals to aid in the necessary preparations for white paper implementation. £25 000 was kept by the district to fund compilation of asset registers. A further £14 000 was allocated to each unit to use as it thought appropriate. The units which have declared an interest are to get this money immediately. The Royal Victoria Infirmary, on the other hand, will get the money sometime "before the end of the financial year." A further £65 000 was allocated to Freeman Hospital and the mental health unit to enable them to progress business plans and contracting and to strengthen their personnel and accountancy activities in order to become self governing in the first wave (see News, p 1181). Newcastle General Hospital was allocated a further £25 000 for business planning and was promised a further £40 000 if the business plan could show the hospital's ability to sustain self governing status. These amounts are to be incorporated in recurrent funding for these units from 1990 onwards and are subject to further increments as required by progress towards self governing status.

Apart from its £14 000 allocation, and despite the absolute necessity for the Royal Victoria Infirmary to prepare itself for revised capital allocations and contracting on the same time scale as the other units, the infirmary has so far been denied the extra funding. The medical staff of the unit are concerned about this differential funding and would like to know if other units not declaring an interest have been similarly treated and if such differentiation is deliberate government policy.

W RYDER
Chairman, Consultant Medical Staff Committee

Royal Victoria Infirmary,
Newcastle upon Tyne NE1 4LP

Health Education Authority in a time of adversity

SIR,—You conclude a scrapbook of items about the Health Education Authority (HEA)[1] by telling your readers that "the perpetual controversy surrounding the authority damages the reception of its work on many 'uncontroversial' topics." It certainly does. And the *BMJ* only adds to this false impression of perpetual controversy in its account of recent events at the HEA.

Of course there are differences of opinion with the government. As you rightly say, the issues of sex and healthy eating generate strong feelings and genuine differences of opinion, both scientific and moral. Controversy is inevitable. The HEA has the difficult task of providing clear and helpful advice on issues for which a consensus view is difficult to obtain.

You describe our decision not to publish in full a literature search into the determinants of healthy eating as a "dietary storm." It wasn't even a light shower. We didn't publish the report because it exceeded its brief and needed more editing than we had time to undertake. The *BMJ* rejects hundreds of papers every year for the same reason.

"Learning About AIDS," the pack for educators which we are supposed to have scrapped, is widely available and generally regarded as one of the best examples of educational material on the subject. We continue to fund an active programme of training and dissemination to encourage its use.

You rightly state that our dental health advertising campaign in the north west has irritated the sugar industry. It would be surprising if it did not, since it vividly illustrates the damage that sugar can do to children's teeth. What you neglected to add is that the posters are on prominent display and we have no intention of taking them down or changing them.

SPENCER HAGARD

Health Education Authority,
London WC1H 9TX

1 Delamothe T. Health Education Authority in a time of adversity. *Br Med J* 1989;**299**:1065. (28 October.)

New contract for government funded research workers

SIR,—The Association of Department of Health (DoH) and Department of Social Security (DSS) Funded Research Workers was established in 1988 as a direct result of the changes that were introduced, without warning or prior consultation, into the standard contract for academic research sponsored by the then Department of Health and Social Security (DHSS). Under the previous contract the researcher was free to publish on condition that the DHSS had had 28 days to offer any comments, which the researcher had to show he or she was aware of but was not required to incorporate in the final manuscript. By contrast, the new contract states that "Any publication of research material is subject to the prior consent of the Secretary of State, which consent shall not be unreasonably withheld." This change was considered by the Committee of Vice Chancellors