treatment is restarted and continued for a further 12 weeks.

We agree with the authors that self-administered subcutaneous heparin is safe and effective and has revolutionised the management of thromboembolism of pregnancy; we would encourage patients on long-term anticoagulants to discontinue oral warfarin and change to self-administered subcutaneous heparin well before conception takes place.

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¹ Griffith, G C, and Boggs, R P, *American Journal of Cardiology*, 1964, **14**, 39.

SIR,—The article by Dr Graham Spearing and others (3 June, p 1457) provides convincing evidence that subcutaneous heparin during pregnancy is safe and, for most women, effective. Their suggestion that this is the optimal method for all women exposed to the risk of pregnancy and requiring long-term anticoagulation requires careful evaluation, however, in women with prosthetic heart valves, especially as their group of 22 patients did not include any such women.

The efficacy of subcutaneous heparin in preventing recurrence of thromboembolism is assumed rather than proved. Badaracco and Vessey¹ found that, of 48 women who became pregnant after an episode of thromboembolism and who were not treated prophylactically, six had a suspected episode of thromboembolism. In the group tested by Dr Spearing and his colleagues, of eight women treated prophylactically because of an episode before pregnancy, one developed a suspected deep vein thrombosis (DVT). Another patient among the 14 in whom the episode occurred during the pregnancy developed a DVT during treatment. Their experience that the evidence of DVT subsequently disappeared with intravenous heparin is shared by experience in this hospital, where the use of subcutaneous heparin in at least two patients (of a total of 28 treated antenatally by various regimens) proved insufficient and at least temporary reversion to intravenous therapy was required.

In non-pregnant subjects with prosthetic heart valves the value of effective anticoagulation in preventing embolisation is overwhelming.² Most reports in relation to pregnancy are of occasional cases, but Tejani,³ in collecting data from 46 pregnancies, has emphasised the risk of maternal embolism without anticoagulation. Whether the degree of protection offered by subcutaneous heparin alone for the duration of pregnancy is adequate remains to be seen. To use subcutaneous heparin before conception in those planning a pregnancy would entail a number of months' treatment for some such women, and any increased risk of embolism compared with oral anticoagulation might have a substantial period in which to operate. Remaining on oral anticoagulation until pregnancy is recognised, however, fails to spare the patient the particular benefit of heparin in relation to the possible teratogenicity of oral anticoagulants. Evidence concerning the adequacy of protection afforded to women with prosthetic heart valves when pregnant must be based on observations in such women and not assumed from the lesser

risk in otherwise healthy women with previous thromboembolism. The price of failure in the women with prosthetic valves includes the hazard of arterial embolism.

Homograft valves, not usually requiring long-term anticoagulation, are preferred by many surgeons for women in the childbearing years and experience of pregnancy in women with prosthetic valves is limited. In two such women in this hospital subcutaneous heparin was used at the end of pregnancy only. In one cerebral embolism with good recovery had already occurred before pregnancy at the time of emergency replacement of the first prosthetic valve owing to incrustations. For most of the pregnancy the need to prevent embolism seemed paramount. The other pregnancy was complicated by twins and placenta praevia, and emergency caesarean section at 36 weeks for severe haemorrhage was complicated by massive extravasation of blood into the pelvic tissues even although oral anticoagulation had been replaced by subcutaneous heparin one week before the final antepartum haemorrhage. In a further patient two spontaneous abortions occurred while on oral anticoagulation and an adverse effect of warfarin cannot be excluded. This would seem a possible indication for conversion to subcutaneous heparin before conception should a pregnancy be desired. I would be grateful to receive details of any patients with prosthetic valves treated with subcutaneous heparin only for a substantial part of pregnancy. If the risk from embolism is no greater compared with oral anticoagulation the greater safety for the fetus seems a distinct benefit.

Until such evidence has accumulated it seems unwise to extrapolate from experience of the very different risk of venous thromboembolism.

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¹ Badaracco, M A, and Vessey, M P, *British Medical Journal*, 1974, **1**, 215.

² Gadbois, H L, et al, *Journal of the American Medical Association*, 1967, **202**, 282.

³ Tejani, N, *Obstetrics and Gynecology*, 1973, **42**, 785.

Facet joints and low back pain

SIR,—Please may I be allowed to reply to the letter of my friend Dr Mark Mehta (17 June, p 1624)? In this letter, while agreeing that the facet joints are an important element in the aetiology of back pain, he states his belief that one policy I advocate in the management of this huge problem—"organised neglect"—is a negative one. In contradistinction, I believe my attitude to be a positive one and by no means to exclude the valuable contribution that he and his colleagues and many others (including, I trust, myself) are making to relieve pain in patients who fail to respond to less elaborate measures.

However, "treatment" of any sort is not, I believe, the way in which the most common types of low back pain should be managed, since the basic problems are usually self-righting in any individual attack and recurrent attacks largely preventable. It is for this reason that I use the term "organised neglect" to help to concentrate the mind of the patient, and potential patients, on how they can care for their own back problems. I hope also that I am able to persuade at least some of my

colleagues that doctors will do more good by education with this problem than by any form of treatment not based firmly on education.

The arguments about the basic pathology in back pain, whether the lesion be in the facet joints, discs, or elsewhere, disguise the fundamental point that the common acute lesion is an acute sprain of one of these tissues. The chronic lesion is a chronic strain of one of these tissues and both types of lesion are self-righting up to a very late stage of most problems. They differ from strains of other joints and ligaments, such as the ankle joint, largely for these reasons: (1) the injured structures are part of a complex articulation surrounded by muscle which may go into spasm causing severe pain; (2) the injured structures are near nerve roots which, if irritated, will cause some impairment of nerve conduction; (3) the injured structures are in an inaccessible part of the body and hence an injury here may cause greater anxiety than would a similar sprain to a more superficial structure.

If the patient will accept this simple reasoning then much worry can be eliminated and one cause of increased muscle tension reduced, as he will appreciate that with simple guidance ("organisation") he can treat any attack and, more importantly, prevent most attacks of backache. The "neglect" element is to ignore his back, except for the advice given, as it does not have "discs going out" or "joints being displaced" in the vast majority of sufferers.

In an acute attack the acute spasm will be relieved by a variety of means (from hot packs to ice packs, from local injections to epidural injections, from massage to manipulations, from hypnosis to relaxation therapy). The spasm will stay away, in the usual minor sprain, if only the patient will (a) perform alternating spinal movements and (b) allow the irritated muscles frequent short periods of relaxation from the postural strain of holding the trunk erect—that is, "lie as though dead" for five minutes in each hour.

Initial relief and initial movement having been secured, then simple alternating movements (rotation and lateral flexion exercises and high-stepping "marking time" actions) will need to be continued for "one minute every hour on the hour" until all discomfort has gone, but healing of a sprain of worn structures of middle life is slow. Hence the advice that "the tortoise beats the hare in training after injury"—brave patients, who exercise through the pain barrier, do badly, and persistent cowards, who exercise within the pain barrier, do well.

After healing, and in chronic problems, the "organisation" includes the advice that "an exercise a day will keep the doctor away" by improving the tone of the back, belly, and buttock supporting musculature and retaining mobility of the lumbar facet joints. However, "any pain is a sprain" and hence all exercise must be painless. Coupled with the usual advice on avoiding unreasonable lifting and postural stresses, 90% of patients will be able to manage their own problems, leaving more time for more elaborate measures to be used for those with major lumbar instability and intervertebral disc protrusions.

I realise that the advice given differs little from that given by very many others for very many years. Nevertheless, because the problem of back pain remains a province where the doctor's failure to help often leads patients to seek relief from outside the profession, I

labour the point that we should try harder to teach "organised neglect."

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Diet and weight reduction

SIR,—Your expert (10 June, p 1529) supports the views of the questioner that there are some individuals (presumably adults) who fail to lose weight on a daily intake of around 1000 kcal (4.18 MJ).

Certainly there are obese people who do not lose weight with an intake as low as 1500 kcal (6.27 MJ) a day, as has been demonstrated by Miller and Parsonage.¹ But an equally well-supervised study in which the diet supplied 1000 kcal a day resulted in weight loss in every one of the 49 subjects we studied.² They had all claimed that they did not lose weight when keeping strictly to low-calorie diets, and 12 of the subjects maintained that they had used diets of 1000 kcal a day or even lower and still failed to lose weight.

One reason for the discrepancy between what people say and what can be demonstrated if conditions are sufficiently well supervised is that, unless every item of food and drink is measured accurately, people are not at all good at assessing their own consumption, whether or not they are overweight. Nor is it good enough to assume that individuals really keep to a diet while in hospital. We have measured,³ for several days, the calorie intake in 14 hospital patients who had been prescribed low-calorie diets. In 10 of these the actual intake was substantially more than that prescribed and in six instances at least 50% more.

We cannot therefore subscribe to the common belief that there are obese individuals who will not lose weight when their intake is restricted to 1000 kcal a day.

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¹ Miller, D S, and Parsonage, S, *Lancet*, 1975, **1**, 773.
² Yudkin, J, *Practitioner*, 1972, **209**, 352.
³ Davies, G J, et al, *British Medical Journal*, 1975, **1**, 200.

Home or hospital care for coronary thrombosis?

SIR,—It is always interesting to read the arguments of consultants and general practitioners for and against the hospital treatment of myocardial infarction. In your recent "Medical Controversies" article (13 May, p 1254) Dr Peter Carson argues that patients with acute infarction are best managed in hospital because physicians and cardiologists are more experienced in rehabilitating coronary patients and getting them back to work. There is no evidence that this is true, and there is reason to believe that general practitioners are better acquainted with the problems of guiding postinfarction patients back to full activity. The vast majority of hospitals spend infinitely more interest and money on the equipping and running of coronary care units than on the rehabilitation of the patient when he is recovering from the acute episode. Having been taken through the elaborate ritual of coronary care, most patients are dropped back into the community with very little or no hospital follow-up or help with the convalescent phase. It is the GP who has to cope with the

day-to-day problems of lack of confidence, with odd chest pains, faintness, fatigue, and other symptoms, or of denial of illness with over-eager return to the old way of life which helped create the illness in the first place.

I run a course of graduated physical exercises for patients recovering from myocardial infarction, using the facilities of a local sports centre. I believe that it is most appropriate that coronary rehabilitation be conducted by GPs in the community for the following reasons:

(1) Hospitals are mainly involved with acute problems and are much less concerned with the long-term care of patients. They have little commitment to following up the patient once he is over the acute illness and tend not to release personnel to such mundane tasks.

(2) General practice rehabilitation is cheap, employing an inexpensive permanent form of labour and using equipment provided by the community. My course, when fully established and properly funded, will have cost a capital outlay of about £600 with a running cost of about £20 per patient, which compares very favourably with the cost of keeping him in hospital for one day.

(3) The course, being away from the hospital environment, does not seem so like treatment and encourages the customer to regard himself as a normal person and not a patient. He is more likely to see training as fun and more likely to keep it up.

(4) Many patients who suffer infarction are kept at home and would not be able to benefit from a hospital-based programme.

It is now recognised by most cardiologists and general physicians that supervised exercise training is of great value to the majority of patients after myocardial infarction, and such programmes are widely available in some parts of the world. Hospitals in Britain, however, have failed to provide adequate coronary rehabilitation facilities, and I believe that the time is ripe for GPs, using community sports equipment, to fill this gap. If we fail to meet this need it will be right for coronary patients to band together to demand that such a vital, but neglected, part of their treatment be provided by the Health Service for which they pay.

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Correlation between cytomegalovirus infection and HLA-BW15

SIR,—In the course of screening several "panels" of volunteer, HLA-matched, but otherwise unrelated donors in connection with a marrow transplant programme it was noted that two panels, both sharing the tissue type HLA-BW15, had higher than average numbers of individuals (9/10 and 3/4) with antibodies (complement-fixing and IgG-immunofluorescent) to cytomegalovirus (CMV). On further testing of donors possessing this tissue type CMV antibodies were found in 16 out of 22 (73%). The donor population was drawn from healthy adults in the Greater London area and the frequency of CMV antibody for all the donors so far tested (mean age 34.4, range 21-59 years) was 49% (40/82), which is comparable to the 54% reported for an age-matched population examined in London in an earlier survey.¹ The 22 donors (mean age 35.3 years) with the tissue type HLA-BW15 (16 of whom were CMV-antibody-positive) were compared with the 60 donors (mean age 34.1 years) possessing other tissue types (24 of whom were CMV-antibody-positive) in a Fisher exact probability test, one-

tailed since the direction of the difference was predicted in advance. The analysis indicated a low probability ($P=0.009$) that the different frequencies of CMV antibody were due to chance alone.

The findings suggest that normal donors with tissue type HLA-BW15 either have greater susceptibility to CMV infection or respond more readily with antibody production than does the general population. A similar association in the mouse between CMV susceptibility and the murine major histocompatibility complex has recently been reported.² The same donors were also examined for antibodies to other viruses (herpes simplex, varicella-zoster, EB virus, measles, mumps, parainfluenza type 1, influenza type A, rubella, adenovirus, and *Mycoplasma pneumoniae*), but the results failed to demonstrate any obvious relationship between these infections and tissue type HLA-BW15. Since CMV is a double-stranded DNA virus, the other reported association³ of HLA-BW15, with systemic lupus erythematosus, is particularly interesting in this context.

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¹ Stern, H, and Elek, S D, *Journal of Hygiene*, 1965, **63**, 79.

² Chalmers, J E, Mackenzie, J S, and Stanley, J F, *Journal of General Virology*, 1977, **37**, 107.

³ McDermott, H O, and Bodmer, W F, *American Journal of Medicine*, 1972, **52**, 1.

Diabetic complications in childhood

SIR,—I wish to comment on your leading article on this subject (15 April, p 941).

Concerning the late prognosis of juvenile diabetes the two more recent and important works on this subject published in French are often forgotten. Firstly, François *et al*¹ studied 204 patients with onset of diabetes before the age of 16 and duration longer than 10 years. The diabetics were treated with a normal diet and daily adjustments of insulin dosage. At regular ophthalmoscopy retinopathy was present in 14% of patients after a duration of diabetes of 10 years, in 38% after 15 years, and in 43% after 20 years. There was a correlation with the degree of control, retinopathy being present in 17% of patients with good control, 35% of those with fair control, and 47% of those with poor control. Secondly, Lestrade *et al*² studied the degenerative complications in a group of 114 subjects diabetic before the age of 15 years and followed up for 20 to 25 years. Retinopathy was present in 55% of the patients and proteinuria in 17%. In these two studies, the frequency of retinopathy is reduced when compared with that in children on a strict regimen.³

Concerning the early diagnosis of infantile diabetic retinopathy by fluorescein angiography, only a few such studies on retinopathy are available in the literature: those of Barta *et al*⁴ and of Malone *et al*,⁵ the latter being mentioned in your article. These authors consider the presence of microaneurysms to be the earliest finding. In 1974 we published a preliminary