lives and visits are often infrequent. To this extent, therefore, I see the community hospital in populations in excess of 40 000 being of primary significance to the community in respect of acute diagnostic and surgical services at an appropriate level, and the geriatric and long-stay element as a part of the overall picture rather than the predominant feature. In populations less than this figure, however, then I would agree entirely with Dr Evans's comments about the role of community hospitals. This assumes that they can be viable in small communities, and this again is an area that, I would suggest, needs careful study in relation to the overall costs of these establishments set against the benefits to the community.

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Immunisation against whooping cough

SIR,—In showing that 75% of infants below 3 months of age with whooping cough were admitted to hospital and that 42% of all hospital admissions of children notified as whooping cough were infants of 5 months or younger, Drs Christina L Miller and W B Fletcher (17 January, p 117) have indeed confirmed the widely held belief that "in young infants whooping cough is still dangerous." They have not shown that "at all ages previous vaccination reduced the severity of the disease." What they have shown is that, among notified cases, a significantly higher proportion of the more severe cases and of those admitted to hospital were not immunised or were incompletely immunised. This does not mean that immunisation is necessarily protective. Of 8092 cases notified to them, 2940 (36%) were fully immunised while only 2424 (30%) were definitely not immunised.

In the same issue (p 128) Dr N D Noah claims that "current vaccines provide young children with substantial protection against whooping cough." What he actually shows, in a single tabulation of notifications uncorrected for age, is that the incidence of whooping cough is lower in immunised than in non-immunised children. But the rate of notified infection was still relatively high (50 per 100 000) in 1974 in children fully immunised with the new vaccine. There is no evidence in either article that immunisation of older children protects younger ones.

Several questions arise:

(1) What kind of immunisation is this for which success is being claimed? It is an immunisation which leaves those at highest risk (that is, below 6 months of age) unprotected and which, even when complete, is associated only with partial protection of those in the lowest risk groups.

(2) What kind of epidemiology is this which advocates immunisation by excluding consideration of factors other than immunisation? It is admitted in both articles and is indeed obvious from the data that factors other than immunisation must influence susceptibility to whooping cough. If immunisation is to be tested for efficacy the data must be standardised for domestic, demographic, and social factors. Whooping cough is much lower in incidence, hospital admissions are less frequent, and immunisation schedules are often better maintained in districts where socioeconomic conditions are favourable. The reported association between

protection and immunisation could be an expression of better social conditions and child care as much as of biological protection by pertussis vaccine.

(3) What kind of editorial policy is this which publishes incomplete data and promotes far-reaching claims about the efficacy of immunisation but refuses to publish collateral data questioning this efficacy?

Paradoxically, the articles by Drs Miller and Fletcher and Dr Noah reinforce the suggestion made in my letter in your issue of 10 January (p 93) that evidence about the efficacy of pertussis vaccine is lacking. But the questions remain.

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Low-dose heparin and the prevention of venous thromboembolic disease

SIR,—With reference to your leading article on this subject (23 August, p 447) there is, I believe, an important distinction to be made in terms of the population at risk and the efficacy of low-dose heparin.

Our study¹ showed that low-dose heparin was not an effective agent in the prevention of thromboembolic disease in patients following elective hip surgery, in this instance total hip replacement. This study was one which compared low-dose heparin, aspirin, warfarin, and dextran 40. The determination of fresh postoperative thrombi was by the routine use of venography by the technique of Rabinov and Paulin.²

Our findings were quite clear that low-dose heparin was not effective in this population group. Similar findings have been reported by Evarts and Alfidi.³ The report by Gallus *et al*⁴ on hip fractures also showed that low-dose heparin was less effective here than in other population groups. I think this is an important distinction to be made and feel that it should be called to the attention of your readers.

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¹ Harris, W H, *et al*, *Journal of Bone and Joint Surgery*, 1974, **56A**, 1552.

² Rabinov, K, and Paulin, S, *Archives of Surgery*, 1972, **104**, 134.

³ Evarts, C M, and Alfidi, R J, *Journal of the American Medical Association*, 1973, **225**, 515.

⁴ Gallus, A S, *et al*, *New England Journal of Medicine*, 1973, **228**, 545.

Management of babies with diarrhoea

SIR,—In temperate climates the dangers of hypernatraemic dehydration in diarrhoea and electrolyte overload due to concentrated milk formulae are well documented. It is also recognised that a proportion of children with diarrhoea have temporary lactase deficiency. These factors have encouraged recent management regimens which recommend that "all solid food and milk [are] taken out of their diet for the first 24 hours" (your leading article, 6 December, p 539) and "the most important principle of management is to stop all milk and solids initially."¹

I believe the most important principle in the management of diarrhoea is the replacement

of the water and electrolytes that have been lost. In tropical countries where diarrhoea, often associated with malnutrition, is a major problem² the withdrawal of food and especially breast milk is wrong. Such restriction can tip the nutritional balance against a child whose condition is borderline. Moreover, mother's milk, the main source of high-quality protein for many children, will decrease rapidly in the absence of suckling. Continuing breastfeeding is one useful way of providing some fluid and nutrition at the same time.³

Reports from tropical countries indicate that hypernatraemia is not a frequent consequence of diarrhoea but that hypokalaemia is common.^{4,5} This is probably because in poorer countries most children receive breast milk for many months. In industrial countries artificial feeding is much more common and diarrhoea occurs predominantly before 3-6 months of age, while the kidneys are still relatively immature. Since active oral rehydration is known to be effective^{6,7} I feel your leading article is too negative about the use of oral electrolyte fluids. In areas where the need for rehydration is greatest and facilities are least available the benefits of even the most simply compounded electrolyte mixture far outweigh the hazards of hypertonic intoxication.⁸

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² Scrimshaw, N S, *et al*, *WHO Monograph No 57*, p 216. Geneva, WHO, 1968.

³ Kingston, M E, *Environmental Child Health*, 1973, **19**, 168.

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Effect of levodopa on Parkinsonian tremor

SIR,—Until recently therapy in Parkinson's disease followed two major precepts. Firstly, that akinesia and rigidity respond best to levodopa and to a relatively slight degree to anticholinergic drugs. Secondly, that tremor can be satisfactorily treated by stereotactic thalamotomy only.

While agreeing with these sound clinical observations, one must point out that the two clinical situations represent almost opposite extremes of a clinical continuum, beginning at one end with pure akinesia and rigidity, then developing an admixture of tremor, and ending with pure tremor. One sees numerous patients who manifest akinesia, rigidity, and tremor. What seems as yet still not widely appreciated is that in many such patients treatment with levodopa causes definite improvement in all three aspects of their pathophysiology. Furthermore, the degree of improvement of tremor obtained is of value to the patient as well as being apparent to the physician.

The improvement in tremor caused by levodopa has been recorded by several workers.¹⁻⁴ My colleagues and I⁵ conducted a double-blind controlled trial to compare the relative efficacy of levodopa and amantadine in Parkinson's disease. Levodopa, of course, proved to be superior in a wide

variety of clinical performance tests. One finding of particular interest at that time was that levodopa caused an easily appreciable reduction in the severity of tremor—to an extent that was valued by the patients—in addition to its well-known effects on rigidity and akinesia. The mean Webster rating⁶ for tremor ($\pm$ SD) during a control period was 1.434 ± 0.71 (30 patients), and during treatment with levodopa it fell to 1.030 ± 0.67 (29 patients). Thus a definite improvement in tremor was obtained which was statistically significant ($0.0125 < P < 0.025$) and was of great value to the patients in about one-third of the entire group. The use of levodopa with decarboxylase inhibitors appears to be of similar value in respect of tremor.

It is suggested that when confronted by patients complaining of tremor alone or suffering from the effects of a varying admixture of tremor, akinesia, and rigidity one should commence treatment with levodopa and decarboxylase inhibitor. The dosage should be increased cautiously until a maximum degree of improvement is obtained in all three pathophysiological features. There are some patients, unfortunately, in whom levodopa seems to aggravate the tremor even when at the same time rigidity and akinesia are being improved. The place of thalamotomy should now be restricted to those patients whose tremor fails to respond satisfactorily—or is exacerbated—in response to levodopa.

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Trial by traction

SIR,—With regard to your leading article (3 January, p 2) I would support the need to mount bigger and better trials of lumbar traction but would make a plea for two conditions; firstly, to stop regarding traction as a single treatment, and secondly, for more accurate selection and diagnosis of cases.

Traction is not a single treatment. To prescribe traction is similar to prescribing aspirin. Traction is available in many different forms, different forces in relation to the body weight, different positions of the patient, lumbar flexion, lumbar extension, lateral flexion, etc. It is available in intermittent, continuous, or pulsed variety, and even the periodicity of the pulsing can be different. Future trials should more accurately discuss the reasons for the choice of the method of traction used, together with a detailed description of its procedure and control. Incidentally, in all traction treatments it is necessary to be sure that the harness is such that it applies the traction in the correct or chosen direction and does not slip.

In your article there was mention of a "suggestion that traction might help more when root signs were present,"¹ surely a significant statement when taken with the other report² that "no advantage for this form of treatment [was shown] in patients with lumbago and sciatica," both of which terms

are blanket and ill-defined description of symptoms and not diagnoses. It appears to me that rather more patients with "lumbago" and "sciatica" do not have their symptoms caused by discopathy than do from other causes. Indeed traction may help patients with a nipped synovial fringe in an apophysial joint (as does sometimes manipulation), but there are many causes of both these conditions, which, although mechanical, traumatic, or degenerative in origin, are unlikely to be affected in any way by traction save by the fact that traction is a time-consuming treatment which allows the passage of time. This time may enable nature to effect the healing or cure of symptoms.

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Thrombocytopenia, haemolytic anaemia, and sarcoidosis

SIR,—We read with interest Dr P d'A Semple's case report (22 November, p 440). His patient's clinical features overlap in part with our report¹ of a 63-year-old woman in whom sarcoidosis and idiopathic (immunological) thrombocytopenic purpura (ITP) coexisted. Dr Semple and Dickerman *et al*² seem to suggest that the occurrence of ITP in patients with sarcoidosis may reflect an underlying autoimmune diathesis in sarcoidosis. However, we are impressed by the paucity of reports of serological manifestations of autoimmunity and of clinical autoimmune diseases in patients with sarcoidosis.

We believe that the onus of proof is on those who claim an increased incidence of autoimmune diseases in sarcoidosis to demonstrate that such an association does not simply result from hospital patient selection bias.³

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Low-protein diets in chronic renal failure

SIR,—In your excellent leading article (29 November, p 486) emphasis was given to nutritional deterioration of patients with chronic renal failure. We have found that all prolonged dietary regimens of less than 40 g protein/day, despite a high intake of calories, are subject to this hazard and should be avoided when dialysis and transplantation facilities are available.

Plasma albumin and body weight are unsatisfactory markers of nutritional status but have been used to support short-term nitrogen balance data in the formulation of many low-protein diets. Consequently the progressive malnutrition caused by these diets

may remain undetected until severe clinical symptoms occur. However, some indication of nutritional deterioration is given by the decrease in plasma essential amino-acids^{1,2} and in certain plasma proteins such as transferrin^{3,4} and complement C3.^{2,5} These indices also show increases in response to improvements in nutrition.

Composite diets based on essential amino-acids¹ and keto-acids⁷ are frequently nitrogen-deficient, unappetising, and not readily available. However, there are advantages in supplying essential amino-acids in a palatable form as a supplement to restricted protein diets where nitrogen may be inadequate or marginally adequate (that is, less than 40 g protein/day). This therapy may improve nitrogen balance,⁸ increase the synthesis of liver proteins,² and in the long term minimise uraemic neuropathy⁸ and other symptoms associated with nutritional deterioration.

Further investigations are necessary to prevent the nausea that occurs in some patients and also to evaluate certain semi-essential amino-acids. Studies with our own formulation of essential amino-acids and, more recently, with a commercial product taken as a drink (Nephranutrin, Geistlich and Sons Ltd, Chester) show that tyrosine should be given.² Histidine is also necessary when protein intake is less than 20 g.⁸

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Incurable Patients Bill

SIR,—In your issue of 17 January (p 165) you publish the details of Lady Wootton's Incurable Patients Bill which is expected to receive a second reading in the House of Lords in February. The Bill sets out the right of a patient (a) to be relieved from the pain and distress of incurable disease, even if unconsciousness results from such relief, and (b) not to be kept alive if the brain becomes so damaged by accident or disease as to render him permanently incapable of giving directions. Undoubtedly this Bill is motivated by compassion for such patients, but I doubt if legislation is the right way in which to protect their rights, for the following reasons:

Firstly, the Bill seeks to regulate treatment by the law (the management of the dying is just as much a matter of treatment as the cure of the living). But however compassionate the reasons may be for doing this in this instance, if the Bill becomes law it will set a precedent which may well be extended into other areas of medical practice. It is fundamental to medical practice that treatment is based upon a doctor's competence and judgment.

Secondly, the relationship between doctor and patient is founded upon trust and responsibility. Most patients believe that