average not more than 300 m above the last, with a rest day every two or three days (or every 1000 m). The emphasis on distances between sleeping sites is important and implies that excursions in excess of these heights can be undertaken as long as they are followed by a descent before sleeping. On the Mount Everest and other trekking routes in Nepal the recommended itineraries conform to the above formula and are well accepted by trekkers.

Acetazolamide is of proved prophylactic value for altitude illness, but protection is not necessarily complete. Whether this drug should be offered to all travellers to high altitude is debatable. Indications for prophylaxis include rapid ascents and a history of altitude illness.[4] Allergy to sulphonamides is a contraindication to use. One 250 mg tablet twice daily is as effective as a daily 500 mg slow release capsule, and there is evidence that lower daily doses can be used.[4] Dexamethasone is not currently recommended for routine prophylaxis, but it may have a place in people who are allergic to acetazolamide or who must ascend rapidly for rescue or other purposes.[5]

Pollard's lack of enthusiasm for the portable hyperbaric chamber is disappointing. This device has had a major impact on the treatment of altitude illness, and few with experience of using it remain unimpressed by its effectiveness. Controlled trials are difficult to organise because of ethical considerations, but at least one study has had favourable results.[6] Whenever possible hyperbaric treatment should be used in conjunction with descent.

Regardless of other considerations, for altitude illness the most important prophylaxis is a sensible graded ascent; the only definitive treatment is still descent.

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Long term problems after obstetric epidural anaesthesia

EDITOR,—C MacArthur and colleagues' study of long term problems after obstetric epidural anaesthesia has important deficiencies.[1] In their discussion the authors point out that the results do not necessarily imply a causal relation, and, indeed, it is hard to imagine how initially uncomplicated lumbar epidural anaesthesia can cause long term tingling in the hands or migraine, for example.

Nevertheless, the authors prefer to emphasise the causal possibility in explaining the increased frequency of symptoms in the group who had epidural anaesthesia (which for some reason also includes women who had spinal anaesthesia). Nebulous phrases such as "initial stresses which in some cases required postpartum triggers" are used to fit the results of complex statistical techniques, although a more plausible explanation, such as the possibility of personality differences between women who request epidural anaesthesia and those who do not, is not even mentioned. A woman's personality may affect her pain threshold, influencing her decision to opt for epidural anaesthesia, and may also independently influence the development of symptoms such as those described. The possibility of a slight difference in personality among the epidural group being responsible for a slight, albeit significant, increase in symptoms is conceivable and its absence from the discussion a serious omission. The control group shows that it is possible for a woman to develop these symptoms without having epidural anaesthesia.

The study received wide prominence in the lay press, and the public may, quite reasonably, have been impressed by the study's size. Most members of the public, however, are likely to confuse association with causation, with a detrimental effect on their perception of epidural anaesthesia. Though not wishing to be complacent about the potential effects of epidural anaesthesia, I think it unfortunate that the authors have failed to identify a more simple, alternative explanation for their results. For this reason, and the others given, I agree with the authors that different investigational methods are needed.

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1 MacArthur C, Lewis M, Knox EG. Investigation of long term problems after obstetric epidural anaesthesia. *BMJ* 1992;**304**:1279-82. (16 May.)

AUTHORS' REPLY,—We agree with A M Cohen that differences in the pain thresholds or personalities of women opting for epidural anaesthesia may have influenced their later reported symptom rates. We sought evidence that this might be the case but could find none. This was discussed in our earlier paper[1] and in our reply to correspondence about that paper,[2] and also, and at length, in our book on the overall study.[3] The journal's editorial staff and a referee asked us not to repeat these already published findings and discussions. We would, however, be happy to pursue these points further with anyone who, after reading the earlier publications, still has questions or comments. Cohen's note that women who had spinal anaesthesia were included in the epidural group is incorrect; these women (n=160) were analysed separately.

Although we identified a possible causal mechanism for backache and showed evidence to support it,[1] we agree with Cohen that our results do not prove causality, and we stated this clearly in our paper. Indeed, this was why we called for further examinations of the problem with different investigational methods, including randomised trials, and we hope that we may prompt others, as well as ourselves, to take up this call.

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Site of injection for vaccination

EDITOR,—I was sad to see the photograph used to illustrate Clare Dyer's news item on pertussis and brain damage.[1] This shows vaccination by injection into the left deltoid region close to the tip of the shoulder. Although the article relates specifically to pertussis vaccine, which is given by intramuscular or deep subcutaneous injection, the photograph could be taken as implying that the site shown is acceptable for general use, including for BCG vaccination. My experience suggests that this is a popular misconception.

Referrals of children and particularly girls for management of hypertrophic scars and keloids resulting from vaccinations at the tip of the shoulder and high on the arm are common, and prevention is infinitely better than any available cure. Conservative management with silicones and topical steroid preparations is of limited value and associated with some morbidity, and intralesional steroid injections are painful and require general anaesthesia in children. The scar resulting from excision is longer than the original and equally prone to hypertrophy and keloid formation. Revision surgery may liberate encapsulated vaccine, resulting in a more violent vaccination reaction than the original injection and an even worse final scar when healing eventually ensues.

The Department of Health's guidelines regarding vaccination specifically exclude the upper arm above the deltoid insertion as a site for BCG vaccination,[2] and the *British National Formulary* advises that injections of BCG vaccine should be at the level of the deltoid insertion and not higher on the arm and also states that the tip of the shoulder should be avoided.[3] The deltoid insertion lies roughly halfway between the tip of the shoulder and the lateral epicondyle of the humerus and definitely not near the site shown in the photograph.

The only vaccination for which a specific site on the upper arm is recommended is rabies; for all other injectable vaccines the upper and lateral surface of the thigh is a much better site as it has much greater muscle bulk, is far less prone to poor scarring, and is much less frequently exposed to view.

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Sigmoidoscopy in general practice

EDITOR,—Both Gregory P Rubin's short report[1] and the accompanying editorial[2] on proctoscopy and sigmoidoscopy in general practice cite the need for adequate training for general practitioners, but neither highlights the requirement for adequate disinfection procedures. Inadequate cleaning could result in the transfer of potentially harmful pathogens—for example, salmonella and hepatitis B virus.[3]

Rigid sigmoidoscopes can be easily sterilised in an autoclave after thorough cleaning. Flexible sigmoidoscopes, however, must be disinfected in glutaraldehyde as recommended by the British Society of Gastroenterology.[4] Glutaraldehyde is an irritant disinfectant which, under the Control of Substances Hazardous to Health Regulations,[5] must not be present in the working environment in concentrations above 0·2 ppm.[6] It can cause sensitivity problems such as asthma, dermatitis, and sinusitis. Consequently the equipment required for handling it is more sophisticated and expensive than an autoclave. A closed automatic washer disinfector or an open washer and disinfector totally encased in a fume cupboard with an extractor system is required. Either system will cost about £15 000.