fore repeated at a serum dilution of 1:20 after absorbing with double the quantity of anti-G antibodies, and unequivocal positive results for parvovirus B19 IgM were then obtained. It would be unfortunate if high concentrations of parvovirus B19 IgG were to mask the laboratory confirmation of acute infection with less sensitive techniques when the diagnosis was suspected clinically.

With regard to the management of an outbreak of parvovirus B19 infection, we have prepared a fact sheet for professionals and an explanatory leaflet for parents which we are happy to make available.

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1 Pattison JR. Human parvovirus B19. *BMJ* 1994;**308**:149-50. (15 January.)

Consider short courses of antibiotics

EDITOR,—The Department of Health's determination to reduce prescribing costs will leave many general practitioners looking for ways to do this without harming their patients; perhaps they should consider the duration of the courses of antibiotics that they prescribe for uncomplicated infections. The preferred duration may occasionally be three or even 10 days, but generally it is either five or seven days—though there is no reason to believe that seven days is ever better than five. A study that we have conducted indicates the confusion surrounding this issue and the cost of the two extra days' treatment.

We obtained data from the Prescription Pricing Authority for 1992-3 for all prescriptions for tablets or capsules of amoxycillin, ampicillin, cephalexin, and erythromycin at 250 mg and 500 mg strengths (omitting ethinyl succinate erythromycins); phenoxymethylpenicillin 250 mg; trimethoprim 200 mg; and co-trimoxazole 400/80 mg. We analysed only items prescribed for short durations and categorised them as five day, seven day, or other by applying standard dosage-frequency to the size of the item: 21 and 15 capsules were commonest for amoxycillin 250 mg, and we took these as seven and five day courses respectively.

Nationally, 36·8% of courses were for five days (5 149 001/13 973 878) and 47·1% for seven days (6 576 613/13 973 878). Only for phenoxymethylpenicillin did five day courses clearly exceed seven day courses, though for ampicillin the split was roughly even. There was great variation among regions (with five day courses predominating in South Western and Wessex) and among family health services authorities.

To look at variation among doctors we studied singlehanded practices and excluded items known to have been given by deputies, locums, and trainees. For 1817 practices there were 816 062 items, with seven day courses again more common except in the case of phenoxymethylpenicillin. Analysis of the 11 preparations combined showed that most practices used both durations of courses, but for the individual preparations there was considerable polarisation. Doctors varied the duration according to which antibiotic they gave but differed over which antibiotic should have which duration. Doctors in partnerships probably behave like their singlehanded colleagues in this respect.

Nationally the cost of the extra two days' treatment lay between £1·9m and £7·2m, depending on whether it was calculated on the basis of generic or brand leader prices. Had we included the liquid formulations and every other antibiotic, the cost would have been much higher. Some antibiotics are packaged as seven day courses, and this encourages doctors to waste money; original pack dispensing is likely to result in even more waste.

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Adult epiglottitis

Cefuroxime is effective

EDITOR,—Jonathan H Raphael comments on the likely aetiology and antibiotic treatment of epiglottitis in adults.[1] He describes a case caused by *Streptococcus pyogenes* in which improvement occurred only after benzylpenicillin was added to cefuroxime. The organism "proved sensitive to benzylpenicillin but resistant to cefuroxime." While no one would question that benzylpenicillin is the antibiotic of choice for serious infections due to *S pyogenes*, the author does not make clear whether he is describing clinical or microbiological failure with cefuroxime; the two are very different. He does not mention antibiotic doses to permit comment on clinical failure. Nor does he state how it was decided that the organism was resistant to cefuroxime. *S pyogenes* is exquisitely sensitive in vitro to both benzylpenicillin and cefuroxime, with minimum inhibitory concentrations of the order of 0·007 and 0·06 mg/l respectively. The recommended breakpoint minimum inhibitory concentration for cefuroxime is 4 mg/l.[2] If the minimum inhibitory concentration of this isolate is considerably higher than the figures quoted here then it is of great interest to microbiologists and clinicians.

Empirical treatment of any serious infection must cover the most likely pathogens. Cefuroxime would provide that cover in adult epiglottitis. Once an organism has been isolated, treatment may need to be changed to the most appropriate antibiotic for that organism. Clinical failures can occur with any antibiotic but must be distinguished from in vitro resistance.

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1 Raphael JH. Adult epiglottitis. *BMJ* 1994;**308**:719. (12 March.)
2 British Society for Antimicrobial Chemotherapy. A guide to sensitivity testing. *J Antimicrob Chemother* 1991;**27**(suppl D).

Seek microbiological advice

EDITOR,—I was both surprised and dismayed to read the brief case report presented by Jonathan H Raphael.[1] My surprise related to his erroneous microbiological statement and my dismay to the lack of consultation with the local microbiology laboratory before publication of his letter.

Any microbiologist would recognise that β haemolytic streptococci group A are sensitive to both cefuroxime and benzylpenicillin and would not report them as resistant to cefuroxime. The argument that antibiotics effective against *Haemophilus influenzae* are insufficient in adult epiglottitis is therefore incorrect and not supported by this case. Serious sepsis, such as epiglottitis in an adult, should ideally be managed in consultation with a microbiologist. Any publication including microbiological data and their interpretation should also involve the microbiologist.

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1 Raphael JH. Adult epiglottitis. *BMJ* 1994;**308**:719. (12 March.)

Reye's syndrome

EDITOR,—We agree with John F T Glasgow and Raymond Moore that Reye's syndrome is a heterogeneous disorder.[1] Indeed, it is a non-specific clinicopathological entity, the microvesicular lipid accumulations evident in the liver on light microscopy now being considered to be a non-specific finding for which there are many other causes.[1,2] Electron microscopy is now recommended, but in the epidemiological studies reported it has been done in relatively few cases. With regard to aetiology, it is clear that the diagnosis of Reye's syndrome has been revised recently in favour of an inherited metabolic disorder in many patients; other patients are nowadays more correctly diagnosed as having viral disease or an escalation of symptoms induced by antiemetics, whose side effects are now better recognised.[2]

This improved diagnosis, however, implies that the American and British epidemiological studies that suggested a link between Reye's syndrome and aspirin were done on a heterogeneous group of children with different diseases. This fact alone weakens their hypothesis. In the studies carried out by the Centers for Disease Control only the drugs used before the onset of severe vomiting were registered; thus drugs—for example, antiemetics—given between the onset of vomiting and admission to hospital were excluded. Moreover, the Ohio survey first started by registering all drugs taken throughout the illness, but when these data indicated that not only the use of aspirin but also that of phenothiazines and trimethobenzamide hydrochloride was significantly greater in cases of Reye's syndrome than controls the questionnaire was revised.[3] Only the drugs given before the onset of vomiting were then registered, and thus the same bias was introduced as in the other surveys.

Defining the day of onset of severe vomiting as the onset of Reye's syndrome is arbitrary and results in incorrect data on use of drugs. This arbitrary definition is the key to the whole theory. Indeed, there is no proof that vomiting reflects the early stages of cerebral oedema or the onset of Reye's syndrome; vomiting is often a symptom inherent to the viral infection.[2] And in some patients the "encephalopathy" was misleading extrapyramidal reactions induced by antiemetics.[2]

In the British risk factor study the use of antiemetics was significantly higher in patients with Reye's syndrome than in the comparison group.[4] Indeed, of 106 patients with Reye's syndrome, 33 had taken at least one antiemetic or antihistamine, or both, before admission compared with 17 of the 185 control patients ($P<0·0001$); of these, 15 patients with Reye's syndrome versus three controls had taken an antiemetic such as metoclopramide ($P=0·0001$).[5] (S Hall, personal communication). The British data and the analysis of the Ohio study[3] show that not only the use of aspirin but also the use of antiemetics, phenothiazines, or other antihistamines is significantly greater in cases than controls.

Why then do people repeat that the only link is the one between aspirin and Reye's syndrome? Would it not be more logical to point to the antiemetics known to be neurotoxic? Their possible role was suggested by the Food and Drug Administration in 1976.[5] The apparent decline of Reye's syndrome is not a factor in favour of a link with aspirin as increased recognition of metabolic,