at 9-10 months to 73% at ≥15 months,[3] and in Thai children the mean antibody titres were 62, 75, and 92 after vaccination at 9-10, 11-12, and 13-14 months, respectively.[4]

Even more serious is the adverse effect of an early dose on subsequent response: children vaccinated at both 8 and 15 months had a final antibody titre which was only 75% ($p<0.0001$) of that reached with a single dose at 15 months.[5] Nor is high dose Edmonston-Zagreb vaccine the manifest solution that Dr Rudd implies for those who advocate early measles vaccination: the titres in Gambian children who received this vaccine at 4 months were 60% lower even than those achieved with the usual dose of Schwarz vaccine at 9 months.[6] As with diphtheria and polio, elimination depends on a high level of herd immunity, best achieved by a maximal individual response. For measles (with mumps and rubella) this means waiting until 15 months in any country.

The same reasoning applies to pertussis, except that the child gives a good immune response at a younger age and the whole schedule of three doses can be completed by 6 months, as Dr Rudd advocates. This is achieved world wide by a popular and effective schedule with doses at 3, 4, and 5 months. The wisdom of starting any earlier is not yet established. Maternal antibody persists for several months.[7] As with measles, a dose given too early depresses the immune response to subsequent doses.[8] Immunity to pertussis requires an adequate response to each of the type specific agglutinogens[9]; there is no evidence in Dr Rudd's references that this is produced, in preterm infants or others, by starting immunisation before 3 months.

Let us continue to break records with vaccine uptake, but let us fix our eyes on good herd immunity by using schedules of known efficacy. Elimination of these diseases is achievable in the new decade if we act on available evidence.

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SIR,—Dr Peter T Rudd points out an increase in the national average immunisation rate for pertussis, from 65% in 1985 to 80% in late 1989.[1] Vaccination against whooping cough is the most effective measure to control the disease. Concerns about the safety of the vaccine contributed largely to the low uptake in the late 1970s and early 1980s. In 1985 a national campaign was launched to promote the safety of the vaccine, aiming at an uptake of over 90%. In that year the uptake of whooping cough vaccine in the Grampian region was 85%, and it continued unchanged through to 1989-90.

To evaluate the effects of the national campaign we surveyed by postal questionnaire the parents of children born in 1985, living in the Grampian region, and who had not received the full primary course of vaccination against whooping cough. Our computer records showed that 982 (15%) of all children born in 1985 had not had the vaccine: 108 because of medical contraindications and 442 because of parental refusal; no reason was stated for the others. We sent a simple postal questionnaire to the parents of every fifth child on the alphabetical list. Thirteen of these 196 families could not be traced; 118 families responded (64%). Analysis of their replies showed that 44 children (37%) were incorrectly recorded as not immunised; nine had been born and immunised overseas, 18 in the United Kingdom but outside our region, and 17 within our region.

The parents of 74 children (63%) confirmed that their children had not been immunised against whooping cough: seven because the child had convulsions, 40 because a close relative of the child had convulsions, 23 because of parental choice, three because the child was adopted (and lacked family history), and one because of a severe reaction to a previous dose. Only one child had an absolute contraindication against vaccination in accordance with the current recommendations of the Joint Committee on Vaccination and Immunisation.[2]

Analysis of the responses of the parents who had chosen to refuse the vaccine showed that four have since changed their attitudes towards the vaccine and have immunised or indicated that they would immunise their subsequent children. Thirteen continued to have reservations against the vaccine and had not or would not vaccinate their subsequent children. Six were still undecided.

This study highlights some of the difficulties in improving the uptake of whooping cough vaccine. It seems that computerised records underestimate the actual rate of vaccine uptake because of incomplete entry of data, ineffective procedure for transfer of information between health authorities, and the lack of an effective and reliable follow up procedure for those children who were not immunised in the first year of life. Also it seems that the campaign for the promotion of whooping cough vaccination is not well targeted towards those who refused to vaccinate their children and has failed to offer them the opportunity for late vaccination. It is hoped that the current prominent role of general practitioners in administering the vaccine and following up those who missed the primary course of immunisation will fill the present gaps in the system.

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Postviral fatigue syndrome

SIR,—Dr J W Gow and colleagues showed a significantly higher incidence of virus-like material in the muscles of patients with the postviral fatigue syndrome than was seen in a control group,[1] but the nature of the control group makes it difficult to ascribe aetiological importance to this finding.

The authors defined their patient group very precisely, and all the patients gave a history of a viral-type febrile illness of such severity that they were confined to bed for several days. The controls and patients showed similar serological findings, but the paper does not state how many of the controls also gave a history of clinical viral disease. A valid control group should consist of subjects who, like the patients, also gave a history of viral infection but who had not subsequently developed the postviral fatigue syndrome. Without controls of this type it is not possible to establish that the presence of virus-like material in muscle is in any way related to persistent symptoms. One cannot exclude the possibility that the greater frequency of virus-like material seen in patients is anything more than an incidental marker for relatively recent viral infection.

Another interesting feature of the paper was the high proportion of the professional classes among the patients (35 of 60). This seems difficult to explain on the basis of a virus infection but would support the view held by some that the condition is stress related and of psychological origin.

The authors recognise and discuss the difficulties of accepting that the condition is due to viral infection and with admirable reticence conclude only that the virus-like material found in muscle may be of aetiological significance. At present the condition remains without established morphological abnormalities and without an identified infective agent. The aetiology is still sub judice.

It is a pity that, in contrast to the caution shown by the authors, the mass media have no such reservations and have widely publicised this paper as "proof" that the condition is an established viral disease. I am afraid that we are now likely to see an increased number of patients complaining of the symptoms.

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DRAMS scheme

SIR,—In his review of DRAMS (drinking reasonably and moderately with self control) Dr Robert Clarke suggested that the cost of the videotape and booklets might deter doctors outside Scotland from using the scheme.[1]

The Scottish Health Education Group would like to emphasise that the DRAMS scheme is designed to provide DRAMS kits free of charge to all doctors who undergo the one day DRAMS training course. While it is clearly out of the question that the cost of DRAMS outside Scotland be borne by the Scottish group, this does not mean that general practitioners will have to finance the scheme. It is anticipated that, in view of existing reciprocal agreements, the Special Health Promotion Authorities in England, Wales, and Northern Ireland will cover these costs directly or through sponsorship.

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Should religious circumcisions be performed on the NHS?

SIR,—We were surprised to read the views of Dr J Cohen and Mr N Zoltie on pain and pain relief in neonates and infants in their letter about religious circumcision.[1]

The subject of pain in neonates is controversial and emotive. Classic teaching stated that neonates do not feel pain, but recent thinking has questioned this. Neonates suffering from pain exhibit all the appropriate responses such as tachypnoea, tachycardia, crying, and withdrawal.[2-4] Is it correct to assume that neonates do not suffer pain just because we are unable to assess and measure the