medication during pregnancy may be hazardous to the fetus, particularly if it is already in jeopardy.

A 32-year-old hypertensive gestational diabetic with a poor obstetric history and taking 250 mg methyl dopa four times daily was admitted to hospital at 30 weeks' gestation because of hypertension (blood pressure 150/100 mm Hg). A cardiotacograph trace on admission was normal. Four days later baseline variability was decreased and a deceleration was noted after a contraction. A repeat trace the next day was normal. Eight days after admission a trace showed depressed baseline variability. At this time the medication was changed to oxprenolol because of worsening hypertension. Two days later a trace showed a baseline of 100 to 110 beats per minute with poor baseline variability. Amniocentesis was performed at 32 weeks for lecithin to sphingomyelin ratio with a view to delivery, after which the fetal heart rate remained unchanged. Despite this, the fetus died several hours later.

The fetus was in difficulties before the change of medication, but the beta-blocking effects of oxprenolol may have produced the depressed baseline fetal heart rate and reduced the fetal ability to deal with hypoxia, precipitating its demise.

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Whooping-cough vaccination

SIR,—There is probably broad agreement with Dr Alastair G Ironside (2 June, p 1488) that "erythromycin prophylaxis is the best practical approach to the protection of the vulnerable infant *when whooping cough affects a family*" (my italics). The Royal College of General Practitioners may well be able to assure us of this with its current trial, which Dr Clifford R Kay mentions (31 March, p 892).

This will not, however, answer Dr David Turner's concern (31 March, p 892) about getting parents to give an antibiotic four times a day to a well child for two weeks. As he says, "it is difficult enough to get them to complete a five-day course for an ill child"—not to mention a course of only three doses of pertussis vaccine. Moreover, there would be the problem of diagnosing the initial pertussis infection accurately in the older sibling, especially if partially vaccinated. And a serious danger in a more widespread use of antibiotic would be the development of drug resistance.

Surely what we should do is to prevent whooping cough from affecting a family. Indeed, it is on the value of herd immunity that I am inclined to part company with Dr Ironside, who concludes that "whooping-cough vaccination confers individual protection but not herd immunity," and who suggests that the disease continued to spread unchecked in the community despite vaccination of three-quarters of the population before 1974.

If we vaccinate only infants, it will take 10-15 years to produce herd immunity against whooping cough in the relevant child population. Good pertussis vaccine has never reached anywhere near 75% of this population in Britain. Much of the 1960s vaccine was in-

effective,¹ owing to lack of factor 3 and adjuvant. Only from 1968 to 1974 did good vaccine reach 75% of each year's infants, so that three-quarters of the children aged 1-7 years became immune; and this progressive decrease in the proportion of susceptibles steadily reduced the size of outbreaks. From 1974, however, as Dr Michael Church has shown (20 January, p 195), the mass media have ensured a succession of falls in the vaccination rate—to less than 40%—producing a marked increase in susceptibles and the biggest outbreak of whooping cough for many years.

In Britain, then, herd immunity against whooping cough has never been given an adequate chance to develop. But, as with rubella vaccine (14 July, p 129), some of us are inclined to expect immediate results from what was designed as a long-term measure. In countries with less parental choice, it may be possible to immunise over 90% and virtually eliminate whooping cough.² The option is open for British parents to reach a similar goal. Let us beware, though: popular opinion here is now being moulded less by the experts than by the mass media.

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¹ Public Health Laboratory Service, *British Medical Journal*, 1969, **4**, 329.

² Zakharova, M. S., et al, *Journal of Hygiene, Epidemiology, Microbiology and Immunology*, 1977, **21**, 128.

Measles and vaccine protection

SIR,—During the year 1978 there was an epidemic of measles in many parts of the country. In the Mole Valley District Council area 651 cases of measles were notified by general practitioners and others during the year. It was decided to investigate how many of these children had had measles vaccination prior to contracting the disease.

Questionnaires were sent to all parents of children affected and to the few adult cases, and a stamped addressed envelope was included for reply. These requested information on the following points: (a) whether vaccination had taken place; (b) whether the illness was mild or severe; (c) any complications; (d) what these were.

Of the 651 questionnaires sent out, 495 replies were received. Eleven were returned marked "not known at this address," etc. The results are given in the table.

Measles in vaccinated and unvaccinated groups

No vaccine			Vaccine protected		
Mild	Severe	Total	Mild	Severe	Total
189	159	348 (70.3%)	92	55	147 (29.7%)
			Complications		
0	34 (9.8%)		0	18 (12.2%)	
Chest	11			7	
Ear	9			4	
Eye	12			4	
Thrush	1			3	
Diabetes mellitus	1			0	

Although these figures give no indication of the attack rate of measles it is interesting to note that 29.7% of measles cases in the survey had received prior protection by vaccination. Of these 147 cases, 55 had a relatively severe illness and 18 had complications. In fact,

the complication rate of 12.2% is higher in this group than the rate of 9.8% in the unprotected. As the numbers of complications were small it was not thought worthwhile to use significance tests. These figures do, however, indicate that the protection given by measles vaccination in this district is not as high as one would have expected from previous studies¹⁻⁵—that is, around 90%—a figure also suggested by the recent short report on a trial in Cameroon (14 July, p 99).

The vaccine is very unstable above the recommended storage temperature and transport delays, industrial action, etc, may be responsible locally for the very unsatisfactory situation. Investigations have shown that some general practitioners have been receiving vaccine through the post and it is possible that the efficacy of the vaccine was poor at the time of administration. Further study has been given to the problem. It is obviously imperative that the manufacturer's instructions are strictly observed.

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¹ Medical Research Council, *British Medical Journal*, 1965, **1**, 817.

² Medical Research Council, *British Medical Journal*, 1966, **1**, 441.

³ Medical Research Council, *British Medical Journal*, 1968, **2**, 449.

⁴ Medical Research Council, *Practitioner*, 1971, **206**, 458.

⁵ Medical Research Council, *Lancet*, 1977, **2**, 571.

Induction of labour using prostaglandin E₂ pessaries

SIR,—While induction of labour by the prostaglandin method, as advocated by Mr J H Shepherd and others (14 July, p 108), shows no little promise for the future by virtue of its relative ease and simplicity, I should like to draw attention to two suggested limitations.

The first concerns the demerits of what amounts to a "forced induction" when the cervix is unripe. Deliberate ripening of the cervix is indeed occasionally indicated but such indication only rarely arises when the problem is suspected postmaturity. It is generally agreed that when a pregnancy has reached T + 10 maturity, the cervix will with very few exceptions have become ripe; these exceptions have been assessed as amounting to 5%. The unripeness of the cervix may therefore be a valuable warning sign that the maturity may have been overestimated and points to the need for reappraisal of the menstrual history, the antenatal records, and the liquor:fetus ratio; as a result, induction may be advantageously waived—the facile induction is not without penalty. The second limitation of the method is the high cost of prostaglandin.

Balanced against these limitations, however, are the undoubted benefits of prostaglandin induction.

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SIR,—The blanket use of prostaglandin E₂ pessaries, as reported by Mr J H Shepherd and his colleagues (14 July, p 108), does concern me. While they did draw attention to the need for fetal monitoring in such patients, I wonder how satisfactorily this can be achieved, especially in relatively high-risk cases, under such circumstances and whether

such monitoring could not be better achieved by direct fetal ECG monitoring after rupture of the membranes. Their suggestion that low-risk cases do not need monitoring under such circumstances must also be questioned.

While prostaglandin given vaginally is undoubtedly effective in achieving cervical softening, be it by the effect of circulating oestradiol or, as we are currently assessing in this unit, by an effect on collagenase activity in the cervix, the response to such treatment is widely regarded as very variable—as noted in this series, where a number of patients laboured after a single administration and some failed to respond to two such administrations of prostaglandin E_2 . Its blanket use in a fixed-dose regimen must be questionable under such circumstances and it must be only a matter of time before the hypertonus already reported recurs with more serious consequences.

The transfer of a patient in labour starting after the administration of prostaglandin E_2 vaginally on the antenatal ward may not be always as rapid and smooth as is necessary if monitoring is to be instituted sufficiently early in labour to avoid occasional fetal asphyxia. A routine induction policy must carry with it some risk and I would be concerned to see it generally applied without the recognition of this problem.

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Thromboembolism in pregnancy

SIR,—In your leading article (23 June, p 1661) the comment is made that "... oral anticoagulants are probably best avoided in the puerperium if the mother is breast-feeding." The most widely used oral anticoagulant in this country is warfarin; we have clearly demonstrated that warfarin is not excreted in human breast milk.¹ Using sensitive and specific analytical techniques, less than 10 ng/ml warfarin was found in breast milk and in the plasma of breast-fed infants. This concentration of warfarin is at least ten times less than that usually required to produce any change in the prothrombin time. Further, no prolongation of prothrombin time was found in those infants breast-fed by mothers taking warfarin. Earlier reports of warfarin being present in breast milk utilised non-specific warfarin assay methods, which monitored inactive warfarin metabolites in breast milk.

Mothers are being encouraged now to breast-feed their infants whenever possible. There is no need to deny this on the basis of outdated and inaccurate information to women taking warfarin.

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¹ Orme, ML'E, et al, *British Medical Journal*, 1979, 1, 1564.

Luteal function in patients seeking AID

SIR,—I can confirm the report of Mr M F Vere and Mr D N Joyce (14 July, p 100) on the effects of stress during artificial insemination by donor (AID) in suppressing ovulation.

I have also noted in the last 30 years that

the wives of sterile men have more problems of irregular menstruation than the wives of fertile men. Nevertheless I have shown^{1,2} that emotional stress can affect some 25% of wives whose husbands are fertile. Where patients have kept preconsultation charts one sometimes sees, in an otherwise normal series, one or two cycles which are poor. Inquiry then elicits the fact that some stress, such as family bereavement or diagnosis of azoospermia, occurred in that cycle. The effects of stress can also be observed in women being treated with bromocriptine, clomiphene, or tamoxifen. For example, a woman ovulates when on holiday, but not when attending for AID or, in another case, when a parent died, and so on.

It would seem therefore that in infertility problems laboratory investigations should not be taken at their face value, but must be studied in relation to the total clinical status of the patient. Hormone assays may well be misleading in these circumstances because of stress, which may not be manifest without close questioning.

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¹ Sandler, B, *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 1961, 68, 809.

² Sandler, B, *Journal of Psychosomatic Research*, 1968, 12, 51.

Drugs for pain

SIR,—The 16 June issue (p 1619) refers to my work in Dr R G Twycross's review of the book by Parkhouse et al entitled *Analgesic Drugs*. Twycross refers to "several debatable American views." I am not sure that I understand why the statement that "morphine is usually given parenterally as its oral activity is low" has "a hollow ring" about it.

I would have thought that in most countries morphine is usually given parenterally. There is certainly no doubt that one has to give seven or eight times the parenteral dose when the oral route is chosen, and even then peak effects are not rapidly achieved or as impressive. Hence in the management of acute pain, which is the usual indication for morphine in most countries, the parenteral route is the most scientific and empirically effective. Recent scientific evaluations of "analgesic cocktails" such as Brompton's mixture indicate that "long tradition" is not necessarily synonymous with scientific fact. One by one the various ingredients of Brompton's mixture seem to be falling by the wayside, despite many years of firm belief in their importance.

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Maintenance of diagnostic equipment in wards and consulting rooms

SIR,—The report of Mr A Shaw and others (24 March, p 789) on errors arising in the use of sphygmomanometers with blocked vents is timely. Other common defects are: (1) dirty graduated tubes causing erratic fall of the mercury column; (2) thinning of the control valve washer causing precipitous fall of the mercury; (3) obstruction of the gauze mesh in the valve by dust resulting in the need for great pressure to squeeze the bulb (very

painful for arthritic fingers); (4) air leaks due to perished rubber tubing.

These faults are easy to identify and their cure can usually be effected in a matter of minutes. The manufacturers of sphygmomanometers might helpfully provide instructions for their identification and correction with each instrument.

This is really part of the wider problem affecting all diagnostic and therapeutic equipment in which faults are just as likely to occur. Clearly all equipment involving moving parts or electrical connections should (like motor cars) be routinely checked and serviced. This would be beyond the capacity of most doctors. At another hospital, where I was formerly on the staff, an attempt was made to set up a system of routine inspection and servicing of ward equipment, but organisational difficulties were encountered and until now no action has been taken.

The time is overdue for the establishment in hospitals of a service for the routine inspection of equipment, for the identification of faults, and for their repair where this is feasible.

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Analgesia in terminal malignant disease

SIR,—The letters by Dr F R Gusterson and others and by Dr I M C Clarke and Miss S M Tempest (7 July, p 47) described clearly some of the advantages of the suppository as a dosage unit for controlling pain in terminal malignant disease. The benefits of using the rectal route for systemic administration apparently are appreciated more widely in continental Europe than in the United Kingdom, if one can judge by the relative numbers of suppository products available. The rate and extent of absorption of suitable drugs from the rectum compare very favourably with the oral route and local adverse effects are rare, other than irritation with certain non-steroidal, anti-inflammatory analgesics.

It is unfortunate, in view of the potential advantages of rectal administration, that there are so few proprietary suppository dose forms containing potent analgesics suitable for the treatment of severe, intractable pain when practitioners without direct access to a hospital pharmacy or dispensary may not be able to obtain readily generic products of this type. The latest copy of *MIMS* indicates that only two proprietary products are available—namely, suppositories of pentazocine lactate and of dextromoramide tartrate. It is our experience that dextromoramide tartrate in Palfium suppositories is rapidly absorbed and well tolerated and that such a dosage form is a useful addition to the normal range of oral and parenteral presentations of potent analgesics.

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Muslims, Ramadan, and diabetes mellitus

SIR,—A Pakistani patient with diabetes mellitus consulted me in a state of agitation. He had heard on a television programme that doctors from a Birmingham diabetic clinic had issued a warning to Muslim diabetics: