test characteristics for delivery before 34 weeks (they are unlikely to be better) the prior odds would now be only 1:100 and the posterior odds approximately 4:100 (say 4%). The identification of women with a 20% risk of delivering before 37 weeks and 4% risk of delivering before 34 weeks is less impressive than a 94% chance of preterm delivery. Since 17·5% of women not delivering prematurely will have had a positive test much anxiety will be caused if such testing becomes routine.

We would not wish to suggest that this test is not an exciting development. It seems to perform better than cervical assessment, which until now has been the best single predictor of preterm labour. However, any test is only likely to be useful if there is an effective intervention that can follow a positive result. No such intervention has been shown to reduce perinatal mortality in properly conducted randomised trials, although tocolysis does prolong pregnancy and reduce the respiratory distress syndrome in women who are already having contractions. In such high risk groups fibronectin measurement may direct treatment to women actually likely to deliver prematurely.

Many people will argue that there should be a randomised trial of the fibronectin test. We disagree. Tests for preterm labour cannot in themselves improve outcome. Only the interventions which follow the test result can do this. These interventions might follow any risk factor such as an early pregnancy risk score, uterine activity monitoring, cervical microbiological culture, or assessment of cervical dilatation. Women identified to be at high risk of premature labour by one or more of these tests should logically be entered in trials of the relevant intervention, not trials of the test. The first step is proper evaluation of test sensitivity and specificity in a larger series of patients. Results must be concealed from clinicians to avoid the treatment paradox that true positive results which are followed by an effective intervention will seem to be false positives. If the fibronectin test continued to perform well in such studies it could be used to identify a high risk group for trials of possible treatments.

J G THORNTON
R J LILFORD

Institute of Epidemiology and Health Services Research,
University of Leeds,
Leeds LS2 9LN

1 Lockwood CJ, Senyei AE, Dische R, Casal D, Shah KD, Thung SN, *et al*. Fetal fibronectin in cervical and vaginal secretions as a predictor of preterm delivery. *N Engl J Med* 1991;**325**: 669-74.

Bovine insulin

EDITOR,—None of the contributors to the "human insulin and hypoglycaemia debate" mentioned bovine insulin.[1] In our fascination with the scientific minutiae of hypoglycaemic unawareness we seem to have forgotten that some of the worst problems occurred when middle aged or elderly people were unnecessarily switched, on a unit for unit basis, to human insulin from the once daily, long acting bovine insulin that had suited them for years.[2]

In a 1988 paper 22 diabetic patients with true sulphonylurea failure (mean age 64·5 (range 50-88) years) were randomly allocated to once daily long acting bovine lente insulin (Neulente, Nordisk/Wellcome) or once daily human insulin zinc suspension (Humulin Zn, Eli Lilly).[3] The only striking difference between the two groups was that after six months' treatment the patients receiving Neulente had had only four episodes of hypoglycaemia, whereas those receiving Humulin Zn had had 46, 36 of which occurred between 3 am and 6 am. Humulin Zn is now described as an intermediate acting insulin, although studies in normal volunteers had shown that its action was equivalent to a lente insulin, with the nadir of blood glucose concentration occurring 20 hours after injection.[4]

When acting as a referee for the 1988 study[3] I commented how strange it was that by the time the paper was published the insulin which "worked" would have been withdrawn. The fact is that there is no satisfactory long acting human insulin that can be used either for once daily treatment of older patients or as the basis of a basal bolus regimen for younger patients. The problem is compounded by the fact that human Ultratard is described as a long acting insulin when in fact its 50% disappearance time is 12-18 hours versus 35-53 hours for the now withdrawn bovine equivalent.[5] One clinical study concluded that the onset of action of human Ultralente is two to four hours, with a broad and variable peak between six and 12 hours after injection,[6] so it does not produce the constant basal insulin concentrations that the architects of the basal bolus concept originally envisaged.[7]

My experience is that attempts to treat older patients with a once daily injection of any human insulin formulation are often frustrated by nocturnal hypoglycaemia and morning hyperglycaemia, leading to one version of brittle diabetes in the elderly.[8] Once daily bovine lente (Hypurin Lente) or protamine zinc insulin (Hypurin PZI) works well in these patients and is also sometimes a good choice as a basal insulin for younger people who are plagued by nocturnal hypoglycaemia on a four times daily regimen in which the human intermediate acting insulin last thing at night does not last long enough.

Why has bovine insulin apparently been consigned to the scrap heap?

ROBERT TATTERSALL

Diabetes Unit,
University Hospital,
Queen's Medical Centre,
Nottingham NG7 2UH

1 Williams G, Patrick AW. Human insulin and hypoglycaemia: burning issue or hot air? *BMJ* 1992;**305**:355-7. (8 August.)
2 Turner TA, O'Mullane NM, Sivner AL, Healy M, Walter D. Switching to human insulin. *Lancet* 1988;ii:1150.
3 Tindall H, Bodanksy HJ, Stickland M, Wales JK. A strategy for selection of elderly type 2 diabetic patients for insulin therapy, and a comparison of two insulin preparations. *Diabetic Med* 1988;5:533-6.
4 Frier BM, Sullivan FM, Mairs FS, Coch IM, Scotton JB. Pharmacokinetics of human insulin zinc suspension (recombinant DNA) in normal man: a comparison with porcine insulin zinc suspension. *Diabetic Med* 1984;**1**:219-21.
5 Hildebrand TP, Berger A, Volund Aa, Kuhl C. The subcutaneous absorption of human and bovine ultralente insulin formulations. *Diabetic Med* 1985;**2**:355-9.
6 Freeman SL, O'Brien PC, Rizza RA. Use of human Ultralente as the basal insulin component in treatment of patients with IDDM. *Diabetes Res Clin Pract* 1991;**12**:187-92.
7 Holman R, Turner RC. A practical guide to basal and prandial insulin therapy. *Diabetic Med* 1985;**2**:45-53.
8 Griffith DNW, Yudkin JS. Brittle diabetes in the elderly. *Diabetic Med* 1989;**6**:440-3.

Practising intubation on cadavers

EDITOR,—Alison Tonks gives a misleading interpretation of the BMA's policy on training in intubation techniques and how that policy stance was reached.

The issue was initially raised at the September 1991 meeting of the BMA Ethics Committee, and after a long debate covering the philosophical, spiritual, legal, and ethical considerations it was agreed that the practice was ethical but that protocols should be established with regard to who should be taught and how training should be performed to maximise its usefulness while ensuring that the body was treated with due respect.

The establishment of a protocol was delegated to a joint working party of the BMA and the Royal College of Nursing which had already been convened to discuss resuscitation policy. At the first meeting of this working party it became clear that many nurses were uncertain of the ethical basis of this training and that the medical profession was itself divided over whether this type of training was useful. The working party therefore decided to send a questionnaire to all interested parties to establish how widespread the practice was and whether it was thought to be useful, and the results of this survey confirmed a sharp divide within the medical profession—namely, that accident and emergency staff thought it extremely valuable while anaesthetists considered it unnecessary. At this stage there was a meeting of the British Association of Accident and Emergency Trainees in Liverpool, where it was unanimously agreed that this type of training was an extremely useful way of training junior staff in essential intubation techniques.

The survey results were discussed at a further meeting of the joint working party and it was decided to outline the principles that should be included in establishing protocols but to advise the British Association of Accident and Emergency Medicine and the Association of Anaesthetists to try and establish joint guidance. This stance was subsequently supported by the BMA Ethics Committee and by BMA Council.

G HINCHLEY

Accident and Emergency Department,
University Hospital,
Queen's Medical Centre,
Nottingham NG7 2UH

1 Tonks A. Intubation practice on cadavers should stop. *BMJ* 1992;**305**:332. (8 August.)

EDITOR,—The BMA and Royal College of Nursing have issued a statement about tracheal intubation of patients who have just died, which is often done for teaching purposes.[1] The statement suggests that this should be done only in accident departments on patients who have died after sustaining major head and neck trauma as these patients may be difficult to intubate and the technique cannot be learnt elsewhere. The statement concludes that most doctors and nurses who need to be proficient in intubation techniques can obtain sufficient experience through practising on manikins and in the anaesthetic room.

No mention is made of the problems associated with learning to intubate newborn babies, the largest group of patients who may need emergency resuscitation. It does not seem from the statement that any paediatricians were consulted. In large units experienced staff accompany new trainees to deliveries, but this may not always be feasible. Manikins of newborn babies, although a useful training aid, do not show anatomy clearly and are not realistic. For this reason we believe that supplementing the teaching of trainees by intubation of stillborn infants is appropriate. This can be done sensitively and privately but is not easily discussed with the parents at such an emotional time. In our unit it is always supervised.

JENNIFER TYRRELL
PETER RUDD
JOHN OSBORNE
ROBYN CAIN

Royal United Hospital,
Bath BA1 3NG

1 Tonks A. Intubation practice on cadavers should stop. *BMJ* 1992;**305**:332. (8 August.)

Drug resistant tuberculosis

EDITOR,—The report of the discovery that the deletion of a single gene is the cause of isoniazid resistance in *Mycobacterium tuberculosis* contains some misleading comments.

New procedures (such as the Bactec radiometric