robust why do the calculations differ so greatly with only a few days' alteration in the calculated expected dates of delivery?

Michael Connor refers to the way in which screening has been introduced in different districts.[2] In my view this is one of the worst manifestations of the purchaser-provider system in action. Purchasing teams, which do not include any obstetricians or, usually, midwives, are insisting that service contracts should include biochemical screening without having any understanding of how little validation has been done. Obstetricians are effectively given no opportunity to influence the pace of introduction or testing of the screening programme. Medicolegal pressures have developed, and there is the fear of being sued for not having offered biochemical screening if a baby is born with Down's syndrome. We find ourselves doing more amniocenteses as defensive medicine than caesarean sections nowadays.

Gynaecologists are well used to screening programmes, antenatal counselling, and explaining probabilities and risks to asymptomatic women. If an extra chromosome 21 results in predictable alterations in fetal and placental metabolism we will carry out screening for Down's syndrome as enthusiastically as we do cervical smear tests and tests for rubella antibody. At the moment, however, it feels as if we are having to sell to individual women a screening process that has not yet been adequately validated.

SUSAN M TUCK
University Department of Obstetrics and Gynaecology,
Royal Free Hospital,
London NW3 2QG

1 Correspondence. Serum screening for Down's syndrome. *BMJ* 1993;307:500-2. (21 August.)
2 Connor M. Biochemical screening for Down's syndrome. *BMJ* 1993;306:1705-6. (26 June.)

### Vacutainer system can lead to inaccurate results

EDITOR,—In this laboratory, antenatal screening for Down's syndrome incorporates measurement of α fetoprotein and human chorionic gonadotrophin concentrations with commercially available lanthanide chelate fluoroimmunoassays (DELFIA, Wallac Oy, Finland). The single incubation procedure is used for the assay of α fetoprotein. Blood samples are taken with a Vacutainer system (Becton Dickinson Diagnostics, United Kingdom). In two cases recently, contamination of the specimen resulted in spuriously low α fetoprotein values, which if unrecognised would lead to the result of screening being misclassified as positive.

In a sample obtained from a 22 year old woman at 16 weeks' gestation the assayed α fetoprotein concentration of 5·4 kIU/l (0·11 multiples of the median) and human chorionic gonadotrophin concentration of 22·5 kU/l (0·86 multiples of the median) modified her age related risk of bearing a fetus with Down's syndrome from 1:1500 to a high risk of 1:72. In a sample from a 24 year old woman at 19 weeks' gestation α fetoprotein was undetectable and the human chorionic gonadotrophin concentration was 10·6 kU/l. Contamination of both serum samples with potassium EDTA was subsequently confirmed by high potassium concentrations (≥10 mmol/l) and unmeasurable calcium. Specimens to which the anticoagulant EDTA or citrate has been added are known to produce spuriously low values in the DELFIA single incubation of α fetoprotein. When potassium EDTA additive (150 g/l) taken from a Vacutainer tube was diluted 1 in 100 in a serum sample drawn into a serum separating tube Vacutainer the assayed α fetoprotein value was reduced by 43%.

Cross contamination of blood samples can occur with the Vacutainer system if plain tubes are fitted after those containing additives.[1] The recommendation is therefore to fill plain tubes before filling those containing anticoagulant. Clearly cross contamination can also occur if blood to which anticoagulant has been added is used to top up a plain tube. In our first case inquiry established that serum and haematology specimens to which EDTA was added had been obtained at the same venepuncture.

A result indicating an erroneously high risk has serious implications in a screening programme for Down's syndrome. Considerable distress may be caused to the mother, and the possibility of an unnecessary amniocentesis with the potential for loss of a normal fetus arises. As the DELFIA and Vacutainer systems are widely used we believe that such erroneous results may well occur. Phlebotomists should be made aware of the correct order for taking samples with a Vacutainer system, particularly the multiple samples taken at the antenatal booking clinic. Laboratories should check potassium and calcium concentrations in samples that give results indicating a high risk associated with a low α fetoprotein value.

W A BARTLETT
C FORD
A F JONES
Department of Clinical Chemistry,
Birmingham Heartlands Hospital,
Birmingham B9 5SS

1 Calam RR, Cooper MH. Recommended "order of draw" for collecting blood specimens into additive tubes. *Clin Chem* 1982;28:1399.

## Treating psychiatric illness at home

### Relatives may underreport burden

EDITOR,—C Dean and colleagues' paper represents a considerable advance in the attempt to measure relatives' burden with different types of psychiatric services.[1] The finding of reduced distress with a similar objective burden for relatives of the patients treated at home is presented as a significant finding. This might simply have been an artefact of the circumstances of the interview. The relatives of a patient treated at home were more likely to be interviewed in the presence of the patient. The patient's presence while relatives report their burden (in a treatment programme emphasising relatives' support) can critically limit the degree of burden expressed, for understandable reasons: politeness, a desire to please, and the overriding importance of the continued relationship between the relative and the patient long after the researcher has gone.

The authors do not state how many relatives or friends actually lived with the patient in either group. This is particularly relevant before conclusions are drawn about the relative's burden and a home treatment service.

MARCELLINO SMYTH
Academic Unit,
All Saints Hospital,
Birmingham B18 5SD

1 Dean C, Phillips J, Gadd EM, Joseph M, England S. Comparison of community based service with hospital based service for people with acute, severe psychiatric illness. *BMJ* 1993;307: 473-6. (21 August.)

### Author's reply

EDITOR,—As Marcellino Smyth says, interviewing the relatives and friends in front of the patients who used the services would have introduced bias, and the questions were so sensitive that it would have been impossible. The interviews were arranged by one of us (JP) so that they took place in the absence of the patients. Forty four (80%) of the patients using Sparkbrook's community based service and 37 (88%) of those using Small Heath's traditional hospital based service lived with their informant.

CHRISTINE DEAN
Centre for Mental Health Services Development,
Institute of Health,
King's College London,
London W8 7AH

## Encouraging generic prescribing

EDITOR,—The Department of Health could save millions of pounds by insisting either on generic prescribing or on pharmacists dispensing generic equivalents. When I started in general practice, if the prescribing doctor wanted the drug to be named on the container he or she wrote the initials NP (name product) beside the item on the prescription. Subsequently the NP was printed on the prescription pad (and still is) but could be deleted by the prescribing doctor if for any reason he or she did not wish the drug to be named on the container.

About two years ago I suggested that if the Department of Health wishes to bias prescribing towards generic products it could print OGE (or generic equivalent) on precription pads, leaving the prescribing doctor the option of deleting this if he or she wished. I asked my family health services authority's medical adviser to present this idea to the department, and he has done so. This proposal would encourage the prescribing doctor to prescribe generically and to bear the responsibility for any adverse effects of the dilemma over prescribing. Presumably the Department of Health does not wish to bear the responsibility for confusing patients or offending the profitable pharmaceutical companies.

A J SAUNDERS
Everest House Surgery,
Hemel Hempstead,
Hertfordshire

## Managing neck injuries

EDITOR,—J N Brown and A C Crosby emphasise the importance of the mechanism of injury and of avoiding overdependence on apparently normal radiographs when managing neck injuries.[1]

We report on a 27 year old driver, wearing a seatbelt, whose stationary car was hit from the rear by a lorry. Just before impact she turned her head to the right as she heard the screeching of brakes. She remembered that the whiplash movement of the neck occurred while her head was in this position. Initially she complained of left sided neck pain and pain behind the left ear. Unlike in Brown and Crosby's case, she had no neurological symptoms, and limitation of movement was the only abnormal finding on examination. All three standard radiographs were normal.

Over the next few days she developed delayed numbness over the distribution of the left greater occipital nerve, with increasing limitation of movement. Repeat plain *x* ray films were judged to be normal. Physiotherapy assessment suggested a structural component to the abnormal head position. Computed tomography showed a fracture dislocation of the left C1-2 facet joint, with widening of the left C2-3 facet joint. She was referred for neurosurgical management.

This shows the importance of the history. In rotation the degree of normal physiological extension is halved, and thus posterior joints are soon pushed beyond their physiological range.[2] Furthermore, radiographs do not always show a fracture.[3] The absence of soft tissue swelling does not exclude bony injury.[4] Stiff necks can result from accidents with impact from all directions, and the