developed abdominal pain. Two days later he passed a melaena stool and was admitted to hospital.

On admission his haemoglobin level had fallen to 8.5 g/dl and his prothrombin time was greater than 3 min. Extensive generalised haemorrhage into the tissues was revealed by the later appearance of Cullen's sign and bruising on the legs. Despite blood transfusion and correction of the prothrombin time with vitamin K he survived the haemorrhage only to succumb to intractable cardiac failure three weeks later. Permission for post-mortem examination was not obtained.

In-vitro studies have shown that sulphiny-pyrazone will displace oral anticoagulants from their plasma binding sites,³ and it has been suggested that this drug was responsible for potentiation of warfarin activity in a patient.⁴ The manufacturers are aware of this potential danger and suggest that frequent estimations of the prothrombin time should be undertaken when these drugs are given concurrently and that the anticoagulant dosage be adjusted accordingly. There are considerable difficulties in implementing this in practice and we feel that the use of sulphiny-pyrazone outside of hospital is contraindicated in patients on oral anticoagulants.

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¹ Anturane Reinfarction Trial Research Group, *New England Journal of Medicine*, 1978, **298**, 289.

² *British Medical Journal*, 1978, **1**, 941.

³ Seiler, K., and Duckert, F., *Thrombosis et Diathesis Haemorrhagica*, 1968, **19**, 389.

⁴ Davis, J. W., and Johns, L. E., *New England Journal of Medicine*, 1978, **299**, 955.

Costs and benefits of serum α -fetoprotein screening

SIR,—A recent radio broadcast by Kennedy¹ will have stimulated heart-searching among the public and the profession about the usefulness of serum α -fetoprotein (AFP) screening. Kennedy calculated that a national screening programme might sacrifice 205 normal or near-normal fetuses per year to prevent the birth of 329 babies with severe spina bifida. This gives a cost-benefit ratio of 205:329 or 0.62. To test the objectivity of this calculation, I have used an interactive computer program (ARAF-2) to calculate the ratio and to see how it varies as the assumptions used are changed.

I find that the cost-benefit ratio can range from 0.11 to 0.30 using different reasonable assumptions, but it never reaches Kennedy's figure of 0.62. This is partly because Kennedy omits the abortion of all anencephalics from the benefit side, which does not seem very justifiable (since he does count those fetuses with spina bifida which are stillborn). The most important factor in achieving a favourable ratio is to keep the amniocentesis rate (the proportion of the screened population who receive amniocentesis) as low as possible. Table I shows data for a population with 1.81 cases of anencephaly, 1.74 of spina bifida,² and 0.2 of exomphalos³ per 1000 pregnancies screened. Provided that the amniocentesis rate is kept low, the cost-benefit ratio is surprisingly insensitive to changes in the risk of fetal loss due to amniocentesis. Kennedy assumed 1.5% fetal loss; table I assumes 1%, and table II shows the effect of changes in this figure. Table III shows that the ratio varies relatively little with the incidence of neural tube defect, a point which is relevant when proposals to

TABLE I—Effect of amniocentesis rate on the cost-benefit ratio

Amniocenteses		No of fetuses lost or terminated*		Cost-benefit ratio
Rate %	No*	Severely affected	Normal or mildly affected	
0.5	2205	1137	173	0.152
1.0	4410	1156	208	0.180
2.0	8820	1195	277	0.232
3.0	13230	1233	347	0.281

*Numbers based on screening 441 000 pregnancies.¹

TABLE II—Effect on cost-benefit ratio of changes in fetal loss due to amniocentesis

Amniocentesis rate %	Cost-benefit ratio		
	0.5% fetal loss	1% fetal loss	1.5% fetal loss
0.5	0.144	0.152	0.160
1.0	0.163	0.180	0.197
2.0	0.197	0.232	0.267

TABLE III—Cost-benefit ratio and incidence of neural tube defect

Rate per thousand pregnancies		Cost-benefit ratio with 1% fetal loss	
Anencephaly	Spina bifida	1% amniocentesis	2% amniocentesis
1.81	1.74	0.180	0.232
2.5	2.5	0.158	0.198
5.0	5.0	0.128	0.152

screen only in areas of high incidence are considered.

It is interesting to compare these ratios with those for the established practice of offering amniocentesis to women who have had a previous baby with neural tube defect. We expect 3-5% abnormal fetuses in this group.⁴ On the assumption of 1% fetal loss due to amniocentesis and 0.2% false positives (as in table I), the cost-benefit ratio is 0.41-0.60, which is worse than can be obtained in any conceivable serum AFP screening programme. The reason for this is that serum AFP screening defines a group with a particularly high proportion of abnormal fetuses.⁵ It appears that a serum AFP screening programme, in which not more than 1% of those screened receive amniocentesis, would achieve a better cost-benefit ratio than the currently accepted practice of offering routine amniocentesis to women who have had a baby with neural tube defect.

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¹ Kennedy, J., *The Defect*, BBC Radio 4, 31 October 1978.

² Rogers, S. G., and Weatherall, J. A. C., *Studies in Medical and Population Subjects* No 32. London, HMSO, 1976.

³ *Birth Defects: Atlas and Compendium*, ed D Bergsma (National Foundation—March of Dimes). Baltimore, Williams and Wilkins, 1973.

⁴ Clinical Genetics Society Working Party on Amniocentesis in Relation to Genetic Counselling. *Eugenics Review*, in press.

⁵ Ferguson-Smith, M. A., et al., *Lancet*, 1978, **1**, 1330.

Seizure following lumbar myelography with metrizamide

SIR,—In recent years water-soluble media have been used for lumbar myelography. Meglumine iocarmate has been found in some cases to be associated with severe muscle spasm leading to central fracture dislocation of the hip.¹ This has led to the more general

use of metrizamide. Complications, however, may occur with this latter medium² and we report a case in which a grand-mal seizure occurred shortly after its use.

A 24-year-old factory worker presented with clinical evidence of a prolapsed intervertebral disc. Lumbar myelography was carried out using 10 ml of metrizamide solution with a concentration of 170 mg/ml. The patient was instructed to sit upright out of bed for six hours. The following morning he had a grand-mal seizure. There was no past or family history of epilepsy, neither did the patient take neuroleptics, antidepressants, or chlorpromazine.

Grand-mal seizures are not unknown following the use of metrizamide.² We would therefore make three suggestions. Firstly, that our indications for myelography should remain strict. Secondly, that although the manufacturers suggest that patients may lie nearly flat following the procedure, they should preferably remain sitting up for a couple of hours to lessen the danger of contact of the medium intracranially. Lastly, that patients should not be managed as outpatients and should remain in hospital for 24 h after myelography.

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¹ Eastwood, J. B., Parkes, B., and Reid, B. R., *British Medical Journal*, 1978, **1**, 692.

² Nickel, A. R., and Salem, J. J., *Acta Radiologica*, 1977, suppl 355, p 409.

Quality control

SIR,—I share the misgivings expressed by Dr C A K Bird and Mr C B Brownhill (2 December, p 1573) about the quality of biochemical assays performed in ward side rooms.

Our hospital pharmacy regularly issues Dextrostix to 38 wards and clinics. Twice this year, in August and November, I offered the sisters in charge of these units the opportunity to participate in a quality control scheme. Those who took part were each sent a sample to be analysed for glucose level with Dextrostix. I collated their results and sent each participant a report showing all the results but identifying only their own result, the laboratory's finding, and the ascribed glucose content of the sample. I undertook not to reveal the results obtained by individual units to any third party.

In August four wards and in November 11 wards out of the 38 participated. On both occasions two wards produced results so inaccurate that if the samples had come from a patient clinical action based on them would have been inappropriate. Also, although our laboratory has been reporting in SI units for nearly two years, more than two-thirds of the results sent in by the wards and clinics were in mg/100 ml.

Dextrostix and other techniques for extra-laboratory biochemical analyses, used properly, are an invaluable aid for the clinician. Used in an incompetent manner they can be a grave hazard to the patient.

I am grateful to Miss H M Chadwick of Ames Co for a gift of Tek-chek quality control material.

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