British urologists provide a cost effective service

EDITOR,—The juxtaposition of Linda Beecham's article on NHS doctors' pay¹ and Charles-Gene McDaniel's article on American doctors' income² leads to comparisons of the earning capacity of different doctors. It would be fair, however, also to compare the work that each of the two groups does, and I have considered urology on the two sides of the Atlantic. For a current maximum annual salary in Britain of £52 440 and an average American salary of £100 000, the two groups of urologists do quite different average amounts of work.

The ratio of population to consultants in urology in the United States is roughly 200 million to 9000, whereas in Britain it is roughly 60 million to 300. If the ratio was the same in Britain as in the United States there would be over 2000 consultant urologists in Britain. This implies that we are offering a service to nine times as many patients as the average American urologist. On that basis, if British urologists were reimbursed at the same level as American urologists we would be getting paid £900 000 a year rather than £52 440.

This can be further broken down by looking at the average costs of individual procedures. In my practice, where a prostate operation takes an average of half an hour, I work roughly 60 hours a week for the NHS. This implies that I am paid about £17 for each hour that I work, not including the on call commitment. The income before tax, therefore, for the average 30 minute prostate operation is £8.50. If all of the outpatient and inpatient work relating to such an operation is also included the cost does not rise above £20 for the entire treatment episode.

This represents an extremely cost effective service, and comparisons based simply on income across the Atlantic are inadequate to explain the dedication and effort put in by all the doctors in Britain.

G MICHAEL FLANNIGAN
Consultant urologist

Yorkshire Clinic,
Bingley BD16 1TW

1 Beecham L. Government phases NHS doctors' pay award. *BMJ* 1996;312:395. (17 February.)

2 McDaniel C-G. US doctors see average income fall. *BMJ* 1996;312:395-6. (17 February.)

Using condoms to prevent transmission of HIV

Condoms have an appreciable failure rate

EDITOR,—In a book about AIDS the Social Commission of the French Episcopate states that "Many competent doctors maintain that a condom of reliable quality is today the only means of prevention. As such, it is necessary."¹ I wonder whether the commission is aware of the following relevant facts about condoms and the transmission of HIV.

Firstly, a survey by a family planning clinic in Manchester of people experienced in using condoms reported that "52% of respondents had experienced condoms bursting or slipping off in the previous 3 months....We were surprised to find how commonly our clients had experienced 'accidents', even those who had apparently relied on condoms as their method of choice for contraception....It is routine practice to give clients information about the correct use of sheaths before their first prescription."² The article went on: "The pregnancy rate reported by Vessey *et al.* of 6 per 100 women years for women aged 25 to 34 years belonging to a particularly stable and well motivated clinic population, supports our findings that slipping off and rupture of sheaths is common even among experienced

users." The senior author of the report has also criticised the statement that "Most condom failure is due to incorrect usage."³

Secondly, in discussing attempts to develop a condom made of plastic an article in *Population Reports* stated: "While a more expensive material than latex, plastic is more uniform with fewer pinholes or variations in thickness."⁴ The report also stated that "the people using condoms faced a risk about two thirds that of non users of developing gonorrhoea, trichomoniasis, or chlamydia infection" and gave a relative risk for the transmission of HIV of 0.4 for people using condoms.

Thirdly, a study by a genitourinary clinic in London showed that, although use of condoms increased from 4% to 21% between 1982 and 1992, this failed to control viral sexually transmitted diseases.⁵

Finally, an editorial in the *New England Journal of Medicine*, in which a European study of transmission of HIV was published, stated: "The sample was not large enough to exclude the possibility of a transmission rate of up to 1.5 per 100 person years among the consistent condom users."⁶

JOHN KELLY

Consultant obstetrician and gynaecologist

Birmingham Maternity Hospital,
Birmingham B15 2TG

1 Dorozynski A. French bishops ease ban on condoms. *BMJ* 1996;312:462. (24 February.)

2 Kirkman RJE, Morris J, Webb AMC. User experience: Mates^R v Nuforms^R. *Br J Family Planning* 1990;15:107-11.

3 Kirkman R. Condom use and failure. *Lancet* 1990;336:1009.

4 New Condoms in the 1990s. *Popul Rep H* 1990;8:28-31.

5 Evans BA, McCormack SM, Kell PD, Parry JV, Bond RA, MacRae KD. Trends in female sexual behaviour and sexually transmitted diseases in London, 1982-1992. *Genitourin Med* 1995;71:286-90.

6 Condoms and HIV transmission. *N Engl J Med* 1994;331:391.

Abstinence and fidelity are only fully effective means of prevention

EDITOR,—Alexander Dorozynski reports that the Social Commission of the French Episcopate has said, "Many competent doctors maintain that a condom of reliable quality is today the only means of prevention" against AIDS.¹ At the eighth world congress of sexology, in Heidelberg, Germany, in 1987, about 800 delegates were asked to indicate by a show of hands whether they would have sex with a person who was known to be HIV positive, using a condom of reliable quality as the only protection. The only person who said yes was a journalist, who said that he would do so even without a condom. He later turned out to be a vociferous gay activist, who caused several other gay activists to distance themselves publicly from his extreme views. At the 10th world congress, in Amsterdam in 1991, the same question was asked in the sexuality education workshop. Not one of the 60 professionals present said that he or she would have sex with an HIV positive person using only a condom.

If a condom is effective why are competent doctors not prepared to stake their own lives on it? Certainly, condoms greatly reduce the risk of infection, but abstinence and fidelity to a monogamous spouse remain the only fully effective means of prevention.

If the doctors quoted were truly competent then they would know how to promote abstinence and fidelity successfully instead of promoting the condom as the "only means of prevention." The Social Commission of the French Episcopate is sadly misled and deluded.

A GRAZIOLI
Director

Sex Education and Dysfunction Unit of South Africa,
Medical Fiduciario del Consolato d'Italia in Cape Town,
PO Box 2227,
Clareinch 7740,
South Africa

1 Dorozynski A. French bishops ease ban on condoms. *BMJ* 1996;312:462. (24 February.)

Poor diet in pregnancy may be a proxy for some other hostile influence on fetal growth

EDITOR,—Studies that have emphasised links between poor fetal growth and later cardiovascular disease have hypothesised (with little strong evidence in developed countries) that suboptimum nutrition in pregnancy might be responsible.¹ K Godfrey and colleagues in Southampton now provide evidence that diet in pregnancy, particularly a high carbohydrate intake early on and a low protein intake later, does affect placental and fetal growth.²

These findings are especially interesting when seen alongside the studies by Crawford *et al* of women in Hackney.³ Mothers of babies in "an optimum birthweight range" (3.5-4.5 kg) had a median daily protein intake in the first trimester of 73 g. Mothers of low birthweight babies consumed less protein but also had a low intake of many other nutrients. Median daily protein intakes in the mothers in Southampton were 87 g (lower quartile 70 g) in early pregnancy and 86 g (72 g) in later pregnancy. These lower quartile values are very close to the median 73 g a day in the women in Hackney. This suggests to us that there is unlikely to have been protein inadequacy in the diet of the Southampton mothers sufficient to restrict placental and fetal growth.

Table 1—Number of mothers of infants with intrauterine growth retardation and of infants of appropriate birth weight eating various food groups on most days

	Intrauterine growth retardation (n=64)	Appropriate birth weight (n=64)	P value
Protein	42	43	NS
Green vegetables	45	60	<0.01
Root vegetables	18	36	<0.02
Fruit	44	59	<0.01
Dairy products (excluding milk)	44	48	NS
Starch sources	64	63	NS
Confectionery	44	44	NS
Cereals	40	48	NS
Most daily milk intake as full fat milk	37	26	<0.05

During a study of postnatal growth of infants with intrauterine growth retardation⁴ we compared the quality of maternal diet during pregnancy as assessed by a food frequency questionnaire given to mothers of infants with intrauterine growth retardation and infants of appropriate birth weight in the first month after delivery (table 1). Mothers of infants with intrauterine growth retardation were less likely to eat green vegetables, root vegetables, and fruit regularly but showed no differences in consumption of protein, starch, cereal, and confectionery. Interestingly, more of the mothers of infants with intrauterine growth retardation drank most of their milk as full fat milk. This study therefore suggests that mothers of infants with intrauterine growth retardation have a less healthy diet in pregnancy than those of infants with normal growth. Though they are probably sufficient in gross carbohydrate and protein intakes, their folate intake from food would be expected to be low.

But many other factors—for example, smoking—influence fetal growth, and there were more smokers among our mothers of infants with intrauterine growth retardation (31 v 19). Possibly, poor diet is a proxy for some other hostile influence. Studies of larger populations in

developed countries are needed to clarify the importance of suboptimum nutrient intakes as a cause of fetal growth retardation.

M COSGROVE
Lecturer
D P DAVIES
Professor

University of Wales College of Medicine,
University Department of Child Health,
Cardiff CF4 4XN

1 Barker DJP. The fetal origins of adult disease. *Fetal and Maternal Medicine Review* 1994;6:71-80.
2 Godfrey K, Robinson S, Barker DJP, Osmond C, Cox V. Maternal nutrition in early and late pregnancy in relation to placental and fetal growth. *BMJ* 1996;312:410-4. (17 February.)
3 Doyle W, Crawford MA, Wynn AHA, Wynn SW. The association between maternal diet and birth dimensions. *Journal of Nutritional Medicine* 1990;1:9-17.
4 Cosgrove M, Davies DP, Jenkins HR. Nucleotide supplementation and the growth of term small for gestational age infants. *Arch Dis Child* 1996;74:F122-5.

Raised adult blood pressure linked to failure to achieve growth potential in utero

EDITOR,—In their study of men in Uppsala, David A Leon and colleagues found that the highest blood pressures were in men who had been small babies but grew to be tall adults.¹ They argue that these babies failed to achieve their growth potential in utero. We replicated their analysis in three studies of men born in England (in Hertfordshire (in 1920-30, n = 841), Preston (1935-43, n = 239), and Sheffield (1939-41, n = 170)). Their blood pressures were measured at ages 59-70, 46-54, and 50-53 respectively. Details of the methods have been published.²⁻⁴

Table 1 shows the results for the men living in Hertfordshire, with the groups as defined by Leon and colleagues. As in Uppsala, the inverse relation between blood pressure and birth weight was stronger in men who were taller than 176 cm (the median height in Uppsala) and the highest pressures were in men who had been small babies but were tall adults. In Preston and Sheffield, however, the relation between blood pressure and birth weight was not affected by adult height. The mean systolic pressure in men who were taller than 176 cm but had weighed less than 3250 g at birth was 154.2 mm Hg (n = 31), compared with an overall mean of 153.7 mm Hg, in Preston and 140.8 mm Hg (n = 15), compared with an overall mean of 153.7 mm Hg, in Sheffield. There was no trend in systolic or diastolic pressure across the range of birth weights in taller men in Preston or Sheffield.

We agree that raised blood pressure in adult life is linked to failure to achieve growth potential in utero. However, the combination of small size at birth with tall adult height indicates failure to achieve growth potential in utero only in a setting where postnatal nutrition is optimal. This may be why the men living in the relatively affluent area of Hertfordshire yield similar results to

those living in Uppsala while those living in the industrial areas of Preston and Sheffield do not.

CATHERINE M LAW
Epidemiologist
CAROLINE H D FALL
Epidemiologist
CHRISTOPHER N MARTYN
Clinical scientist
CLIVE OSMOND
Statistician

MRC Environmental Epidemiology Unit,
University of Southampton,
Southampton General Hospital,
Southampton SO16 6YD

1 Leon DA, Koupilova I, Lithell HO, Berglund L, Mohsen R, Vågerö D, et al. Failure to realise growth potential in utero and adult obesity in relation to blood pressure in 50 year old Swedish men. *BMJ* 1996;312:401-6. (17 February.)
2 Hales CN, Barker DJP, Clark PMS, Cox LJ, Fall C, Osmond C, et al. Fetal and infant growth and impaired glucose tolerance at age 64. *BMJ* 1991;303:1019-22.
3 Barker DJP, Bull AR, Osmond C, Simmonds SJ. Fetal and placental size and risk of hypertension in adult life. *BMJ* 1990;301:259-62.
4 Martyn CN, Barker DJP, Jepsersen S, Greenwald S, Osmond C, Berry C. Growth in utero, adult blood pressure, and arterial compliance. *Br Heart J* 1995;73:116-21.

Not gaining patients' consent in trials is deceitful

EDITOR,—Nicholas J Wald and colleagues say that it is reasonable to enter patients into clinical trials without their consent if what the patients receive constitutes recommended practice.¹ But this view denies such patients the right to know all relevant details about the situation in which they find themselves.² It also denies them the opportunity to choose to act altruistically by giving their consent, as is urged by those conducting trials.³ It means, too, that patients' consent to the use of personal and clinical data about them for purposes other than their diagnosis and treatment is forgone.

Deceit, however inadvertent, has serious ethical detriments. It cannot further the cause of clinical research willingly entered into as a partnership between researchers and patients.

CHARLOTTE WILLIAMSON
Vice chair

York Health Services Trust,
York YO3 7BY

1 Wald NJ, Major P, Murphy P, Parkes C, Frost C. One and two view mammography in breast cancer. *BMJ* 1996;312:509-10. (24 February.)
2 Fried C. *Medical experimentation and social policy*. Amsterdam: North Holland, 1974.
3 Baum M. The ethics of randomized controlled trials. *Eur J Surg Oncol* 1995;21:136-9.

Flavonoid intake and coronary mortality

Other antinutritional factors may also have a role

EDITOR,—Paul Knekt and colleagues report an inverse association between intake of flavonoids and incidence of coronary mortality.¹ Their data also show that the protective effect of flavonoids was associated with a diet high in intake of apples and onions.¹ I would like to draw attention to a

point that Knekt and colleagues mention in their discussion: "thus it cannot be excluded that the association in the present study between intake of flavonoids and coronary mortality may be due to other substances in fruits and vegetables—for example, fibre, carotenoids, and vitamin C—or due to differences in intake of fatty acids closely correlated with high flavonoid intake."

Fruits and vegetables contain antinutrients—for example, phytic acid, saponins, tannins, flavonoids, phyto-oestrogens, and protease inhibitors—that have been found to be associated with a cholesterol lowering effect and, therefore, with a reduction in the risk of heart disease.² Pectin, cellulose, and hemicellulose, with only trace amounts of lignin, are the main components of dietary fibre from most apples.³ Pectin added to a test meal significantly decreases the rate of uptake of glucose, with a concomitant reduction in the production of insulin. In addition, supplementation with pectin lowers low density lipoprotein cholesterol concentrations without reducing high density lipoprotein cholesterol concentrations. The proposed mechanisms for the hypocholesterolaemic effect of pectin are increased excretion of bile acids and stimulation of hepatic 3-hydroxy-3-methylglutaryl coenzyme A reductase activity.³

Other important factors present in vegetables are saponins, which are amphiphilic compounds with a strong action on surface tension and properties similar to those of detergent. Onion (*Allium cepa*) saponins contain sitosterol, oleonic acid, and a triterpene alcohol, β -amyirin.⁴ These compounds become active in the prevention of cardiovascular diseases by interacting with bile acids (forming micelle-like aggregates) and with cell membranes or membrane constituents such as cholesterol, thus interfering with their absorption.⁴

I agree with Knekt and colleagues that further studies are needed to confirm the importance of flavonoids in the prevention of coronary heart disease.¹ A possible role for the above mentioned antinutritional factors may not, however, be completely ruled out as they may exert a complementary protective effect by means of distinct mechanisms.

GEMA FRÜHBECK
Research fellow

Department of Physiology and Nutrition,
University of Navarra,
31080 Pamplona,
Spain

1 Knekt P, Järvinen R, Reunanen A, Maatela J. Flavonoid intake and coronary mortality in Finland: a cohort study. *BMJ* 1996;312:478-81. (24 February.)
2 Thompson LU. Phytic acid and other nutrients: are they partly responsible for health benefits of high fiber foods? In: Kritchevsky D, Bonfield C, eds. *Dietary fiber in health and disease*. St Paul, MN: Eagan, 1995:305-17.
3 Baker RA. Potential dietary benefits of citrus pectin and fiber. *Food Technology* 1994;48:133-9.
4 Velisek J. Saponins. In: Davidek J, ed. *Natural toxic compounds of foods: formation and change during processing and storage*. Boca Raton, FL: CRC, 1995:45-52.

Objective data trials are needed

EDITOR,—Paul Knekt and colleagues' study showing an apparent protective effect of consumption of flavonoids on the risk of coronary death illustrates the pitfalls of such investigations.¹ Intake of flavonoids shows the same association with both non-coronary and coronary mortality. It either reduces biological susceptibility to many diseases or it serves as a marker for a complex of sociobehavioural factors associated with the risk of death.

Observational studies of diet and health have two main problems. Firstly, dietary intakes are socially and culturally determined and are confounded with other exposures influencing risk of death. In a recent study showing an apparent protective effect of dietary fibre against

Table 1—Mean systolic and diastolic blood pressure (mm Hg) at age 59-70 by birth weight and height at examination among men resident in Hertfordshire

	Birth weight (g)				All men	P value for trend
	<3250	3250-3750	3750-4250	≥4250		
Height ≤176 cm	(n = 202)	(n = 245)	(n = 138)	(n = 61)	(n = 646)	
Systolic	165.5	164.2	162.2	163.3	164.1	0.12
Diastolic	90.4	90.1	88.3	89.4	89.7	0.07
Height >176 cm	(n = 32)	(n = 70)	(n = 62)	(n = 31)	(n = 195)	
Systolic	174.0	164.4	161.5	161.3	164.6	0.03
Diastolic	95.8	90.6	89.7	90.1	91.1	0.07