Potassium may also have other beneficial actions. In a prospective study of elderly Californians Khaw and Barret-Connor found that a high potassium intake was associated with a lower incidence of stroke quite independently of blood pressure.¹⁰ This is consistent with the finding of Tobian *et al* that potassium supplementation of hypertensive rats protects against fatal cerebral haemorrhage even when blood pressure is not lowered.¹¹ It would be premature to extrapolate such data into dietary guidelines for humans without the benefit of controlled trials. It is, however, worth recalling that bendrofluzide lowered potassium concentrations in the Medical Research Council's trial and that the one significant difference between the group treated with bendrofluzide and that treated with propranolol was that there were fewer strokes in the former.¹²

Clearly there are possible advantages of an increase in population potassium intake. But where there are winners there are also losers. A healthy person has no difficulty in excreting an extra load of 20 mmol of potassium a day. But others may be at high risk of potassium toxicity as a result of disease or drug treatment. When used medically potassium supplements carry surprisingly high risks.³ In the Boston collaborative drug surveillance programme life threatening or fatal complications occurred in 28 of 4921 patients, an incidence of one in less than 200.¹³ Particularly susceptible are elderly patients; patients with renal impairment; and patients taking potassium sparing diuretics, angiotensin converting enzyme inhibitors, and, most important of all, non-steroidal anti-inflammatory drugs.¹⁴⁻¹⁶ Near fatal hyperkalaemia as a result of salt substitutes has been reported in these susceptible groups.¹⁷⁻¹⁹ The risks are probably greater than these few reports suggest. Ingestion of salt substitutes is likely to pass unrecognised by doctors unless a history is specifically sought, and information is unlikely to be available in cases of sudden death.

Excessive use of salt substitutes that contain potassium may therefore lower blood pressure slightly and may conceivably lower the incidence of stroke; but it will almost certainly cause some deaths among vulnerable groups. Where the balance of advantage lies is impossible to establish, and this information is unlikely to become available as vulnerability depends on a

combination of circumstances. The conditions of clinical trials provide little guidance about what will happen to the eccentric, the misguided, or the confused outside the constraints of medical supervision. The best policy is probably to ensure that those who are vulnerable by reasons of disease, age, or treatment are warned both by their doctors and by the manufacturers. Salt substitutes that contain potassium should be used only for adding to food to taste, and not for cooking. They should not feature in public health education, and a more enlightened approach to increasing potassium intake would be to achieve it through a diet enriched in fruit and vegetables.

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- 1 Klinge Foods Limited. *Technical data sheet on LoSalt*. East Kilbride: Klinge Foods Limited, 1991.
- 2 Tannen RL. Diuretic induced hypokalaemia. *Kidney Int* 1985;28:988-1000.
- 3 Harrington JT, Isner JM, Kassirer JP. Our national obsession with potassium. *Am J Med* 1982;73:155-9.
- 4 Robertson JWK, Isles CG, Brown I, Camerson HL, Coley H, Lever AF, *et al*. Mild hypokalaemia is not a risk factor in treated hypertension. *J Hypertens* 1986;4:603-8.
- 5 Miall WE, Greenberg G. *Mild hypertension: is there a pressure to treat?* Cambridge: Cambridge University Press, 1987:88-90.
- 6 Carlsen JE, Kober L, Torp-Pedersen C, Johansen P. Relation between dose of bendrofluzide antihypertensive effect and adverse biochemical effects. *BMJ* 1990;300:975-8.
- 7 Cappuccio FP, MacGregor GA. Does potassium supplementation lower blood pressure? A meta-analysis of published trials. *J Hypertens* 1991;9:465-73.
- 8 Easterbrook PJ, Berlin JA, Gopalan R, Matthews DR. Publication bias in clinical research. *Lancet* 1991;337:867-72.
- 9 Rose G. Desirability of changing potassium intake in the community. In: Whelton PK, Whelton AK, Walker WG, eds. *Potassium in cardiovascular and renal Medicine*. New York: Marcel Dekker, 1986:411-6.
- 10 Khaw K-T, Barret-Connor E. Dietary potassium and stroke associated mortality. A 12 year prospective population study. *N Engl J Med* 1987;316:235-40.
- 11 Tobian L, Lange J, Ulm K, Wold I, Iwai J. Potassium reduces cerebral haemorrhage and death rate in hypertensive rats, even when blood pressure is not lowered. *Hypertension* 1985;7(suppl 1):110-4.
- 12 Medical Research Council Working Party on Mild to Moderate Hypertension. MRC trial of treatment of mild hypertension: principal results. *BMJ* 1985;291:97-104.
- 13 Lawson DH. Adverse reactions to potassium chloride. *Q J Med* 1974;43:433-40.
- 14 McCarthy EP, Frost GW, Stokes GS. Indomethacin induced hyperkalaemia. *Med J Aust* 1979;i:550-2.
- 15 Goldszer RC, Coodley EL, Rosner MJ, Simons WM, Schwartz AB. Hyperkalaemia associated with indomethacin. *Arch Intern Med* 1981;141:802-4.
- 16 Tan SY, Shapiro R, Franco R, Stockard H, Mulrow PJ. Indomethacin induced prostaglandin inhibition with hyperkalaemia. A reversible cause of hyporeninemic hypoaldosteronism. *Ann Intern Med* 1979;90:783-5.
- 17 Snyder BL, Dixon T, Bresnitz E. Abuse of a "salt substitute." *N Engl J Med* 1975;292:320.
- 18 McCaughan D. Hazards of non-prescription potassium supplements. *Lancet* 1984;i:513-4.
- 19 Hoyt RE. Hyperkalaemia due to salt substitutes. *JAMA* 1986;256:1726.

More radiotherapists, please

British consultants see so many patients they don't have time to think

The Royal College of Radiologists wants more consultants in clinical oncology to be appointed.¹ This is hardly surprising—virtually every specialty in Britain believes itself to be overworked, undermanned, and getting a raw deal compared with its opposite numbers abroad. (For example, British consultants in clinical oncology see on average more than twice as many new patients each year as their colleagues in Europe and the United States.) So why should we heed the college's report?

The main reason is that manpower has not kept pace with workload. In the United Kingdom there are currently 240 consultants in clinical oncology—exactly the same number as in 1980. Yet over the past decade new patient referrals have increased by one fifth and cancer registrations will have increased by a similar rate if past trends continue. Not only is cancer becoming more common but radiotherapy is being used successfully against more cancers and earlier in their development.

Consider breast cancer. Referral rates to radiotherapists rose rapidly once doctors accepted that mastectomy could usually be avoided if local surgical excision was followed by radical radiotherapy. Data from one region suggest that referral rates for early breast cancer increased by one fifth in the past four years alone.¹ Knowledge that early treatment of such common cancers as those of the rectum and prostate may be life saving has also substantially increased radiotherapists' workload.

Consultants have an average of 2000 patients under their care—about as many as the average size of a general practitioner's list—but all of these patients will be suffering from cancer. British clinical oncologists frequently control most aspects of their patients' care, including the administration of increasingly complicated regimens of chemotherapy.² This differs markedly from what has become standard practice elsewhere.

In addition to this technical role they have to devote much

of their time to counselling patients and their families and, inevitably, supervising their continuing and terminal care. Many patients have no other hospital based specialists to turn to. Attempts to reduce junior staffing levels to ensure that well trained juniors will eventually find consultant posts and moves to limit their working hours have also exacerbated problems within the specialty.

Faced with similar problems, the Royal Australian College of Radiologists started putting numbers to its complaints, estimating how many patients were being deprived of essential treatment and how much the delays in treatment were costing.³ Perhaps the royal college here should follow this

lead. Unless more clinical oncologists are appointed standard care for Britain's patients with cancer looks likely to continue well into the next century.

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1 Board of the Faculty of Clinical Oncology. *A report on medical manpower and work load in clinical oncology in the United Kingdom*. London: Royal College of Radiologists, 1991.

2 Tobias JS, Tattersall MHN. Who should treat cancer? *Lancet* 1981;i:884-6.

3 Harrigan P. Australia: delays in radiotherapy reforms. *Lancet* 1991;338:876.

General practitioners' pay

Unsettling pool debts

Many general practitioners believe that they worked harder in the first year of their new contract than ever before. They will therefore be surprised to discover that under existing arrangements nearly £6000 may be clawed back from their pay.¹ To understand how this could happen requires a detailed knowledge of the workings of the pay system.

Each year the review body on doctors' and dentists' remuneration recommends what gross income (net income plus expenses) the average general practitioner should receive the following year. By multiplying this amount by the estimated number of general practitioners a sum of money is arrived at: the remuneration pool. This is distributed among general practitioners by way of fees and allowances. Their uptake determines whether the average intended gross income is delivered.

The review body's ultimate intention is to deliver average net income as accurately as possible. Its success is known only after three years and depends on the findings of a survey of general practitioners' expenses conducted by the Inland Revenue. Any errors in delivering gross income are (as happened with last year's overpayment) apparent earlier. The review body has an explicit mechanism for dealing with underpayments or overpayments of net income. In any one year 5% of average net income or 20% of new money (whichever is the smaller) may be recovered from or added to the current year's award.

Before the 1990 contract the pay system worked smoothly, regularly delivering within 2% of the expected net figure. Any underpayments or overpayments were made good by the government or the profession, with little impact on subsequent awards and no fuss. Predicting that the new contract would disrupt this steady state was not difficult: all the elements already mentioned—manpower, uptake, and expenses—were liable to change significantly and unpredictably.

Last year there were fewer general practitioners than forecast to share total remuneration, leading to a larger average income than intended. Workload under the new contract exceeded all expectations, particularly in the newly remunerated fields of minor surgery, health promotion, and procedures rewarded by target payments. This led to greater uptake than had been predicted. Expenses remain the unknown quantity, and these may alter the eventual size of the overpayment.

The overpayment would not have been as high as £5951

had it not been for two special factors affecting target payments. Firstly, despite a review body recommendation to the contrary, the government included the premiums on higher rate target payments within average net remuneration for the first nine months of the financial year. Although these were expected to average £400 per doctor, the actual yield from higher rate target premiums for the full year has been over £2000. Their inclusion for three quarters of the year has contributed £1400 to the overshoot. Secondly, government accounting convention dictates that payment for work done in any given year must be brought to account in that year, regardless of when it was actually received.

This affects target payments because the Department of Health agreed to initiate the scheme with a one off double payment. (If it hadn't then because payments are made one quarter in arrears doctors would have received only three quarters of what they were due in the first year of the contract.) Accruals based accounting, however, has pulled into the first year of the contract payments made to doctors in June this year—meaning that the equivalent of five quarters' payments is being included in calculations for 1990-1. This has contributed another £700 to the overspend.

These are essentially technical problems capable of solution. Much is at stake: clawing back large amounts of money from future pay awards will surely threaten any cautious acceptance of the new contract that may be building up. But there are more long term considerations. Should the receipts from work sensitive payments be regarded as a bonus or merely one more element affecting how a given pool of money is divided up? Can the current system withstand the stress that an overpayment of this size (12% of average intended gross income) imposes on it? Arguments for change are included in two GMSC publications, *Building Your Own Future* and *Your Choices for the Future*. General practitioners will surely want to participate in this debate.

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1 Beecham L. GPs' anger at £6000 clawback. *BMJ* 1991;303:1014.

2 General Medical Services Committee. *Building your own future*. London: GMSC, 1991.

3 General Medical Services Committee. *Your choices for the future*. London: GMSC, 1991.