while participating in a clinical trial. Although in recent years the number of claims has increased in the Netherlands, my impression is that claims by volunteers are (still) extremely rare, and therefore it should be possible to resolve these issues.

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- 1 Netters JS. Clinical research in trust hospitals. *BMJ* 1993;307:1499. (4 December.)
- 2 Ferguson A. Clinical research in trust hospitals. *BMJ* 1994;308:412. (5 February.)
- 3 Correspondence. Insurance against injury in clinical trials. *BMJ* 1994;308:855-6. (26 March.)

Overdose with calcium channel blockers

EDITOR,—John Kenny's editorial on overdose with calcium channel blocking drugs made several statements that could be misinterpreted with potentially serious results.¹ Calcium channel blockers had similar effects in overdose despite differing therapeutic effects. A range of similar adverse effects have been reported in case reports, but death, and life threatening complications such as heart block and refractory hypotension, are much more common with verapamil than diltiazem.^{2,3} Similarly, these effects are more common with diltiazem than nifedipine (and presumably other dihydropyridines).^{2,3} This mirrors their relative effects on cardiac conduction in therapeutic doses. There have been no deaths formally reported with nifedipine poisoning alone.³ Most nifedipine poisonings will respond to supportive treatment with intravenous fluids. Verapamil, in contrast, frequently causes profound bradycardia and hypotension and warrants aggressive and intensive therapy.

We agree that the initial treatment of choice is calcium, but the suggestion that four doses of 1 g (or 20 mg/kg) at 15-20 minute intervals is the maximum safe dose and that calcium concentrations should be monitored (presumably to avoid hypercalcaemia) will often lead to failure of this treatment. An analysis of reports of patients failing to respond to calcium reveals either that the doses given are not mentioned or that the total dose given was in the order of 1-3 g.⁴ Surely the aim of calcium treatment in this situation is to overcome a competitive blockade of calcium channels in the cardiac conducting system. The degree of hypercalcaemia that is required will depend on the level of calcium channel blocker and its relative effect on these tissues. This can be easily monitored with the electrocardiogram. Thus, our approach to calcium channel blocker poisoning with cardiac conduction problems is to give 1 g of calcium salts every 2-3 minutes until the block is reversed. The maximum dose of calcium we have used has been 30 g over 12 hours, and the highest calcium concentration we have observed has been 5.94 mmol/l (23.8 mg/dl).⁴ We have found no adverse effects attributable to this treatment.⁵ In our experience, the few patients who do not respond to such a regimen do not respond to any other treatment including glucagon, isoprenaline, dopamine, noradrenaline, and pacing. These may all be worth trying, but our experience is that patients who are truly refractory to calcium therapy are, unfortunately, refractory to all other treatments. This has been supported by animal work done in our laboratory—calcium given in sufficient doses was able to reverse all the cardiovascular toxicity associated with calcium channel blocker overdose.⁶

The severity of this poisoning warrants thorough gastrointestinal decontamination. For sustained release calcium channel blocker preparations, whole bowel lavage with polyethylene glycol

is, in our experience, far more effective than charcoal with an osmotic cathartic⁴ (and also does not cause intravascular volume depletion) and should be used routinely.

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- 1 Kenny J. Treating overdose with calcium channel blockers. *BMJ* 1994;308:992-3. (16 April.)
- 2 Litovitz TL, Holm KC, Clancy C, Schmitz BF, Clark LR, Oderda M. 1992 Annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *Am J Emerg Med* 1993;11:494-555.
- 3 Pearigen P, Benowitz N. Poisoning due to calcium antagonists. *Drug Safety* 1991;6:408-30.
- 4 Buckley NA, Dawson AH, Howarth DM, Whyte IM. Slow release verapamil poisoning. Use of polyethylene glycol whole-bowel lavage and high-dose calcium. *Med J Aust* 1993;158:202-4.
- 5 Howarth DM, Dawson AH, Smith AJ, Buckley NA, Whyte IM. Calcium channel blocking drugs in overdose: an Australian series. *Hum Exp Toxicol* 1994;13:161-6.
- 6 Eccleston DS, Dosen P, Smith AJ. A rat model for calcium channel antagonist toxicity in man. *Clin Exp Pharmacol Physiol* 1991 (suppl 18):15.

Screening the population for diabetes

EDITOR,—Work done in Newfoundland, where the population prevalence of diagnosed diabetes is about 4%,¹ supports the conclusions in Philip D Home's editorial.² In an effort to test the frequently stated, but poorly researched, hypothesis that there are many people with undiagnosed diabetes in the community colleagues and I (a randomly selected group of family doctors) tested a 1 in 5 random sample of our patients aged 40 and older.³

We tested 1767 (84.7%) of the 2087 patients in the sample, using the National Diabetes Group's diagnostic criteria. Forty eight people had a raised fasting blood sugar glucose concentration when first tested, but only 19 of these had a high concentration when a second test was done. Thus we identified 19 people with previously undiagnosed diabetes; 294 people in the sample were already known to have diabetes. Thus, there were 15.5 people previously known to have diabetes for each person newly found to have the disease. An enormous amount of work by 17 family doctors raised the prevalence of diabetes in our population of patients aged 40 and over from 12.4% to 13.2%. In a publicly funded national health service, in which most patients see a doctor often and accurate reflectance glucometers are cheaply and commonly available, few people with diabetes remained undetected.

Our results support Home's view that population screening for diabetes is probably not cost effective and that professional alertness remains the most efficient approach. I agree with the Canadian Task Force on the Periodic Health Examination and the US Preventive Services Task Force that screening for diabetes should be confined to people in the groups at higher risk.^{4,5}

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- 1 Worrall G, Fodor G, Butt M. A minimal prevalence survey of diagnosed diabetes in Newfoundland and Labrador. *Can J Public Health* 1991;82:104-8.
- 2 Home PD. Diagnosing the undiagnosed with diabetes. *BMJ* 1994;308:611. (5 March.)
- 3 Worrall G, Moulton M. The ratio of diagnosed to undiagnosed diabetes in patients 40 years and older. *Can J Public Health* 1992;83:379-81.

- 4 Canadian Task Force on the Periodic Health Examination. The periodic health examination. *Can Med Assoc J* 1979;121:1193-254.
- 5 US Preventive Services Task Force. *The guide to clinical preventive services: an assessment of the effectiveness of 169 interventions*. Baltimore: Williams and Wilkins, 1989.

Computed tomography of the colon in elderly people

Single contrast barium study is adequate

EDITOR,—Michelle Fink and colleagues are presumably referring to the double contrast barium enema technique when they state that barium enema can be difficult, distressing, and unrewarding in frail elderly patients.¹ We agree that the standard double contrast barium enema can be unpleasant and unsuccessful in elderly people and that alternative techniques for examining the colon should be evaluated.

The colon can be examined quickly, efficiently, and without distress by using a single contrast barium technique. For the past year it has been our policy to investigate the colon with a single contrast barium enema technique in frail elderly patients. The use of low viscosity barium suspension, often combined with smooth muscle relaxants, has proved successful in imaging the entire colon. The dilute barium suspension is infused into the rectum under gravity and flows rapidly through the colon to reach the caecum. It is not necessary to inflate the colon with air. During the procedure the patient remains mostly in the supine position and is turned only occasionally into the right or left oblique positions. The complex positioning movements required for the double contrast technique that cause so much distress and discomfort are unnecessary. Most of the barium suspension is drained from the colon at the end of the examination. The technique is capable of showing medium sized polyps as well as carcinomas.

Since March 1993 we have performed 117 single contrast examinations on patients aged from 73 to 95 (mean 81) years. The colon was outlined as far as the caecum in 102 of the 117 patients. In nine of the remaining 15 patients stenotic lesions, characteristic of carcinoma, were found in the distal colon. The total examination time was recorded in 39 patients and averaged 21 minutes. Some incontinence of barium occurred in about half the patients but this was mostly minor; severe incontinence was evident in only 16%.

The advantages of the single contrast barium enema are that it gives more precise information about the colon than computed tomography, is widely available, and does not put further demands on already hard pressed resources.

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- 1 Fink M, Freeman AF, Dixon AK, Coni NK. Computed tomography of the colon in elderly people. *BMJ* 1994;308:1018. (16 April.)

Workload generated is too heavy

EDITOR,—We agree with Michelle Fink and colleagues that computed tomography of the colon in elderly people is more humane and easier to perform than doing a barium enema. It often reveals highly relevant extracolonic disease and can be as cheap as a barium enema. Moderate size colonic tumours are picked up quite adequately with computed tomography.

Our concern, however, is the possibility of being flooded with requests for this examination. In correspondence last year the authors admitted that