50 000 IU, which could be taken once every two months to provide an equivalent dose, but this needs testing in clinical trials.

The question of whether to treat all elderly people living in the community is problematic. Two thirds are not deficient in vitamin D, yet 250 would need to be treated for one year to prevent a fracture.²³ This number could probably be reduced by confining treatment to people aged 80 or older.² Treating only women with known vitamin D deficiency could prevent one fall for every five women treated for a year⁸ and treating 20-25 women in nursing homes and old people's homes for a year without screening for vitamin D status would prevent one fracture.²¹

Finally, devotees of anecdote based medicine who need an example of the dramatic effect of vitamin D on muscle weakness (in a different clinical context) may wish to note the case report of "A woman who left her wheelchair" after three weeks of calcitriol for extremely severe vitamin D deficiency with progressive muscular weakness.²⁵

I thank Richard Doll and Larry Ramsay for encouraging me to undertake this review.

Competing interests: GV is a semiretired independent consultant in pharmaceutical medicine. He spent most of his working life in the industry with responsibility for the clinical development of new drugs. He also worked as a medical assessor with the Committee on Safety of Medicines responsible for evaluating the efficacy and safety of new drugs. The review was prompted after participating in a five year randomised controlled trial of vitamin D for the prevention of fractures in elderly people by the realisation that appropriate preparations of vitamin D are not readily available in England.

- 1 Blake AJ, Morgan K, Bendall MJ, Dallosso H, Ebrahim SB, Arie TH, et al. Falls by elderly people at home: prevalence and associated factors. *Age Ageing* 1988;17:365-72.
- 2 Semba RD, Garrett E, Johnson BA, Guralnik JM, Fried LP. Vitamin D deficiency among older women with and without disability. *Am J Clin Nutr* 2000;72:1529-34.
- 3 Jacques PF, Felson DT, Tucker KL, Mahnen B, Wilson PW, Rosenberg IH, et al. Plasma 25 hydroxy vitamin D and its determinants in an elderly population sample. *Am J Clin Nutr* 1997;66:929-36.
- 4 Institute of Medicine. *Dietary reference intakes*. Washington, DC: National Academic Press, 1997.
- 5 Holick MF. Vitamin D: a millennium perspective. *J Cell Biochem* 2003;88:296-307.

- 6 Mowé M, Haug E, Bohmer T. Low serum calcidiol concentration in older adults with reduced muscular function. *J Am Geriatr Soc* 1999;47:220-6.
- 7 Dhesi JK, Bearne LM, Moniz C, Hurley MV, Jackson SH, Swift CG, et al. Neuromuscular and psychomotor function in elderly subjects who fall and the relationship with vitamin D status. *J Bone Miner Res* 2002;17:891-7.
- 8 Pfeiffer M, Begerow B, Minne HW, Abrams C, Nachtigall D, Hansen C. Effects of a short term Vitamin D and calcium supplementation on body sway and secondary hyperparathyroidism in elderly women. *J Bone Miner Res* 2000;15:1113-8.
- 9 Bischoff HA, Stähelin HB, Dick W, Akos R, Knecht M, Salis C, et al. Effects of vitamin D and calcium supplements on falls: a randomised controlled trial. *J Bone Miner Res* 2003;18:343-51.
- 10 Evans JG. Falls and fractures. *Age Ageing* 1988;17:361-4.
- 11 Chang JT, Morton SC, Rubenstein LZ, Mojica WA, Maglione M, Sutton MJ, et al. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials. *BMJ* 2004;328:680.
- 12 Heikkinen RJ, Inkovaara JA, Harju EJ, Haavisto MV, Kaarela RH, Katja JM, et al. Annual injection of vitamin D and fractures of aged bones. *Calcif Tissue Int* 1992;51:105-10.
- 13 Egsmose C, Lund B, McNair P, Lund B, Storm T, Sorensen OH, et al. Low serum levels of 25-hydroxy vitamin D and 1,25 dihydroxy vitamin D in institutionalized old people: influence of solar exposure and vitamin D supplementation. *Age Ageing* 1987;16:35-40.
- 14 Gloth FM, Gundberg CM, Hollis BW, Haddad JG Jr, Tobin JD. Vitamin D deficiency in homebound elderly persons. *JAMA* 1995;274:1683-6.
- 15 Lips P, Graafmans WC, Ooms ME, Bezemer PD, Bouter LM. Vitamin D supplementation and fracture incidence in elderly persons: a randomized placebo-controlled trial. *Ann Intern Med* 1996;124:400-6.
- 16 Nesby-O'Dell S, Scanlon KS, Cogswell ME, Gillespie C, Hollis BW, Looker AC, et al. Hypovitaminosis D prevalence and determinants among African American and white women of reproductive age: third National Health and Nutrition Examination Survey, 1988-1994. *Am J Clin Nutr* 2002;76:187-92.
- 17 Gallagher JC, Kinyamu HK, Fowler SE, Dawson-Hughes B, Dalsky GP, Sherman SS, et al. Calcitropic hormones and bone markers in the elderly. *J Bone Miner Res* 1998;13:475-82.
- 18 McKenna MJ. Differences in vitamin D status between countries in young adults and the elderly. *Am J Med* 1992;93:69-77.
- 19 Meyer HE, Smedshaug GB, Kvaavik E, Falch JA, Tverdal A, Pedersen JL. Can vitamin D supplementation reduce the risk of fracture in the elderly? A randomized controlled trial. *J Bone Miner Res* 2002;17:709-15.
- 20 Latham NK, Anderson CS, Lee A, Bennett DA, Moseley A, Cameron ID, et al. A randomized, controlled trial of quadriceps resistance exercise and vitamin D in frail older people: the frailty interventions trial in elderly subjects (FITNESS). *J Am Geriatr Soc* 2003;51:291-9.
- 21 Chapuy MC, Arlot ME, Duboeuf F, Brun J, Crouzet B, Arnaud S, et al. Vitamin D₃ and calcium to prevent hip fractures in elderly women. *N Engl J Med* 1992;327-42.
- 22 Dawson-Hughes B, Harris SS, Krall EA, Dallal GE. Effect of calcium and vitamin D supplementation on bone density in men and women 65 years of age or older. *N Engl J Med* 1997;337:670-6.
- 23 Trivedi DP, Doll R, Khaw KT. Effect of four monthly oral vitamin D₃ (cholecalciferol) supplementation on fractures and mortality in men and women living in the community: randomised double blind controlled trial. *BMJ* 2003;326:469-72.
- 24 Vieth R. Vitamin D supplementation, 25-hydroxy vitamin D concentrations and safety. *Am J Clin Nutr* 1999;69:842-56.
- 25 Mingrone G, Greco AV, Castagneto M, Gasbarrini G. A woman who left her wheelchair. *Lancet* 1999;353:806.

The power of prayer (and adequate fluid resuscitation)

While working in South Africa, 10 years ago, I visited a small town on the edge of the Little Karoo. This is a remote arid area of thorn bushes, ostriches, and minimal rainfall, but the town, Montagu, is famous for the production of muscatel, a sweet dessert wine.

In the past, the town's isolation resulted in its inhabitants being self sufficient. For medical care, they relied on the plant lore and skills of local healers. Recently botanists have started to identify the plants they collected and to document how they were used in remedies, which may lead to future research into plant derived cures. When I visited, orthodox medical care was available, but the town was still rather off the beaten track.

After a restful night, I was the only customer for breakfast in the small restaurant. As I waited for my meal, I examined the décor, which resembled an old fashioned tea room. Prominently displayed on one wall was a deep picture frame containing a statue of the Virgin Mary, encircled by a narrow blue plastic tube

which looked vaguely familiar. On closer inspection, I realised to my amazement that it was a double lumen central venous catheter.

It seemed an unlikely place to find specialist medical equipment, and so I asked the waitress about it. Her face broke into a wonderful smile. Everyone had thought the owner of the restaurant was going to die when he was taken off to hospital with a burst appendix, he was so ill. But, praise be, he had started to improve after the doctors inserted the blue tube into the side of his neck. Our Lady had answered the people's prayers and saved his life.

The surgery he underwent and the antibiotics he must have received did not feature in the story of this miraculous recovery. Before the owner left hospital his family asked if they might keep the lifesaving tube. So now the double lumen central venous catheter hangs in a place of honour in a rural restaurant with a statue of the virgin—an instrument of divine, rather than medical, intervention.

Diana M Jolliffe *consultant anaesthetist, Leicester Royal Infirmary*