THE VITAMIN D STATUS OF NURSING HOME / HOSTEL RESIDENTS IN SOUTH-WEST SYDNEY.

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Over the last 25 years, low vitamin D status among housebound elderly has been reported in many countries (McKenna 1992), including Australia (Reid et al. 1993). Proximal muscle weakness, reversible by low doses of the fat-soluble vitamin D, may increase the risk of falling (Parfitt et al. 1982). Compensatory increases in parathyroid hormone (PTH) levels contribute to loss of calcium from bone. Recently, a large double-blind trial of elderly French women demonstrated the effectiveness over 18 months of a daily supplement of vitamin D_3 and calcium in reducing the incidence of hip fractures by 43% ($P<0.05$), and increasing the bone density of the proximal femur ($P<0.001$) (Chapuy et al. 1992).

For this cross-sectional study, 158 Caucasian subjects (79±7 yrs) were randomly selected from nursing home (NH), hostel (HS) and self-care (SC) units of four Nursing Home complexes in south-west Sydney. Venous blood samples were taken for analysis of 25-hydroxy vitamin D (25-OHD) levels; sun-exposure was estimated with adhesive UV-monitors; mobility levels were noted; dietary intakes of calcium and vitamin D were estimated from menu records, and any vitamin / mineral supplements taken regularly were recorded.

Vitamin D status at the end of summer was below the normal range (blood 25-OHD <25 nmol/L) in 28% of the total sample (mean ± SD=37±19; range 4-120 nmol/L). The mean ± SD for NH (n=82) subjects was 33±18 nmol/L; for HS (n=55) was 36±16 nmol/L; and for SC (n=21) was 52±23 nmol/L. Recorded sun-exposure was below the minimal erythemal dose for super-sensitive skin in 48% of NH, 20% of HS, and 0% of SC subjects; this low exposure group (n=49) had a 25-OHD level of 27±10 nmol/L. Mobility levels varied with residence type: 21% (n=17) of NH walked alone, compared with 48% (n=26) of HS and 95% (n=20) of SC. Both nonwalkers and supported walkers had five times the risk of low vitamin D status, compared with those who walked alone (OR=5.1, CI_{95}=4.6 - 5.6). NH subjects were 10 times (OR=10.7, CI_{95}=6.8 - 22.9) and HS subjects seven times (OR=7.0, CI_{95}=4.3 - 15.3) more likely to have low vitamin D status than SC subjects. Dietary vitamin D intake in unsupplemented subjects was 3.2±1.4 ug/day.

A daily supplement (small fish liver oil capsule, with 10 µg = 400 I.U. vitamin D_3 and 1.25 mg vitamin A) to be taken with breakfast, was offered to all surviving subjects with low or borderline 25-OHD levels. Of the 33 subjects who completed the six week trial, 18 (55%) responded well (25-OHD incr. by 10-33 nmol/L), while eight (24%) showed minimal response (incr. by <4 nmol/L or decreased levels of 25-OHD). Of the non-responders, two were on strict low-fat diets and had negligible fat at breakfast; one had a cholecystectomy during the trial, and three others (self-medicating) may have missed several doses.

Hypovitaminosis D occurs in a significant proportion of Australian nursing home / hostel residents. Regular, low dose supplementation could be effective in correcting this problem.

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