

# Online chat raises difficult question



**DR MICHAEL TAM**

BSC(MED), MBBS, MMH(GP), FRACGP  
Staff specialist, GP Unit, SWSLHD &  
Ingham Inst; Conjoint Sen Lecturer, UNSW

## Should elderly people living in the community routinely take vitamin D supplements?

### CLINICAL SCENARIO

SYLVIA, a 65-year-old woman who was largely well and lived independently in her own house, saw me recently for preventive care.

It has not been my practice to check or recommend vitamin D routinely. But after the consultation, a discussion on an online GP forum made me question myself.

A couple of Australian papers were cited and they claimed there was strong evidence for vitamin D in preventing falls.<sup>1,2</sup> What is the evidence?

### CLINICAL QUESTION

What is the effect of vitamin D supplements in reducing falls in community-dwelling older people?

### THE RESEARCH EVIDENCE

#### Step 1: The Cochrane Library

A systematic review was published in 2012 on interventions (including vitamin D) for preventing falls in older people living in the community.<sup>3</sup> I tried to see whether there was a more recent review.

#### Step 2: TripDatabase and PubMed

I conducted a search using the TripDatabase PICO search tool (Participant: “older person”, Intervention: “vitamin D”, Comparator: “placebo”, Outcomes: “falls”).

A large number of trials and synopses appeared, but few newer than 2012. To narrow things down, I used PubMed to search “vitamin D supplementation falls”, and limited the results to only systematic reviews since 2012.

It seemed that there were many systematic reviews, with conflicting evidence as to whether vitamin D reduced falls.<sup>4</sup> One of the largest systematic reviews was by Bolland and colleagues, published in *Lancet Diabetes and Endocrinology* in 2014.<sup>5</sup> Let’s look at this systematic review in detail.

### CRITICAL APPRAISAL

I will use the systematic reviews critical appraisal sheet from the Centre for Evidence-Based Medicine.<sup>6</sup>

#### What PICO question does the systematic review ask?

In unselected community-dwelling individuals (Participants); what is the effect of vitamin D (colecalfiferol or ergocalciferol) supplements with or without calcium (Intervention); compared

to non-vitamin D control therapy (including placebo) (Comparator); on falls (Outcome).

This study also used trial sequential analysis, and asked the question whether further trials were warranted (see Stat Facts).

#### Is it clearly stated?

Yes.

#### Is it unlikely that important studies were missed?

Probably. The search strategy (in 2014) made use of the then-numerous (10!) contemporaneous systematic reviews, which included the 2012 Cochrane review,<sup>3</sup> to identify the primary research.

#### Were appropriate criteria used to select articles for inclusion?

Yes. The authors only included randomised trials. Exclusions: cluster randomised





trials, trials that included other interventions only in the vitamin D group, and trials in populations with chronic comorbidity other than osteoporosis or fragility.

#### Were the included studies sufficiently valid for the question?

Probably. The authors formally assessed the risk of bias of the included studies. One trial was at high risk of bias, eight were at moderate risk, and 11 were at low risk.

#### Were the results similar between studies?

Somewhat. There was moderate heterogeneity between studies ( $I^2 = 61\%$  for vitamin D vs control, and  $55\%$  for vitamin D  $\pm$  calcium vs control).

#### What were the results?

Comparisons against the control intervention for the relative risk (RR) of falls:

- Vitamin D: RR 0.95 (95% CI 0.89 - 1.02)
- Vitamin D  $\pm$  calcium: RR 0.95 (95% CI 0.89 - 1.02),  $p = 0.12$

In the trial sequential analysis, the pooled sample size was larger than optimum, with an effect estimate for vitamin D within the “futility boundary” of a 10% risk reduction threshold.

This can be interpreted that there is a sufficient body of evidence such that further research using the same methods are unlikely to change the meta-analysis results.

#### DISCUSSION AND CONCLUSION

The evidence is somewhat complex and needs to be interpreted with care.

Earlier systematic reviews have reported supportive evidence for the use of vitamin D in preventing falls, while more recent systematic reviews, including this one, have not been supportive.

In my view, this systematic review provides convincing evidence that the effect of vitamin D on falls in otherwise-well, community-dwelling people is likely to be small, if it exists.

The results of this study are largely consistent with the 2012 Cochrane systematic review.<sup>3</sup>

To be clear, there is a good rationale for people who are at high risk of osteomalacia to receive adequate vitamin D. However, routine preventive use seems difficult to justify based on these results.

Vitamin D supplements seemed safe in studies, but may be associated with hypercalcaemia, hypercalcuria and renal stones.

For Sylvia, I encouraged her to undertake regular exercise. ■

References available on request



#### Trial sequential analysis

Meta-analyses, like individual studies, often lack statistical power. Trial sequential analysis is a method that accounts for total number of pooled participants, and the statistical diversity in the included studies. It may better control false positive (type I) and false negative (type II) errors.<sup>7</sup>

Stat Facts

STOCKPHOTO.COM