**Author’s response to reviews**

**Title:** Effects of vitamin D in the elderly population: current status and perspectives

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Reviewer 1.

This is an excellent overview of the evidence pertaining to vitamin D in older people. I just have a few minor comments:

- Section 2, 2nd paragraph: this paragraph starts talking about patients with kidney, bone and phospho-calcic disorders but then mentions randomised controlled trials on fracture/fall prevention. It is not entirely clear which population is being addressed here. In the same section, doses are quoted up to 600,000 units per month—it would be helpful to insert a comment referring to the later section on problems associated with high bolus doses.

Authors: We fully agree with the reviewer. It was a mistake from our side and the related sentences have been corrected accordingly.

- Section 2, 3rd paragraph: my understanding is that the reason for LC MS is greater accuracy and pick up of both D2 and D3, rather than high throughput. LC MS techniques require more operator input and therefore are not generally suitable for high throughput assays.

Authors: It is true that LCMS/MS methods can present a better accuracy and recognize both 25(OH)D2 and 25(OH)D3 but these methods are also used for their high-throughput and for the low cost per test. A result can be obtained in a couple of minutes, and some very big commercial labs, mainly in US, are equipped with LCMS/MS only to run 25(OH)D. Now, these “2-minute methods” are not more accurate than common immunoassays.

- Section 2 last paragraph—it would be helpful to mention that there is substantial heterogeneity in the functional threshold is derived from the PTH and calcium absorption studies the study by Sai in JCEM in which these studies were
reviewed is helpful here.

Authors: This is an important point raised by the reviewer. We have added a statement in the related section to highlight the substantial heterogeneity between studies.

- In section 6 after the list of bullet points, it would be helpful to add a few sentences just giving a little more detail on potential caveats to the interpretation of observational studies, spelling out issues of reverse causality and confounding.

Authors: This is of primary importance. We have added the following statement in the discussion section: “When analysing results of observational studies, it is important to consider potential reverse causality or residual confounding factors. For example, lifestyle factors, not always adequately recorded in observational studies, could influence circulating levels of vitamin D and, as such, could confound the association between 25(OH)D levels and incidence of diseases. On the other hand, 25(OH)D levels might not be responsible for the changes in outcomes of the diseases but disability in itself might influence the vitamin D status of the individual. In other words, serum 25(OH)D levels could just be a biomarker of severity of the diseases. In principle, these issues with reverse causality and confounding factors could be ruled out with RCTs.”

Reviewer 2.
The paper is excellent. No major observations.
Authors: We thank the reviewer for this kind comment.