Authors' response to Young and Hopkins: vitamin D and lung function

We thank Dr RP Young and Ms RJ Hopkins for their interest in our article and their constructive comments.¹

We agree with Dr RP Young and Ms RJ Hopkins that our analyses may suggest a threshold effect. However, we believe that more studies are needed before we firmly can assume a threshold effect. It is true that the association between vitamin D level and FEV₁% predicted was mirrored by a corresponding association between vitamin D and FVC% predicted. Therefore in our main analysis, the vitamin D level was not significantly associated with the FEV₁/FVC ratio. This general reduction of lung volumes in

individuals with low vitamin D levels could, as suggested by Young and Hopkins, be caused by general frailty or weakness and not by an intrapulmonary process. Yet, as we observed a significant interaction, suggesting a stronger association between vitamin D and FEV₁% pred in individuals with airway obstruction we concluded that low vitamin D levels may play a role with regard to development and in particular progression of COPD.² It was not our intent to claim that low vitamin D is a cause of decreased lung function, as observational studies like ours are subject to reverse causation and confounding as rightly pointed out by Young and Hopkins. We rather sought to report the observed association and fully agree that these associations could be confounded by or mediated through, for example, systemic inflammation. Indeed, we ourselves have previously reported that markers of systemic inflammation like elevated fibrinogen and C reactive protein are associated with reduced lung function, increased risk of COPD and prognosis in COPD.^{3–5} Therefore, we agree that future studies on the relationship between vitamin D and lung function and COPD should include possible confounding or mediation through systemic inflammation.

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