Author’s response to reviews

Title: Relationships between Orthostatic Hypotension, Frailty, Falling and Mortality in Elderly Care Home Residents

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Dr. Romero-Ortuno

Section Editor
BMC Geriatrics

RE: BGTC-D-18-00653 entitled "ORTHOSTATIC HYPOTENSION, FRAILTY AND FALLING RISK IN ELDERLY CARE HOME RESIDENTS"

Dear Dr. Romero-Ortuno,

Thank you for your careful consideration of this paper, and for the helpful and constructive reviews of our work. We have carefully considered the reviewer’s comments, and have
incorporated these suggestions in this revised version of the article. We believe the article is improved as a result, and hope it will be acceptable for publication in BMC Geriatrics in its revised form. We enclose a point-by-point response to the specific comments raised. A copy of the revised manuscript (changes tracked) has been uploaded online.

REVIEWER #1

Marie Therese Cooney (Reviewer 1): This is an interesting manuscript and describes an important issue - frailty in LTC residents and its relationship with falling and OH.

I appreciate the use of routinely available data and the use of an orthostatic measure which is practical to perform in this population. Both will make translation of the results to clinical practice more feasible.

We are pleased you consider the manuscript to be interesting and addressing an important area. We are pleased you considered the feasibility of the work to be readily translatable.

The description of the frailty index is interesting - however, I would suggest that the authors validate it using an outcome such as mortality or progression to a higher dependency and care needs level within a certain timeframe. It would be surprising if this information was not available for analysis. Additionally it would be interesting to see how this frailty index compared to a frailty score for example Fried method or even the Rockwood score if this was not available.

Thank you for this helpful suggestion. We were able to obtain mortality / survival data for all participants for a 36-month follow-up period, and we now incorporate these data in the manuscript. As the reviewer proposed, individuals who were frail, based on the FI-MDS, had higher mortality than the non-frail, even in this generally frail institutionalised population with inherently high mortality rates. We are not able to determine the Fried phenotypic index because the majority of these participants are no longer living, and these data are not available in their record. However, essentially the FI-MDS is a Rockwood score, with the only difference that it is generated from a standard assessment tool.

The authors state that frailty was a predictor of both OH and falls risk. However, the statistical significance of this is not reported. Looking at figure 6 and the AUROC curves I would suggest these are very unlikely to be statistically significant. The reported AUROCs of under 0.6 also demonstrate poor discrimination.

In response to the reviewers’ suggestion, we have restructured the results to focus more on the predictive power to determine mortality, rather than OH and falls risk. We retain these earlier analyses in narrative form, but removed the original Figure 6. Instead we have a new Figure 6, based on the mortality data which showed better discrimination (AUC 0.651, p=0.007).

I would suggest that the authors either address these issues or limit their conclusions to 1. a description of the levels of frailty in LTC (ideally with validation or correlation of FI) 2. the
association between frailty and OH and falling 3. Omit the use of frailty as a predictor of future falls - I do not think it is supported by the ROCs. Also, as shown in figure 2 - the not frail group had less falls than the frail group, but the rate was still half of the frail patients fall rate.

We have now revised the manuscript in light of these suggestions – and have incorporated mortality data as suggested above. We agree that in this population, although the prospective falling rate was significantly lower in the non-frail individuals, there were still some individuals who were not frail that experienced falls. This reflects the well-documented clinical reality of older adults in long-term care facilities in whom falls are common in general. However, we believe our data provide some simple tools to risk assess individuals in long-term care and identify those with particularly high fall susceptibility who would benefit from targeted fall management strategies.

REVIEWER #2

Roman Romero-Ortuno (Reviewer 2): This is a well-written study convincingly showing that orthostatic hypotension (consensus and initial definitions) and a frailty index are retrospectively and prospectively associated with falls in a cohort of care home residents. The study adds value to this field due to the inclusion of frail care home residents.

We are pleased you consider the work of be of interest to the field.

We thank the reviewers for their careful consideration of this manuscript, and hope it will be acceptable for publication in its revised format.

Best wishes,

Victoria Claydon