**Author’s response to reviews**

**Title:** Hospital in the Nursing Home program reduces emergency department presentations and hospital admissions from residential aged care facilities in Queensland, Australia: a quasi-experimental study

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**Author’s response to reviews:**

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Dear Editor:

Thank you for your decision letter dated 7 December 2015. We were pleased to know that our manuscript was rated as potentially acceptable for publication in BMC Health Services Research, subject to revisions suggested by the reviewers. We are now writing to submit the revised manuscript (BHSR-D-15-00061) entitled “Hospital in the Nursing Home program reduces emergency department presentations and hospital admissions from residential aged care facilities in Queensland, Australia: a quasi-experimental study” for your further consideration.

We would like to thank the reviewers and the Editor for the constructive comments to improve the quality of our manuscript. Based on the comments, we have prudently revised our manuscript. We have submitted the revised manuscript on the journal website, as well as a copy of the original manuscript marked with all changes we have made during the revision process.
(using red colored text). Appended to this letter is our point-by-point response to the comments raised by the reviewers.

We sincerely appreciate your consideration of our revised manuscript, and hope with these amendments, our manuscript could be favorably accepted for publication. We look forward to further communications.

Sincerely yours,

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Appendix: Response Letter to the Reviewer Comments

Thanks to the reviewers for the constructive comments. We have revised our manuscript accordingly, and marked all changes we have made using red colored text. Please also find below our point-by-point response to these comments.

Reviewer reports:

Reviewer #1:

The manuscript is very interesting and well written.

However I have some considerations regarding the methodology:

- Did you consider the potential misclassification of the exposure in the study groups? Maybe similar or comparable interventions could be implemented in the control hospital (LH). Please specify in the methodology section if you have verified the exposure in the control group.

Response:

Thanks for pointing out this issue. While undertaking this research project, our team consulted the Director of Emergency Department at the control hospital (LH) and learned that they had no
similar or comparable interventions and they were not planning on introducing any similar interventions to their areas in the investigated period. To the best of the authors’ knowledge, we were not aware of any similar intervention in the control hospital. Accordingly, we specified in the methodology section (page 4) that the control hospital was not known to have any exposure to similar or comparable interventions.

- The clinical characteristics of the patients included in the analysis are based on Australasian Triage Scale, considering only acute conditions and not complexity or severity of chronic conditions. You should take into account in the logistic model the chronic risk factor that could have an impact on the propensity to use health services (in particular hospital admissions).

Response:

Thanks for this constructive suggestion. On the basis of the most available data that we could access from the hospital systems, we managed to obtain data regarding patients’ primary clinical diagnosis for coming to the EDs or inpatient wards. We then modified the logistic model for predicting hospital admission via EDs, by adjusting for the impact of patients’ primary clinical diagnosis. Accordingly, the results section (page 8 & 10) and the Tables (page 23 & 24) were updated, and the results from the revised logistic model showed no essential changes to our previous findings.

However, it should be acknowledged that the primary clinical diagnosis that we took into account in the modified logistic model represented only the primary reason for patients to come to hospitals, but it did not exactly represent the general complexity or severity of patients’ chronic conditions. Due to data availability, we considered our current adjustment of primary clinical diagnosis as a practical and meaningful alternative method. Besides, previous literature identified that “people residing in RACF commonly suffer from chronic incurable disease” (Arendts, G., Dickson, C., Howard, K., & Quine, S. (2012). Transfer from residential aged care to emergency departments: an analysis of patient outcomes. Internal medicine journal, 42(1), 75-82.), and that “by definition, a RACF resident has chronic incurable illness and disability rendering them unable to live independently” (Arendts, G., Quine, S., & Howard, K. (2013). Decision to transfer to an emergency department from residential aged care: a systematic review of qualitative research. Geriatrics & gerontology international, 13(4), 825-833.). All patients included in our analysis were residents from RACFs, and the majority of them were believed to have chronic conditions. Under such a particular circumstance, we assumed the chronic condition would not essentially affect the outcomes of our interest.

- The role of RACF is not evaluated in your analysis. Maybe you could analyse the role of different RACF in a multilevel analysis or at least compare the different organizational model of the RACFs in the two areas.

Response:
Due to the unavailability of necessary data, it is practically impossible in this study to analyse the role of different RACF in a multilevel analysis. The authors acknowledged this as one limitation of our study. Accordingly, we added discussions in the limitations section to address this weakness and we also added discussions to evaluate the role of RACF by comparing the organizational model of the RACFs in the two areas (page 15).

- In the discussion section, it could be interesting to compare the HiNH program with other care-home model that did not have an impact in term of readmission rate respect to routine care. (Damiani et al. Hospital discharge planning and continuity of care for aged people in an Italian local health unit: does the care-home model reduce hospital readmission and mortality rates? BMC Health Serv Res. 2009 Feb 4;9:22)

Response:

Thanks for this recommendation. Accordingly, we added some comparison with results from Damiani (2009)’s study in the discussion section (page 12).

Reviewer #2:

- I have only a couple of comments about your very interesting study. Although you point in an awkwardly worded sentence on p.11 that your results are consistent with some studies and not with others, undoubtedly it is the details of the interventions that are likely to be associated with success or failure. And, I believe the critical issue is the one you raise in the last sentence of the paper, i.e., now that you have designed and implemented a seemingly effective intervention, can you transfer it into other places and get similar results? I assume that will be easier if the incentives of the hospitals and nursing homes are aligned to try to make it work. I cannot tell that from what you've written in this paper, and you might want to say something about that in the discussion.

Response:

Thanks for the comments. We agreed with what were pointed out here. Accordingly, we modified that worded sentence on page 11, and added further discussions to talk about if the incentives of the hospitals and nursing homes are aligned to try to make the intervention work in other places (page 11).

- I am struck by the huge difference in bypass hours of the two hospitals. In the U.S., what you call "bypass" is called "diversions". Usually when there is a dramatic difference between hospitals like this, it reflects a real difference in the way the institutions are managed since emergency department flow is usually related to several other factors within the hospital. That, of course, is a different subject from what you were studying; but the low
bypass rate at RBWH may reflect good overall management and that may be a factor in whether or not your hospital in nursing home intervention is well-managed.

Response:

Thanks for pointing out this interesting aspect and for informing us about this issue related to the U.S. We agreed that the huge difference in bypass or diversions between the two hospitals was impressive. We thought it was interesting to talk about this in our paper. What you mentioned about diversions applied to the institutions in Australia as well. This is a different subject from what our current paper was studying, however the authors would also be very interested to investigate more into the bypass or diversions topic in relation to hospital performance or management in the next study.

- I would urge you to minimize the acronyms.

Response:

Thanks for the suggestion. We minimized the acronyms in our manuscript wherever possible. Meanwhile, we added an Abbreviations section on page 16 for convenient checking.