Author’s response to reviews

Title: A scoping review of initiatives to reduce inappropriate or non-beneficial hospital admission and bed days in people nearing the end of their life: Much innovation but limited supporting evidence

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A scoping review of initiatives to reduce inappropriate or non-beneficial hospital admission and bed days in people nearing the end of their life: Much innovation but limited supporting evidence" (PCAR-D-19-00194R1)

Response to the issues raised by reviewers

General
We very much appreciate the great effort made by Katrin Gerber and Natasja Raijmakers in reviewing this manuscript. We accept all your suggestion bar one and have altered the text accordingly. These have done much to improve our text, figure and tables. Thank you.

Katrin Gerber (Reviewer 1):

Thank you for the opportunity to review this manuscript. I would like to compliment the authors on this well-written and comprehensive review. This is a highly relevant topic. There are a few minor
amendment and questions I would like to suggest that can be addressed at the authors' and editors' discretion.

Content-related suggestions

Background:
p. 4, line 5-8. In the first paragraph, you state that patients are "often admitted with little or no benefit to their clinical state". While this may be the case for some, I would suggest to briefly acknowledge that many hospital admissions at the end of life have a valid medical reason and may even reflect patients' or families' preference as it is, for example, the case in admissions for respite care to ease the burden on exhausted family caregivers.

We have amended the text P4/72

p. 5, line 36-39. You state: "A more useful proxy measure for the success of a palliative care innovation may be a reduction in hospital bed days." On a similar note as my previous comment, please add: "…when hospital admissions are not medically indicated or in accordance with patients' or families' wishes."

We have amended the text at P5/108

p. 5, line 59. "…identify initiatives which may avoid or shorten hospital admissions at the end of life". Please insert: "…unnecessary or unwanted hospital admissions…"

We have amended the text at P6/118

Methodology:
p. 6, line 21. "The second part explored objective reasons for success…" Can I suggest to rephrase this to be more specific? Maybe "success of the intervention by reducing bed days".

We have amended the text P6/128

p. 6, line 24. Who screened and selected the studies? One or multiple authors? This needs to be specified.

Multiple. Now amended at P6/129

p. 6, line 30-31 (and also in the abstract). You mentioned that Part 1 included "discussions with experts". By that I suspect you mean discussions among the authorial team or were other experts included? It would be worthwhile specifying who was involved and what the purpose/content of those discussions was.

Our expert authors and external contacts were often aware of more obscure data sources. Amended at P6/132 and in the Abstract

Care home innovations:
p. 9, line 10-13. "possibly due to knowledge gaps…” Please specify whose knowledge gaps you are referring to (staff's, administrators'…).
Among all grades. Amended at P10/204

Palliative care support in community:
p. 11, line 44. "... this effect was only seen in male patients". How odd. Was there any explanation given as to why this might be? Did any of the other studies explore gender effects of their interventions?

The report authors suggest the following: “possibly because of greater provision of home palliative care services among those with prostate and colorectal cancer.” Amended at P12/263

Others do not appear to have explored gender issues.

Ambulance and paramedic education:
p. 13. This is very interesting! Was it only the Kirk 2017 study that addressed this? It might be worth highlighting this in the discussion under directions for future research.

We did find one other abstract from Kent which did not meet the inclusion criteria. We raise this issue as a suggestion in ‘Conclusions and future research’ P24/561

Discussion - main findings:
p. 18, line 29: You wrote: "Some studies failed to demonstrate benefits in the intervention group…" Please change this to: "Some studies found no benefits…" or something similar. I am sure you will agree that the lack of a significant finding is not a failure. It is a finding in and of itself.

Agreed. Amended at P18/408

Strengths and weaknesses:
p. 19, line 1-3. "some studies… appeared to be driven by one or more enthusiastic healthcare professionals". I think this needs to be explained further. How would you have known which studies were driven by more or less enthusiastic healthcare professionals and how does this impact the findings?

We specifically discuss the paper by Barbara Pesut at P21/472 and the issue what contributes to success in the next paragraph at P21/477

Another limitations concerns that not all studies identified whether the aim to reduce hospital admissions was actually in accordance with patients'/ families' wishes. This could be linked nicely to the point I proposed at the beginning that it must be considered that not all hospital admissions are "bad", unnecessary or unwanted.

An important point. We have amended the text at P20/464

Limitations of study:
p. 21. Could this section possibly be combined with the 'strengths and weaknesses' section on p. 18/19?

Done P20/456 – P21/497

Conclusions and future research
p. 21, line 51-52. "Many people working in palliative care are convinced that what they are doing
brings benefit…” - Please specify what kind of benefit you are referring to here. Maybe change to: "… what they are doing can benefit patients and families through a reduction of unnecessary and burdensome end-of-life hospital admissions…”

Amended at P24/556

p. 21, line 54-57. "Where success is claimed…” - Again, I would suggest avoiding to imply that hospital admissions are a failure. They can be extremely useful and necessary at times. I think it is important to provide a balanced argument here and consider both sides.

Amended at P24/559

Formatting-relating suggestions

May I propose to spell out numbers up to ten, as is common in most publications? For example, "… with one year of admission to two UK hospitals" or "...identification of ten initiatives grouped under three broad headings." Consider checking this throughout.

Done throughout

Please check that abbreviations are explained when you first use them and are included in the list of abbreviations at the end. This concerns, for instance, NHS (first use on p.5 not explained and not in abbreviation list), SPA (first use on p.8 not explained) and RCT (first use on p.13 not explained, although this is a very commonly used abbreviation). Also, TDS is only used twice and I wonder if it is worth spelling this out on both occasions given that this is such a rarely used abbreviation. The same applied to DCP. Maybe check if this would be within your word limit. Avoiding abbreviations often improves readability.

Done throughout

Use square brackets and add closing bracket on p. 14, line 16-18: [cancer: 7 (60-66), … neurodegenerative disease 1 (17)]

Done

p. 14 and 15. Italicise 'n = …' and add space on p. 15, line 10: "usual care, n = 36"

Done

Figure 1. The flow chart is very pixelated and hence difficult to read. I am sure you will amend this. I would also centre the text in the boxes on the left.

Redrawn

Tables. Please italicise 'p' and 'n' in your tables.

Done
Overall, great work. Well done!

Appreciated

YongJoo Rhee (Reviewer 2):

Please include all comments for the authors in this box rather than uploading your report as an attachment. Please only upload as attachments annotated versions of manuscripts, graphs, supporting materials or other aspects of your report which cannot be included in a text format. Please overwrite this text when adding your comments to the authors.

This manuscript does not present any valuable findings based on the data base review. At least, this manuscript has to re-organize with a "frame" to analyze the literature review which can lead a solid point.

Thank you. We discuss some of the limitations of this study. We believe that providing an overview of initiative which may affect unnecessary/unwanted hospital admission has value and could serve as a basis for future research. We are encouraged by the comments of the other two reviewers. FYI, our senior author is palliative care lead for NHS England.

Natasja Raijmakers (Reviewer 3): This is a very interesting review about initiatives to reduce inappropriate or non-beneficial hospital admission and bed days in palliative care patients. The conclusion is clear and valuable. However I do have some suggestions to improve the quality of this paper.

Background:
- Cost reduction is described extensively in the background. However, in the results and discussion, it was barely mentioned. Did you search for articles about cost reductions? Please include the results of this search, or adjust the background.

We have adjusted the background on P6/116. This builds on our point at P5/106

- In the introduction, three main aims of this research were mentioned: identify, analyse and determine (page 5, line 57). However, the aim 'determine' is not included in methods and results. It is shortly mentioned in the discussion (page 20, line 44), but based on the discussion, it was not one of the aims but an interesting question that has arisen during the study. Please clarify if it was one of the aims (and include this aim in the methods and results) or not (and delete this aim from the introduction).

We have reduced the aims to two.P6/117

Methods:
- It is mentioned that a degree of judgement was required in part 1 (page 6, line 49) . Please explain what kind of judgement this is about, by whom this judgement was made and how.

It was not always clear which group an intervention should be assigned to. Resolved by discussion. We clarify at P8/166 (now moved to the results section as suggested).
- I suggest to move table 1 to the results section. This is a result of part 1.

Agreed

- Please explain how the 10 innovation groups and 3 broad headings were formed and move this part to the results section too.

Done. For clarity, we briefly mention in Methodology and then in more detail in Results

- In part 2, were the search terms used for each of the ten initiative groups separately?

Yes. Amended P7/146

- Text in part 2 (page 7, line 23) about exclusion of the studies where palliative intervention considered to be routine practice is at odds with figure 1: "full-text articles excluded: the intervention was not routine practice". Please correct text in the figure.

The Figure has been amended and redrawn

Results:
- Please divide your results in part 1 and part 2, like you introduced those parts in the method section.

Done

- In the results, the ten initiative groups were discussed separately, please use numbers which corresponded to table 1.

Done

- In the result section about 'Care home innovations' the red bag is mentioned (page 10, line 23). This is an innovation within care homes, however is does not match with the broad heading: 'prevent hospital admission'. Please consider to move this innovation to another group.

We thought this was a simple initiative worth mentioning. It is relevant to transfer between care home and hospital. It does not really fit better anywhere else.

- Please take a close look at the different tables:
o Article #39 was included in table 3, 4 and 5. However table 5 did not contain any information about this article, just a reference to table 4. When looking at table 4, there is a reference to table 3. I suggest to include information about this article in all the tables, with emphasize on the innovation to which this table belongs.

Done

o Article #46 belongs to table 3 and 4, but was not mentioned, nor referenced to in table 4.

Done
- Article #58 belongs to table 5, but was not included in any table.

  Done. Now in Table 5.

Discussion:

  - I suggest to merge the sections 'Strengths and weaknesses' and 'Limitations of study' of the discussion part

  Done

  - In the section 'Main findings' (page 18) it is unclear what the main finding was. It is mentioned that "in general interventions showed a reduction in emergency attendance and hospital bed days" (line 18) but also that "studies failed to demonstrate benefits". This contradicts each other.

  We have revised this section P18/404-416