Author’s response to reviews

Title: Anticancer therapy within the last 30 days of life: results of an audit and re-audit cycle from an Australian regional cancer centre.

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Version: 1 Date: 19 Nov 2019

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Response letter to reviewers

PCAR-D-19-00199
Anticancer therapy within the last 30 days of life: results of an audit and re-audit cycle from an Australian regional cancer centre.
Mike Nguyen, MBBS; Sean Ng Ying Kin; Evonne Shum; Alysson Wann; Babak Tamjid; Arvind Sahu; Javier Torres
BMC Palliative Care

Shuji Hiramoto (Reviewer 1): 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.
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MAJOR RIVISE:
1. It is difficult to understand for me about the details of background or treatments in this study. It is recommended to add a table showing the treatment details and backgrounds.
2. Immune check point blockage has been used for lung cancer since the 2015s, and the frequency of use has increased. So, it must be to control effect of historical background when comparison of rates of treatment between audit and reaudit period. However, there is no statistical treatment in this study.
If you want to mention about ICI use I want you to refer to the following article: Chad Gliessh et al. Immune Checkpoint Inhibitor Use Near the End of Life Is Associated With Poor Performance Status,
Lower Hospice Enrollment, and Dying in the Hospital. AJHPM2019

3. The implication and novelty of this study should be clarify in background.

Minor RIVISE:
You must be change C to CT in Table 1 treatment included (Author Hiramoto 2018 in Japan).

Response
1) Table 2, Table 3, Table 4 and Table 5 have been added to the Figures section. These tables provide details regarding patient characteristics and treatments.
2) We acknowledge that a significant contributor to the shift towards immune checkpoint inhibitors is increasing access and availability of these agents in recent times. Paragraph 5 of the discussion section has been amended to further explore this. We acknowledge only descriptive statistics have been used in this manuscript. Thank you for this interesting article by Glisch. It has been included in Table 1 and discussed in paragraph 2 of the background section and paragraph 4 of the discussion section.
3) Paragraph 7 of Background section has been rewritten to clarify the aims, novelty and implications of this study.
4) C has been changed to CT in Table 1 as suggested.

Paola Pacetti (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.

Response
1) Minor language changes made

Akira Inoue (Reviewer 3): This is a report regarding anti-cancer therapy in end-of-life stage in single regional cancer center in Australia. Although the data is interesting, I have several concerns as below.

1. When the intervention based on initial audit results was done? I wonder results of initial audit truly affected on those of reaudit period because there was no interval between two audit period.
2. The conclusion that audit reduced the use of end-of-life chemotherapy was also doubtful, because of the possibility that chemotherapy was simply replaced with less-toxic immune therapy recently.
3. How about a proportion of patients who were still receiving anti-cancer therapy at the timing of palliative care referral both in audit and reaudit period?
4. It should be discussed that the difference of types of cancer between two audit period probably affected on types of anti-cancer treatment.

Response
1) The interventions were carried out based on the nature of the intervention. The once off interventions (point 1 and point 2) were done within a week of conclusion of the audit period as a once off event. The continuing interventions (point 3, point 4, point 5) were done at regular intervals throughout the re-audit period. For example point 3 was carried out at the weekly department meeting, point 4 was carried out at each clinic appointment, point 5 was carried out at the monthly mortality meeting. These details have been added to the improvement implementation section. We accept there may have been some time in the reaudit period where clinicians were still behaving like the audit period as the
interventions may not have been fully carried out as yet. Similarly, there may have been a learning curve as the regular meetings conducted over the reaudit period provided an opportunity to reiterate the audit findings and provide feedback to current performance. However, it is prudent to analyse everything after the audit period as the reaudit period as there is likely an underestimation of the intervention effect. A statement regarding this matter has been made in paragraph 7 of discussion.

2) Paragraph 5 of discussion section has been rewritten to further explore reasons for the observed trends including a shift in treatments from chemotherapy to immunotherapy.

3) We only collected data on rate of palliative care referral and if palliative care referral was late (within the last 30 days of life). These parameters are based on Earle and colleagues definitions for indicators for quality of care. Information regarding palliative care referral whilst on treatment is not available.

4) Paragraph 5 of the discussion section has been rewritten to include the difference in cancer types and this is displayed in a new Table 6.