Reviewer's report

Title: Acute hospital-based services used by adults during the last year of life in New South Wales, Australia: a population-based retrospective cohort study

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Reviewer: josephine dixon

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This paper provides a valuable contribution to evidence on healthcare utilization at end of life, focusing on the experience of New South Wales, Australia. This is likely to be useful information for policy-makers and also provides a platform for further research (involving quantitative and/or qualitative methods). It also provides a point of comparison for international studies looking at similar issues in other geographical areas and countries. Given the ease with which the authors suggest the figures can be updated over time, it is therefore of some concern, if I have understood correctly, that data-linkage with mortality records is not possible after 2007. The analyses additionally draw attention to what we do not know, including information about the provision and utilization of palliative care and community-based services, and the characteristics of people accessing these services (evidence gaps that also exist elsewhere).

Overall, the research presented in this paper is of high quality, the methods are clear (and supported by a separately written paper on the methods used), the analyses seem robust and data sound, the limitations stated and the paper well written and clearly laid out. However, I do have one ‘minor essential revision’ and several comments that come under the category of ‘discretionary revisions’.

Minor essential revisions

1) Remove ‘within’ or ‘in’ in the sentence ‘.. questions, for addressing within in subsequent studies, would require a methodological ..’ in the paragraph just before the ‘Conclusions’ section.

Discretionary revisions

2) I would include the relevant months, as well as the years, for the data sets.

Beyond this, the authors may judge the value and feasibility of expanding on any of the following.

3) The findings presented in the paper are (appropriately) very descriptive. However, notwithstanding an occasional general statement (e.g. ‘population-based studies from other developed countries have reported similar levels of hospitalisation or trends by age or cause of death’), it is difficult to identify which results are in line with existing research or expectations, and which, if any, are at all surprising or note-worthy. It would be good to have more
key comparisons included.

4) Equity issues are particularly well highlighted in this study, with clear findings in regard to diagnosis, area deprivation and age. Given it is such a key finding (being rightly presented up front as a key conclusion in the Conclusions section), the authors might want to at least briefly reference key existing research on unequal, and potentially inequitable, provision as it relates to these groups.

5) The authors briefly describe previous studies of hospital use at end of life in NSW/ Australia (in the second paragraph of the Background section). These use somewhat different methods and parameters to the current study, but include studies that also use administrative data and data linkage. While the authors point to the fact that many of these studies have a selective focus (for example, on older people or people with specific conditions), it may still be useful to directly compare findings from the current paper and draw out what taking the approach in the current paper has been able to add.

6) The authors say, 'The importance of having detailed local information is exemplified by a study of people dying from cancer in London and New York, which found place of death varied significantly by patient and area characteristics'. It would be useful to know if any example from this study could be provided where experience in NSW and/or Greater Sydney appeared to differ from experience elsewhere.

7) In the paragraph just before the section headed ‘Procedures during hospital admissions’, deaths for people with cancer in hospital and in inpatient hospice were reported together. However, assuming similar patterns to the UK, I would expect people with cancer to be less likely than people with other conditions to die in hospital but more likely to die in an inpatient hospice. Are separate figures available? If not, this deserves discussion.

8) I would also be interested to know the characteristics, including age profile, of the 9 per cent who the authors report died in, or on the way to, an ED.

9) The use of multivariate analysis is important since analyses that do not account for the independent effects of patient characteristics and circumstances are likely to be misleading. Could there, however, be some brief discussion about which other factors it would have been useful to include (and why) if data had been available? This would be helpful for those undertaking future research as well as for those responsible for determining the future content of administrative data sets. There is some reference to priorities, needs and comorbidities in the conclusion but it would be good if this could be drawn out more clearly.

10) In the second paragraph under the heading, ‘Measures of hospital-based service provision’ the authors explain how, in the second of their two definitions of palliative care, they include where the service category, service related group or a diagnosis code indicates palliative care need. I would appreciate more discussion about what is included. Murtagh et al. (2013), for example, estimated that between 69 per cent and 82 per cent of deaths in high-income countries are
likely to have preceding palliative care needs.

References


**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests