Reviewer’s report

Title: Indicators for early assessment of palliative care in lung cancer patients: a population study using linked health data

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Reviewer: Charles Normand

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It is always good to see use of administrative data and registry data to answer key health care questions. This paper focusses on an important question and has the potential to provide some useful evidence.

I think the paper would benefit both from some clearer demonstration of an understanding of some contextual issues and also some changes or better justification of some decisions made. First, the authors have a strong focus on place of death, and show (as do other studies) that deaths in hospital are high by international standards. However, it is clear that the relationships here are complex, and the key issue is whether or not death is in the appropriate place. Some people will clearly benefit from the access to hospital based expertise, while in other cases death in hospital is a reflection of failure to access suitable and more appropriate community based services. In this case there is a particular issue that those who die soon after diagnosis often die before it is possible to put in place the support outside hospital, so the hospital death is in part driven by the short time. Others who survive longer have time to move out of hospital. What concerns me is just the need to demonstrate more understanding of the drivers in this area, and what are likely directions of causation.

For some reason the authors dichotomise survival into 30 days or more and less than 30 days. Since survival is a continuous variable and since the samples are large it is not clear to me why it is useful to reduce this to two categories. All things being equal this simply reduced heterogeneity and reduces the potential insights. Similarly it is not clear why co-morbidity is categorised as it is - again there is information being discarded. There is a further issue that this variable may be problematic due to under recording of co-morbid conditions within HIPE data (and probably also in directly collected registry data). This is a pity given the emerging evidence of the specific importance of multimorbidity in determining the effects of palliative care.

This main area in which I think the authors could strengthen the paper is around what the analysis implies in terms of changes in actions and service delivery. Sine survival for people with lung cancer is typically short and (despite some promising new evidence) treatment with curative intent is not very effective, we need to understand better how the analysis will help to make better decisions. Effectively almost all people diagnosed with lung cancer should be assessed for good palliative care assessment/symptom management/supportive care - the real question is how many will benefit from more aggressive treatment of the disease. it is not clear that we can do much to reduce hospital deaths in those diagnosed very late through palliative care referral - it is likely really to be driven by the wider availability of community services to
allow the person to live and die at home. The evidence on the role of multimorbidity on outcomes is interesting but the real question is how does multimorbidity affect the benefits of palliative care (incidentally, while the cited literature covers most of the relevant areas of work, I was surprised not to see some more reference to the evidence on for example palliative care and multimorbidity).

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
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No

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