Reviewer’s report

Title: Variation in survival after surgery for peri-ampullary cancer in a regional cancer network

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Reviewer: Neil Merrett

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An interesting paper looking at geographical distance and regionalisation of cancer surgery and its effects on outcomes. In a country as densely populated as the England, probably not reasonable to use the term geographical isolation, more like relative isolation.

Some issues that need to be addressed.

1. The study appears to be looking only at patients who were offered to surgery. This however may not capture patients who had tumours and were not referred for surgery

2. The authors state that they studied 394 patients who underwent surgery. How many patients over the study period in the region developed pancreatic cancer and what percentage of these were the 394. Were there any differences in the rates of referral for surgery between the various hospitals. EG hospital c has a lower operation rate for pancreatic cancer compared to other facilities. What was the incidence of pancreatic cancer in these drainage areas and what was the incidence of surgery for pancreatic cancer in district. This may indicate that there was indeed a failure to refer.

3. Were all patients diagnoses with pancreatic cancer referred to a MDT for assessment as to suitability for surgery

4. Were the MDT at regional levels only or linked with the major centre

5. Were common protocols used for the staging of patients with pancreatic cancer. Were definitions of resectable, borderline resectable and irresectable agreed by all hospitals. What proportions of patients had neoadjuvent therapies from each centre

6. The rate of laparotomy and no resection appears high at 31%. What staging modalities were used pre operatively and was this consistent for all cases

7. 61km was classified as the average distance travelled. For many countries such as Australia and NZ and canada, this would be regarded as very close. Could the authors comment on whether there is any data on distances this close and effects on outcomes

8. many metropolitan regions have dense populations with infrastructure and transport limitations, whereas 60km in a regional areas may be travelled far quicker than 20km in a city. Did the authors consider measuring time of travel as being more relevent for the study.
9. Was a comprehensive plan instituted to ensure seamless transfer of care and treatment between the smaller and larger centres. Almost all development of regionalisation has occurred with formal agreements and protocols for the investigation and treatment of patients to ensure seamless care no matter where the patient presents in the network. To speak of regionalisation without implementing such a system is likely to result in the delays to treatment. Would the authors like to comment on this?

10. Apart from the surgery itself, what proportion of treatment occurred in the regional centres. Was staging performed at the regional centres, was adjuvant therapy given at the regional centre etc. The aim of regionalisation is for patients to receive as much of their therapy as close to home as possible with the support of the larger centre, and only have the most complex component at the larger centre. The philosophy of treatment here needs to be explained.

11. Many studies have shown that patients who present to smaller centres are less likely to be offered surgery, less likely to have palliative interventions and chemotherapy. What were the outcomes for all patients in the area with pancreatic cancer, not just those who went to surgery. What was the percentage of patients who had adjuvant therapy after their surgery, or palliative therapy and did this differ between centres.

12. The list of references is limited in looking at socioeconomic and geographical isolation and the impact on outcomes and whether this can be overcome by a protocolised networked system as part of centralisation of surgery for low volume oncology. Numerous publications have recently been published from Australia, Canada, New Zealand and Scandinavia. Would suggest that these be referenced in the discussion.

**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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