Author's response to reviews

**Title:** Oesophagectomy rates and post-resection outcomes in patients with cancer of the oesophagus and gastro-oesophageal junction: A population-based study using linked health administrative linked data.

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**Author's response to reviews:** see over
Dr. Stephen Persell  
Editor  
BMC Health Services Research

Dear Dr Persell,

Re: MS: 2134390117475102 - Oesophagectomy rates and post-resection outcomes in patients with cancer of the oesophagus and gastro-oesophageal junction: A population-based study using linked health administrative linked data.

We thank the reviewers for their evaluation of our manuscript. We have highlighted reviewer comments (in italics) and address each in turn below (changes to the manuscript appear in red font):

**Reviewer:** Toshiaki Tanaka

**Reviewer's report:**
The authors investigated the resection rates and surgical outcomes in cancers of the esophagus and gastroesophageal cancer, and compared the outcomes in esophageal cancer alone with those in esophageal and gastroesophageal cancer. For this purpose, the authors used a national database in Australia. This is a valuable and unique report indicating that the inclusion of gastroesophageal cancer alters surgical outcomes compared to those of esophageal cancer alone.

There are several points requiring clarification:
1. How many patients were treated with other modalities, such as chemoradiotherapy, radiotherapy, chemotherapy, best supportive care, and others? Please provide more information about the treatment modalities in all patients in Table 1.

Response: Unfortunately, non-surgical treatment data is collected by the Commonwealth and is not linked routinely to state-based hospital separation data. We have provided more detail about Australia’s health system and the nature of the cross-jurisdictional collections in the first paragraph of the methods (page 5, para 3) and also highlight this as a limitation of our study in the last paragraph of the discussion.

2. The proportion of patients with good performance status (CCI: 0) and locoregional disease seems rather high. What is the reason for choice of non-surgical treatment for these patients? What treatment did they receive? These should be addressed in the discussion.

Response: The CCI is a measure of comorbidity derived from the ICD codes in the hospital separation data. Comorbid disease is noted in the record when it is related
to the patient admission. CCI is not a measure of performance status. The only measure of cancer disease severity in our data set was degree-of-spread at diagnosis. There were no indicators for performance status available. (pg 13, para 1). Patient or physician choices for not undertaking surgery were also not available in our data sets.

3. The proportion of patients with each surgery type seems same for esophageal cancer or gastroesophageal cancer. Transhiatal esophagectomy was performed in 71.6% patient with esophageal cancer and 73.1% with gastroesophageal cancer, and abdothoracic esophagectomy was 15.7% vs 15.8%. What made the difference in post-operative complication rate in these two cancers? This should be addressed in the discussion.

Response: The difference in the association with post-operative complication rate between oesophageal and gastro-oesophageal cancer were that age-at-diagnosis and location of surgery which were significantly associated in patients with oesophageal cancer. This has now been addressed in the discussion (pg 12, para 3)
Reviewers: Ryan Merkow

Reviewers report:

Stavrou et al present their work entitled “Oesophagectomy rates and post-resection outcomes in patients with cancer of the oesophagus and gastro-oesophageal junction.” Their main objectives were to examine rates of esophagectomy and postoperative outcomes among a cohort of patients with and without the inclusion of gastroesophageal junctions tumors. Their main findings were resection rates increased with the inclusion of GEJ cancers, and 30-day complication rates were less in the GEJ cohort. I have a number of questions for the authors, separated into major and minor issues.

Major Issues

1. The introduction was somewhat fragmented and could perhaps be reframed. The authors talk about quality measurement, oversight, public reporting etc., but never make it clear why they evaluate resection rates, and why it is important to consider the influence of including GEJ tumors.
2. The authors focus on predictors of complications between the cohorts studied, which again do not really fit with how the paper was set up in the introduction. Why is it important to assess predictor of complications with and without the inclusion of GEJ tumors? This may be an interesting question, however it was not clear why based on the set up.
3. Presumably any initiative measuring surgical outcomes would risk-adjust for procedure type and tumor location. Why is it important to document a difference?

Response: The introduction has been reframed and now addresses the reason why resection rates are important to report in both these cancers, why post-resection complication rates are an important measure and why surgical type and tumour location should be adjusted for.

Surgical resection for curable oesophageal and gastro-oesophageal cancer is the mainstay of treatment for all patients who are fit for major surgery. However, despite being the only curative treatment for oesophageal/gastro-oesophageal cancer patients, oesophagectomy is associated with significant operative morbidity and mortality.[5-7] Key performance measures of oesophagectomy include 30-day mortality, hospital length-of-stay and post-surgery complication rate. [8-17] Factors influencing outcomes following oesophagectomy include hospital/surgeon factors (experience, peer group/volume), tumour stage, histology and location, surgery type and patient comorbidity; with better outcomes reported in high volume hospitals, patients with non-metastatic disease (approximately 60% of patients), adenocarcinoma (the incidence of which is increasing), and when transhiatal oesophagectomy is performed. [18-22]
4. There is randomized trial data supporting non-operative treatment for squamous cell cancer. Although this remains controversial, it may not be appropriate to include these tumors if truly focused on comparing resection rates between esophagus and GEJ tumors.

5. The authors include metastatic cancer in the cohorts. May make it a cleaner message by removing these patients as well.

Response: As suggested by the reviewer, analyses have been undertaken for patients with non-metastatic adenocarcinoma undergoing resection. We have however presented these as a sub-analysis of the entire cohort (Pg 7 para 1; pg 9 para 2; pg 10-11 last para). Given the primary purpose of our paper was to examine outcomes in all patients undergoing surgery at NSW hospitals we feel it is important to include the entire cohort in the analyses. Adenocarcinoma and non-metastatic disease was associated with oesophagectomy, but there were still patients with SCC &/or metastatic disease that had resection performed. As oesophagectomy is most beneficial for, and is associated with, non-metastatic disease and patients with adenocarcinoma, we also examined rates of surgical resection and factors associated with surgical resection and post-surgical outcomes for this sub-group of patients.

6. The complication models with the overall cohort of esophageal and GEJ cancers does not appear to have controlled for tumor location

Response: We have now stated the adjustment for tumour location in multivariate models.

7. It is unclear what the authors consider 30-day complications. This should be clarified in the methods.

Response: We had defined 30 day complications as haemorrhages, pulmonary or cardiac complications and had noted this on pg 7, second paragraph.

Minor Issues

1. When reporting survival, it would be helpful to know overall follow-up.

Response: One year survival (mortality) rates were examined. Median survival was 365 days (min 1day max 365 days). Mean survival was 328±48 days and this has been stated on pg 9, last paragraph.