Author's response to reviews

Title: Surgical site infections following coronary artery bypass graft procedures: 10 years of surveillance data

Authors:

- Damin Si (damin.si@health.qld.gov.au)
- Mohana Rajmokan (mohana.rajmokan@health.qld.gov.au)
- Prabha Lakhan (prabha.lakhan@health.qld.gov.au)
- John Marquess (john.marquess@health.qld.gov.au)
- Chris Coulter (chris.coulter@health.qld.gov.au)
- David Paterson (david.paterson2@health.qld.gov.au)

Version: 2 Date: 9 May 2014

Author's response to reviews: see over
Dear Editor,

Thank you for providing reviewers’ comments and the opportunity to revise our manuscript. We have made changes in line with reviewers’ advice, as outlined below:

Reviewer 1: Sarah S. Lewis

Discretionary revisions:

1. Abstract conclusions and throughout the manuscript: “patients with more severe disease” is vague and needs further clarification. Do the authors mean patients with more severe underlying comorbidities or patients who are more acutely ill at the time of their surgery?

In light of the reviewer’s suggestion, we now use “patients with more severe underlying disease” throughout the manuscript. The second reviewer also suggested such change.

2. Methods, surveillance data: Authors should provide additional description of the ASA score to distinguish ASA 3 from ASA 4/5.

A brief description of the ASA score classification (1-5) has been provided on page 7 (in lines 87-90).

3. Results, risk factors for complex sternal site infections: Antibiotic prophylaxis was not given in a minority of cases. Is there an explanation for this? Was this more likely to occur in emergent cases? In patients with severe illness?

As suggested by the review, further analysis of our data showed that absence of antibiotic prophylaxis was more likely to occur in emergent cases or in patients with severe underlying disease (indicated by an ASA score of 5). This point has been incorporated into lines 128-130 on page 9.

4. Discussion, second paragraph: Clarify that the first set of numbers (38% in 2003 and 62% in 2009) refers to all SSI (i.e., complex and superficial at both the sternal and harvest sites).

Clarification for the numbers being referred to all SSIs has been provided in lines 192-193 on page 11.

5. Discussion, second paragraph: A recent study of NHSN data found a similar proportion of sternal wound infections caused by Gram-negative organisms. The authors should include this reference in their discussion: Infect Control Hosp Epidemiol 2014; 35(3): 231-9.
We appreciate the reviewer pointing to us the most recently published NHSN data to enhance our discussion. Now this new reference and its relevance to our data have been discussed in lines 200-202 on page 11. The second reviewer also suggested this reference.

6. Discussion, third paragraph: Please clarify what is meant by the statement “this requires clinicians to take a more proactive approach in infection prevention and control”.

We have deleted this generic statement from the manuscript.

7. Discussion, fourth paragraph: The authors should comment on the subjectivity of the ASA score.

We refrain from commenting on the subjectivity of the ASA score, as the score is readily available as part of clinical data for patients and its assessment might be beyond the scope of this study. Instead, we comment on the rationale for re-categorising the ASA score into three groups in this study (lines 238-240, page 13).

Minor essential revisions:

8. Table 1, do not include # of missing in the % calculations

As per reviewer’s advice, we have excluded missing data for calculation of percentages for each of the five variables in Table 1. In addition, we have added a footnote for the table to detail the numbers and percentages of missing data for these five variables.

9. Figure legend, change label to ASA score of 4/5, missing labels on figures

Figure legend and the secondary Y-axis label have been corrected as suggested.

We have proof read the manuscript to correct all spelling mistakes.
Reviewer 2: Caroline Marshall

Major essential revisions

1. Could the authors clarify if there are any other hospitals in Queensland that perform CABG surgery but do not submit surveillance data to CHRISP? If this is the case, a description of the reasons/types of hospitals and patients that may differ from the hospitals that do provide information should be provided. This information is provided in the discussion, but should be mentioned in the methods.

We clarify (in the methods section on page 5) that SSI infection surveillance was conducted in public hospitals in Queensland. Of 166 public acute hospitals in Queensland, only three had capacity to perform CABG surgery and data were provided by these three hospitals. Our surveillance system did not cover private hospitals in Queensland, so no data were available for them. In the discussion, we discuss the generalisability of our findings to public and private patients undergoing CABG procedures in Queensland.

2. Lines 38 and 39 do not quite make sense. When was the 2 year implementation phase? Before the study period or at the beginning of the study period?

We have added a period of 2001-2002 (in line 42) to clarify the two year implementation phase occurring at the beginning of the study.

3. Was active post-discharge surveillance carried out? This needs to be specified and if it was carried out, for how long also needs to be specified. This is implied in the discussion, but is not stated in the methods. A comment on how this was conducted should be included. In line 178, it is stated that post-discharge surveillance was collected form 3 hospitals (but there were only 3 in the study, so why state this?)

We have stated in the first paragraph on page 6 (lines 53-54) that post-discharge surgical site surveillance was conducted using a postal survey of patients 30 days after CABG procedures. The sentence (in lines 188-189) has been revised to refer to a relatively small number of 3 participating hospitals in our study compared with 293 hospitals in the NHSN study.

4. Could the authors explain why they choses the ASA score of 3 as the reference score and not 1?

The rationale for using ASA score of 3 as the reference is based on ASA score distribution as presented in Table 1. Of 14,517 patients undergoing CABG procedures, 7,787 (54%) had an ASA score of 3 and 6,349 (44%) had an ASA score of 4. Only 6 (0.1%) patients had an ASA score of 1. If ASA score of 1 were treated as the reference group, there would be no statistical power to detect a difference in SSI rates with other sub-groups. Further explanation of re-categorisation of ASA score into three groups (1/2, 3, 4/5) has been provided in lines 238-240 on page 13.
5. Although it may not have been published at the time of submission, the authors should include in their discussion a recently published article that covers some of the points from their manuscript: Activity of Commonly Used Antimicrobial Prophylaxis Regimens against Pathogens Causing Coronary Artery Bypass Graft and Arthroplasty Surgical Site Infections in the United States, 2006–2009 Sandra I. Berreros-Torres et al, ICHE March 2014, vol. 35, no. 3

Both reviewers have suggested this reference. Now we have incorporated the reference into our discussion (in lines 200-202).

Minor essential revisions

6. Methods: “risk factors of complex sternal” should read “risk factors for complex sternal”

Changes have been made as advised.

7. The conclusions that GNB are increasing in the abstract don’t really follow from the results in the abstract (although the evidence for increasing GNB is given in the main body).

We have revised the abstract to include data on pathogen distribution for all surgical site infections following CABG procedures, and increasing proportions of Gram-negative bacteria over time. Now the conclusions can be drawn based on information in the results.

8. Could the authors explain how you can have CABG surgery without a graft site incision (or vice versa)?

In case when an internal mammary artery is used as a graft vessel, the only incision is at the sternal site. That is, a separate graft site is not required. In our study, 6.1% of CABG procedures fell into this category (Table 1).

9.
Line 11 should read “associated with increased risk” of SSIs
Line 26 should read “investigation”; Line 37 should read “have provided data”
Line 43 should read “follow up SSI cases”
Line 52 – do you mean “data quality assurance procedures were implemented”? 
Line 94 should read “95% confidence intervals” (assuming that was the case)
Line 115 should read “mole”;
Line 116 delete “old”; Line 116 replace “having” with “included”
Line 132 should read “Pathogens causing SSIs”; Line 136 delete “For specific organisms, ”
Line 284 should read “more severe underlying disease

All changes have been made in line with the reviewer’s advice. The manuscript has been improved with help from reviewers and Editor.

We hope this revision meet with your satisfaction.
Best wishes,
Damin