Reviewer's report

Title: Surgical Site Infection in critically ill patients with secondary and tertiary peritonitis: epidemiology, microbiology and influence in outcomes.

Version: 2 Date: 11 April 2015

Reviewer: Ross Atkinson

Reviewer's report:

Thank you for giving me the opportunity to review this manuscript. The paper is extremely well written, and concerns an interesting and important complication of surgery. I would be happy to recommend the article for publication after the following consideration of the following points:

Minor Essential Revisions

1. Please could the authors advise how they arrived at the figure of 64.4% for the 200 SSI episodes occurring in men?

2. I would suggest that the more common species of microorganism are listed first (e.g. Pseudomonas spp. (n = 44 52, 19.3%) and Escherichia coli (n = 55, 20.4%) should be swapped round).

3. Line 77: please note: Centers for Disease Control and Prevention (Centers rather than Center).

4. Line 106: please amend to "data were" rather than "data was."

5. Line 125: please amend to "the ICU physician" or "ICU physicians."

6. The authors comment that the SSI rate of 53.1% in the study group was higher than the rest of the hospital (20.6%). Are you able to provide any raw data to support this, even if it is simply the total number of SSIs and the total number of patients?

7. Please double check all percentages presented and report to 1 decimal place throughout.

8. Line 164-165, please amend from "with the use of multiple, simultaneous or sequential antibiotics being common..." to "with the use of multiple, simultaneous or sequential antibiotics being used in 72.5% of cases (n=195)." The Results section should simply present the results objectively and the fact that this is "common" should be commented on in the Discussion section, if appropriate.

9. The Discussion section states that SSI had little impact on in-hospital mortality, when in fact, the data suggest that mortality was lower in those with SSI. This is counter-intuitive and some explanation of this point should be given.
10. Line 189: please amend "higher" to "a greater number of..."

11. Line 201: please insert full stop after "concentrations."

12. Line 238: please note spelling, "can" rather than "cab."

13. Figure 1 appears unclear in its present form. Please could the authors ensure a clearer figure is submitted prior to publication.

14. Table 1: I would suggest that raw data are presented initially in the table, with percentages in brackets, i.e. n (X%), rather than percentages first as are currently presented.

15: Table 1: The P value for "Number of drainage" is not in bold. It is below the cut-off of 0.05 for significance, and so should be highlighted. Also, the term "number of drainage" could be amended to be more explanatory.

16. Table 2: Following on from point 2 above, I would suggest that the table is organised so that more common pathogens are at the top of the table, perhaps leaving the category of "other" at the bottom, but maybe having some explanation of what would be in the "other" category.

Good luck with your resubmission!

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.