Author's response to reviews

Title: Evaluation of routinely reported surgical site infections against microbiological culture results: a tool to identify patient groups where diagnosis and treatment may be improved.

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Version: 2 Date: 4 September 2009

Author's response to reviews:

Dear Madam / Sir,

Thank you for your letter informing us on the possibility to revise our manuscript. We thank both reviewers for their careful reading of the manuscript and constructive comments. The comments were taken into account as follows.

Reviewer: Didier Lepelletier

In the report, the reviewer makes 6 points of comment, which are numbered accordingly below.

1. Delete figure 1 and reference 8. We agree that tables / figures must be supported by data analysis from the present study. Figure 1 therefore is deleted. However, reference 8 refers to a report which is published and distributed in the Netherlands, and is therefore not deleted.

2. Criteria to include or exclude with several / different surgeries within first operation: all surgical admissions were included in the analyses. The surgery performed in the first operation was only used to identify different types of surgery, where patients with several and/or different surgeries were included in the category ‘other’. We have added text in the methods section to make this clearer (page 6 lines 3-12).

3. The duration of the survey is not described. We did not time the actual duration of the survey, but estimate that the average duration was about 10 minutes. We have added this to the methods section (page 7 line 3).

4. Some comments in results section belong in discussion. We have deleted the sentences mentioned by the reviewer from the results section.

5. Classification into superficial or deep SSI would be helpful to understand the results. We agree that most SSI without culture are less severe SSI (see table 1) and most likely superficial SSI, which can be deducted from the fact that one-third only had redness of the skin (see results page 8 lines 16-17). In our study all of these SSI were treated with antibiotics, and the question is whether this was necessary, as also pointed out by this reviewer. We did not mean to say
that a systematic culture policy is required for these superficial SSI. We have made this clearer in the results section (page 8 lines 18-20). Given our definition of less severe SSI, i.e. no reoperation required, this means that reoperation is required in the remaining cases. So if SSI with unknown culture results more often concern the less severe SSI that do not require reoperation, this means that given a culture being taken chances are higher that the SSI results in more morbidity (e.g. reoperation). We have made this clearer in the results section (page 8 lines 12-13).

6. Explain definition less severe SSI in table 1. The definition of less severe SSI is given in the methods section (page 5 lines 22-24) and contains all SSI that are treated but result in only temporary health disadvantage from which the patient recovers without (re)operation.

Reviewer: Claire Lietard

In the reviewer report two questions are raised and several revisions are requested.

- First question with respect to the meaning of unknown culture results: the reviewer is right that the culture results are unknown because cultures have not been taken, as described in the methods section (page 6 lines 22-23)
- Second question regarding whether reported SSI are supported by culture results: of all reported SSI, 75% had a positive culture, 15% a negative culture and the remaining SSI had unknown culture results since no culture was taken, as described in the results section (page 8 lines 8-9) and the abstract (page 2 lines 15-16).

Major revisions requested:

- Altemeier index: the surgical wound class is not registered routinely by surgeons in our hospital or elsewhere in the Netherlands. Since findings during surgery determine the wound class which are not completely reported in the medical records, it is not possible to collect these data retrospectively in a reliable way. We therefore could not add these data. We have added this to the methods section (page 5 line 26 – page 6 line 2) so that readers know why these data are not part of the paper.
- Rate of prosthetic by type of surgery: we do not have complete information on whether prosthetic material was present in each patient. We agree that prosthetic material may be a reason for starting treatment with antibiotics sooner in those patients, thereby explaining that negative culture results more often concerned trauma patients. However, we would then expect to find the same result in cardiovascular patients, given the possibility of vascular prostheses. It therefore seems unlikely that this would be the entire explanation. We have added this to the discussion (page 11 lines 12-20).
- Early subsequent surgery: all (subsequent) surgery during (re)admission is included in the database, to enable classification of severity of SSI (and other adverse outcomes). We have added this to the methods section (page 6 lines 12-13).
- Treatment preventive antibiotic: prophylactic antibiotics were used in surgical patients according to protocol. SSI were only reported if additional treatment was given in the postoperative period. We have clarified this in the methods section (page 5 lines 17-18).

- Title of table 2: we have changed the title as requested.

- Infectious risk factors differ between surgery groups and should not be compared: we agree with the reviewer that infectious risk factors differ between surgery groups. These groups were not compared with the aim to find possible risk factors, but only to assess whether results were different for specific groups of patients, thereby guiding decision making specific wards / groups of surgeons. We have added this specifically to the methods section (page 6 lines 3-4) and have added a paragraph in the discussion focussing on these different risk factors (page 11 line 21 – page 12 line 2).

Minor revisions requested:
- Possible explanations for increase in SSI rate in 2001: the finding that positive culture results less often concerned trauma patients was only found for the period 2003-2005 and not for the earlier periods. This suggests that the increased SSI rate is most likely due to more SSI with negative culture results being reported in trauma patients, in particular the less severe SSI. This interpretation is consistent with our survey findings where trauma surgeons perceived their antibiotic policy to have become very liberal over time. This perceived change in antibiotic policy may have been (partly) due the arrival of a new head of the trauma unit who supported a very liberal antibiotic policy. We have added these data to the results section (page 9 lines 6-9) and the possible explanation to the discussion (page 12 lines 3-11).

- 95% CI rate for SSI rate: since figure 1 was deleted based on the comments of the other reviewer, this comment is no longer valid.

Editor
- Ethics committee: since the data were collected as part of routine medical care and the culture results to improve quality of care, approval of an ethics committee is not required under Dutch law.

- Statement on competing interest was placed on the correct place, and journal style was followed.

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We look forward to hearing your decision.
Best wishes,

Perla J. Marang-van de Mheen
(for the authors)