Author's response to reviews

Title: Infection rates associated with epidural indwelling catheters for seven days or longer: systematic review and meta-analysis

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Version: 2 Date: 19 March 2007

Author's response to reviews: see over
Dear Editor

Title: Infection rates associated with epidural indwelling catheters for seven days or longer: systematic review and meta-analysis

Manuscript number: 8748809911245813

We wish to thank the reviewers for their comments. This is how we address them:

**Paul Myles**

1. We have added words to the discussion about minimising epidural infection in a short paragraph. Clearly there is much more that could be written, and we have limited our comments.
2. We have deleted the per million statements, which were for a comparison with infection rates in other circumstances.
3. We have used the word reliable.

**Kwok Ming Ho**

1. There is no information about death rates in the absence of deep infection, and there is no possible way of calculating attributable deaths. What we have in the studies is statements about deaths that were attributed to infection, in whole or in part. While all of us want more, we believe that the knowledge about the limitations of the existing evidence, plus many words about those limitations repeated several times, makes the point.
2. We disagree about the use of confidence intervals. We do use them when we feel appropriate, and where there is a reasonable number of events. When there were only 4/57 deaths, use of a confidence interval suggests a precision that is just not there with so few events, even with large confidence intervals. This would be a misuse of statistics, since it would infer an upper limit of the death rate that could well be misleading in some circumstances.
3. We keep the estimates in the abstract conclusion, but add a beefed up sentence in the abstract repeating what was already in the manuscript: “This is a most uncertain estimate given the limited nature of the evidence..”
4. The information about number of studies is in Table 1 and the text, so that it is straightforward to work out in relation to Table 3. We have added a column in Table 1 to show which were prospective and which retrospective studies. We have also added a section in the text to indicate the number of catheter days, which should be and additional
help. Again, we wish to avoid giving the results a spurious legitimacy by providing 95% confidence intervals because there can be no confidence if there are deficiencies in the studies by nature of their design or small number of events.

5. While most studies have any catheter-related events as the sum of deep and superficial events, some studies included any deep events, and one had a complex classification with systemic events in six patients who did not have either a deep infection or a superficial infection, as best we are able to ascertain. We have inserted additional words into the results to explain why deep and superficial infections do not sum to any catheter-related infection. While checking this we found a typo in Table 1 that we have corrected.

6. We have added sensitivity analyses to Table 3 for cancer studies that were prospective and retrospective, and mentioned this in the abstract. The limited nature of the number of events limits the utility of the analysis, but it is right to include it and we are happy to do so.

7. Given the above, the abstract does not need to be changed, and we may have disagreed with this in any event, since the small number of studies and events could not reliably be used to conclude whether any differences were more or less correct in any direction. The problem with limited data is that any sub-group analysis compounds the limitations.

8. Changed the references to use PubMed translation rather than ours.

Thanks for the help.

Andrew Moore et al.