Reviewer's report

Title: Short- and long-term outcomes in infective endocarditis patients: a systematic review and meta-analysis

Version: 0 Date: 11 Jul 2017

Reviewer: Asim Cheema

Reviewer's report:

This study by Abegaz et al is conducted as a systematic review and meta-analysis of short vs long term outcomes for patients with IE from 1984-2016. The author includes 28 studies in meta-analysis; 11 prospective and 17 retrospective studies with 21, 920 participants. All the included studies looked at medical and surgical treatments. The results show significant increase in long term mortality 27.7% (95% CI: 20.9-34.5; p<0.001) compared to than short-term treatment 19.9%, (95% CI: 17.5-22.3; p<0.001)

Major consideration:

- The authors have tried to address several questions from a heterogeneous population and in the process the "message" of the paper is lost. They have made comparisons of short and long term mortality, short and long term treatment, rate of complications in IE (not certain if they are short term or long term), incidence of IE in drug users and HIV patients (Is this incidence or risk factor presence (prevalence) in patients diagnosed with IE).

- The numbers added for various groups do not add up to 100%, i.e, aortic and mitral valve IE, only 10% of patients have acquired left sided IE, native + prosthetic IE do not add up to 100%, similarly, the type of pathogen do not add up to 100%.

- An inclusion exclusion criterion needs more clarification for studies where surgical intervention was undertaken out of total sample but for which patient population?

- As mentioned by the author age was not limited but no study included children or pediatric population. This makes the statement for limitation of age unjustified and leads to selection bias.

- Short versus long term treatment for IE needs to be defined clearly in the study.
According to the author, number of studies for long term outcome is 13 (12 reference provided in brackets) whereas 10 year, 5 year and 1 year studies number sum up to 28. Should the two match?

Results

- Author has mentioned 34 studies were included but 6 did not meet criteria for meta-analysis. In summary table 34 studies are tabulated with only 2 studies showing * that have not been included in meta-analysis.

- In demographics section author has mentioned nearly half of respondents 9169 (41.96%) were NVE and 1554 (7.12%) PVE. What about the rest of the patients? Also, the numbers provided for NVE and PVE in cardiac involvement in IE cases are different. Please clarify the discrepancy.

- For valve involvement; 1355 (6.21%) patients had MV and 1720 (7.8%) patients had AV involvement which seems low with a data set of 21, 920 patients. Rest of the data should be mentioned in the study.

- For risk difference among gender, which group is significant should be mentioned in the section along with the discussion section.

- No analysis performed for confounding factors like age or causative microorganism.

- Analysis should also be performed with exclusion of heavy studies like Terhag el al 2013 with 7603 and Chia-Jen et al 2010 with 8494 in order to prevent "drowning" effect of others studies.

- With 21, 920 patients in total MV 1355 (6.21%) and AV 1720 (7.8%) involvement seems like a low number. A detail of valvular involvement from included studies can help in better understanding of IE.

Minor considerations:

- All results should be expressed as N (%) 
- Tables should be added for baseline characteristics and demographics for similarities/comparison between the studies
- Native valve percentage should be corrected
- Forest plots need proper labeling.
- Author has mentioned funnel plots in manuscript. Please add it to appendix 2. Also, risk of bias summary table should be included as most of the studies are retrospective studies.
- There are several spelling mistakes in tables/text that need to be corrected.

Are the methods appropriate and well described? 
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls? 
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown? 
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review? 
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review
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Please indicate the quality of language in the manuscript:

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