Reviewer’s report

Title: Role of Bispectral Index monitoring and burst suppression in prognostication following out of hospital cardiac arrest: a systematic review protocol

Version: 0 Date: 26 Jul 2017

Reviewer: Joie Ensor

Reviewer’s report:

The authors present a detailed protocol for a systematic review and meta-analysis investigating the prognostic value of bispectral index (BIS) monitoring and burst suppression (BSR) in relation to neurological outcomes following out of hospital cardiac arrest. The protocol is well structured, and the planned systematic review uses sound review methodology. However the statistical analyses could be elaborated on in line with PRISMA-P guidelines.

Minor comments

1. What kind of effect estimates are expected to be available (please discuss in the manuscript)? The authors mention that sensitivity and specificity of BIS will be extracted. Are effect estimates expected to be relative measures (e.g. odds ratios), examining the role of BIS as a prognostic factor for neurological outcome? Or does interest lie in the use of BIS as a diagnostic test for neurological outcome? In the latter case a more complex meta-analysis method may be needed to allow for correlation between sensitivity and specificity across studies.

2. Further, the eligibility criteria state that studies reporting the use of 'either' BIS or BSR monitoring will be included. But the aim is stated as determining the association between patients who have 'both' a low BIS and high BSR value within 24 hours and neurological outcome. Does this mean that only studies assessing both BIS and BSR will be included within analyses, or that two separate analyses will be performed for BIS and BSR?

3. The manuscript states that both RCTs and cohort studies will be included in the review, but that RoB assessment will be conducted using ROBINS-I. As ROBINS-I is designed to evaluate RoB in non-randomised studies, can it also be used to assess RCTs?

4. It is unclear what is meant by the following, "the methods that will be used to test for heterogeneity are Forest plot or chi-squared statistics". Do the authors mean that they will assess heterogeneity using I-squared and tau-squared statistics? Ref. Higgins JPT, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. BMJ 2003; 327:557-560.

5. The authors discuss the use of subgroup analyses to investigate large heterogeneity. Have the authors also considered the use of meta-regression for examining the causes of heterogeneity?
6. Please provide unabbreviated version of "ROSC" at first use in the abstract.

7. Please provide unabbreviated version of "GCS-M" at first use in the manuscript.

8. Please provide unabbreviated version of "TTM" at first use in the manuscript.

9. Could the authors please provide references for their chosen analysis methods (e.g. the random-effects meta-analysis model, publication bias, heterogeneity measures).

**Level of interest**

Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests.

**Quality of written English**

Please indicate the quality of language in the manuscript:

Acceptable

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