Reviewer’s report

Title: A systematic review of the effects of care provided with and without diagnostic clinical prediction rules

Version: 0 Date: 18 Jan 2017

Reviewer: Roderick Venekamp

Reviewer's report:

In this paper the authors conducted a systematic review to assess the effects of diagnostic clinical prediction rules (CPRs) on patient and process of care outcomes. This is a rigorously conducted, well-written review performed by very experienced team of systematic reviewers and covering an important topic.

Over the past decades, the number of diagnostic studies focusing on developing and validating CPRs has sharply increased, but far fewer studies have focused on evaluating the effects of implementing diagnostic CPRs on patient and process of care outcomes. This latter is of utmost importance since diagnostic accuracy does not necessarily translate into improved patient and process of care outcomes. Although supporting publication of this paper, I have some comments to be addressed by the authors:

1. Abstract, Results: The authors should consider adding the results for suspected (bacterial) pneumonia, e.g. "For suspected pneumonia, diagnostic CPRs reduced antibiotic prescriptions (3 studies) with no difference in unfavourable outcomes between interventions (2 studies)" or provide justification why these results were not presented in the Abstract.

2a. Abstract, Conclusion; I would recommend authors to emphasize the apparent lack of studies evaluating the effects of diagnostic CPRs on patient and process of care outcomes. Despite including "a range of conditions commonly encountered in clinical medicine", the authors identified only 27 RCTs for 14 conditions. In the light of the large number of diagnostic CPR studies published over the past decades, this is a rather low number and should be regarded as important/key finding of this review.

2b. Abstract, Conclusion; Although authors rigorously assessed risk of bias for all included studies and most were judged at high or unclear risk of bias, it is not apparent from the Abstract that results should be interpreted with caution. Although this has been highlighted in the Discussion section: "The conclusions drawn in this review ..... , caution is advised in interpretation of their results.", such a statement is lacking in the Conclusion section of the Abstract.
3. Methods, Risk of bias assessment; Authors should provide additional information how attrition bias was classified into low, unclear or high risk of bias and how reporting bias was assessed.

4. Results, Risk of bias; Table 2 is rather lengthy and somewhat difficult to interpret. The authors may consider to replace this Table by the Cochrane "Risk of bias" summary format.

5a. Results, Assessment of the reporting of interventions; This section is better placed after the Risk of bias section (and prior to describing the effects of diagnostic CPRs).

5b. Results, Assessment of the reporting of interventions; Table 3 is missing from the manuscript.

6. Results, Effects of diagnostic strategies incorporating diagnostic CPRs; The sections relating to suspected Group A streptococcus throat infections and suspected acute appendicitis are lengthy. Authors may consider to shorten these sections by highlighting the key findings and refer to the tabulated results in Additional File 5) for the other results.

7. Results, Effects of diagnostic strategies incorporating diagnostic CPRs, Process of care outcomes; In some sections, information about the impact on patients is lacking, e.g. for suspected Group A Streptococcus, diagnostic CPRs reduced antibiotic prescriptions (5 studies) but this is only relevant if no difference in unfavourable outcomes between the two strategies were observed. Did the trial authors report on these findings? If so, this information should be added. If not, a short statement should be added that no unfavourable outcome data were provided in the included studies. The same applies to some other related sections.

8. Results, Studies of diagnostic CPRs for suspected acute appendicitis; The authors should justify the reason for presenting the Accuracy results for the studies on suspected acute appendicitis. These results don't match with the objectives of this review, i.e. to evaluate the effect of diagnostic CPRs studies patient and process of care outcomes.

9. Results, Studies of diagnostic CPRs for suspected bacterial infection in children with fever; A description of the risk of bias of included studies is missing in this section.

10. Results, Studies of diagnostic CPRs for suspected (bacterial) pneumonia; A description of the risk of bias of included studies is missing in this section.

11. Results, Studies of diagnostic CPRs for suspected ankle or mid-foot fracture; A description of the risk of bias of included studies is missing in this section.

Minor comments:

1a. Abstract, Results; For cardiac chest pain should read as "For suspected cardiac chest pain".
1b. Abstract, Results; For acute appendicitis should read as "For suspected acute appendicitis".

2. Results, Studies of suspected acute coronary syndrome. This heading should be changed to "Studies of diagnostic CPRs for suspected cardiac chest pain".

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