Author's response to reviews

Title: Data Linkage: A powerful research tool with potential problems

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Author's response to reviews: see over
Dear Drs Cassady-Cain & Marshall,

Thank you for your feedback on manuscript MS: 2139798059399448. We have undertaken modification based on the suggestions in your email dated 21 September 2010. With respect to the specific comments and suggestions of the reviewers, these are addressed in turn below.

Thank you once again for the opportunity to re-submit this manuscript. We believe it delivers an important message on the quality of data linkage methods and we appreciate your consideration in helping us to convey this message in the most effective manner.

If you have any questions or concerns, please do not hesitate to contact me using my details listed below.

Yours Sincerely,

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Responses to Editors’ comments

Given the revisions that you made on your resubmission, and the focus on the review of evidence available, we now feel that the current version of the submission is more suitable as a research article, and that it has been refocused as a systematic review.

We would ask you to revise your manuscript in response to the referee’s comments, and, in addition, please revise to ensure that you adhere to the PRISMA guidelines for reporting systematic reviews.

The term ‘systematic review’ can be used a different ways. This is not a systematic review as defined by the Cochrane Collaboration, in that there is no meta-analysis of data due to study heterogeneity. In addition, there is no validated tool to assess the quality of existing studies using linked data, so we have not been able to perform this aspect of systematic review development. While we examined other tools for general observational research studies, such as the STROBE guidelines, we did not believe this tool accurately captured the issues of bias in linkage that we are trying to highlight in this article. This is why we have avoided using the term ‘systematic review’ and have chosen to describe the review as ‘a structured narrative review’ which we feel better describes the methods used.
However, we agree that the approach has been systematic in terms of defined search strategy, inclusion and exclusion criteria and take on board the suggestion to present the findings using the PRISMA guidelines for these aspects of the methods.

We have summarised the study characteristics and categorised their findings into different groups qualitatively according to participant characteristics that are of interest in epidemiological research, which we hope will provide a broader sense of the issues of bias. We have also provided a general, ‘exploratory’ discussion of the quality of these studies, but in the absence of a validated tool, this is not intended to be a definitive assessment.

This includes expanding your methods to elaborate on the search strategy and selection of literature included in your review (including a flow diagram).

We have elaborated on the search strategies, including the databases and search terms according to the PRISMA guidelines. We have also amended the flow chart to provide more detailed information on the reasons for excluding the studies that were not included in the final review.

Responses to the Comments of Reviewer 1

Carefully review Table 1 and the text for inconsistencies. For example, the text under Age states that there are 18 studies that examined the relationship yet only 17 are listed in the Table. The text stated 13 studies examined geography/site yet the Table lists 14. These obvious inconsistencies are very concerning for a second submission and raise concerns regarding the overall quality of the analysis. It would also be helpful if the reference numbers were included in Table 1.

We have now carefully checked the Table and manuscript text. We have added reference numbers to the table and have cited all of the identified studies within the manuscript text. Consequently, we have deleted Appendix 1, as all studies are now listed in the references.

I do not consider this a comprehensive review of the influence of data linkage on validity of results. Please add “suggests” to 1st paragraph of discussion “...data of quality linkage and suggests how it may influence...”

We have amended the wording as suggested.

Clarify what is meant at the end of the 3rd paragraph that this is an exploratory discussion rather than a systematic review. The introduction and abstract does not frame this as an exploratory review.

As mentioned above in this letter, we consider this review to be a structured, narrative review rather than a systematic review due to the absence of a validated quality assessment process for reviewing the included studies. We have amended the 3rd
paragraph in the discussion to clarify why we do not believe it to be a formal systematic review. However, we still feel this study is an important piece of work to highlight these issues and start to develop tools and methods that can allow studies using linked data to be systematically conducted and reviewed in the future, as they become increasingly prevalent. We have also amended the 3rd paragraph to reflect this point. We have also amended the aims to state:

The purpose of this study was to synthesize the evidence through a structured narrative review of patient or population characteristics that may be associated with changes in sensitivity and specificity of data linkage, and which could thereby introduce systematic bias into reported outcomes.