Reviewer's report

Title: Validation of de-identified record linkage to ascertain hospital admissions in a cohort study

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Reviewer: George Vassilacopoulos

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This paper aims at developing and validating a record linkage strategy with limited availability of unique identification. Linkage has been undertaken with and without use of national health insurance (Medicare) number and agreement was tested between two algorithms developed. The results showed that the quality of record linkage can be significantly improved when national insurance numbers are combined with demographic data such as names and addresses.

This is an interesting paper concerned with the effective linkage of disparate patient records (or datasets) for health-related research studies.

The research questions posed in the paper are explicitly and well defined. They concern (a) examining the accuracy of using a combination of a Medicare number and demographic data and only a Medicare number as a unique identifier. A matching algorithm was developed to enable record-linkage. This algorithm was extensively tested using a large variety of datasets. The results obtained were encouraging.

I believe that the manuscript adheres to the relevant standards for reporting and data deposition while the discussion and conclusions are well balanced and adequately supported by the data.

Acknowledgement of relevant work has been made to a satisfactory level while the title and abstract accurately convey the essence of the research effort described in the paper.

As a conclusion, I believe that the paper is of satisfactory standard and addresses an important subject, that of record-linkage, which is essential for using electronic patient records in health-related research such as in medical or epidemiological studies. I recommend that the paper is accepted without revision.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests