Reviewer's report

Title: Automated data extraction from general practice records in an Australian setting: Trends in influenza-like illness in sentinel general practices and emergency departments

Version: 2 Date: 4 May 2011

Reviewer: Barbara Michiels

Reviewer's report:

In general:

First review: The subject of this study, the collection of timely and reliable surveillance data on influenza-like infections, is important to manage adequately upcoming epidemics on national, local and practice level. This study has the potential of providing interesting information on this topic, but fails to provide enough details and sound results. Specific comments on the manuscript are given below.

Second review: the manuscript improved a lot, some comments remain as stated below.

Following abbreviations are used after every comment:
- Discretionary Revisions (DR) (which are recommendations for improvement but which the author can choose to ignore)
- Minor Essential Revisions (MER) (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
- Major Compulsory Revisions (MCR)(which the author must respond to before a decision on publication can be reached)

1. Is the question posed by the authors well defined?

First review: In the Aim section the research question is stated by the authors and consists of two elements: 1) testing of the performance of a newly developed automated data extraction tool and 2) comparing the results obtained by applying this tool on a database of routine GP records with emergency department ILI data: I propose that the underscored text is added to the Aim in the manuscript (MER)

Answer from the author: We are not able to locate any underscored text in the report. Would we be able to see this please?

Second review: The questions are better formulated in the abstract than in the manuscript. The first question could become more detailed as follows: “Can syndromic ILI data be extracted automatically from routine GP data BY ADAPTING AN EXISTING DATA EXTRACTION TOOL? Please adjust the aim section in the manuscript accordingly.(MER)
2. Are the methods appropriate and well described?

1) Development of the data extraction tool:

a) 2nd paragraph: Case definition of ILI:

First review: I am not convinced that the proposed ILI definition consisting of cough and fever and fatigue is sensitive enough to detect all influenza cases, although I understand that this is a National ILI definition used in Australia. Fatigue is a ‘soft’ subjective symptom not always reported by patients or recorded by GPs or other healthcare workers. Although many patients suffering from influenza do complaint from fatigue, it is even not specific for influenza[1]. Other countries are using other definitions most of them containing cough and fever and only differing in the additional signs or symptoms. So why not restricting the definition to cough and fever? (MCR)

Answer from the author: We used the national definition of Australia at the time. This made it consistent with other systems, both in general practice and in emergency departments.

As the reviewer pointed out; fatigue is not specific to influenza, but neither are the other symptoms in the case definition. In order to make the tool more sensitive, we used a number of words to trigger a positive categorization based on the case definition (see table 1). Fatigue was included to achieve a reasonable degree of specificity. Multiple terms for fatigue were included to maximise sensitivity (see table 1)

Second review: I accept the pragmatic reasons for the case definition, but I do not agree that fatigue is helping in specificity. My concern that the tool could miss some ILI cases when fatigue is not found in the record, is refuted by the high sensitivity of the tool. No further action required.

b) 2nd paragraph:

First review: “Information can be entered into medical records software programs as coded entries via tick boxes or drop down menus or as free text.”: please can you specify what kind of information you are referring to? (MER)

Answer from the authors: The text in the manuscript has been changed to address this.

Second review: OK. No further action required.

c) First review: Table 1: as a footnote there is mentioned that “Any description of influenza vaccination caused a negative categorization”: it is a pity not to include vaccinated ILI cases because vaccine failure cannot be detected in this way: why this restriction was introduced? (MCR)

Answer from the authors: The exclusion of vaccination was required to ensure that practice visits for the purpose of vaccination did not count as positive for ILI. The words influenza or flu (eg. Fluvacc) often occurred in the records for a
vaccination visit.
When we tested the tool initially, this exclusion was not programmed, which resulted in a large number of false positives.

Second review: OK, in the future this could be addressed and refined, I think. No further action required.

2) Testing the extraction tool (Canning Flu Tool):
a) 1st paragraph:
First review: “Following refinement of the application…”: what is meant by refinement: what kind of adjustments were there made? (MCR)
Answer from the authors: The manuscript has been changed to address this.
Second review: OK. No further action required.

b) First review: the paragraph regarding “Sensitivity and specificity” must become part of this section regarding the testing of the tool(MER)
Answer from the authors: The manuscript has been changed accordingly. See above.
Second review: OK. No further action required.

c) First review: this section contains information on data collection, which is not part of testing the tool: I propose an additional heading describing all the details of data collection: description of the GP practices and ED sites, period of collection, description of PHREDSS data collection, etc. (MER)
Answer from the authors: The manuscript has been changed accordingly.
Second review: OK. No further action required.

d) First review: There is no information on the quality assessment of the recorded information by the GPs or EDs healthcare workers(MCR)
Answer from the authors: This is beyond the scope of the study.
We referenced the Australian Government Productivity Commission Report on Government Services. This described increased use of electronic records among private general practitioners. We have also added a reference to the way in which GPs use electronic records.
Second review: OK. No further action required.

3) Comparing trends between GP and ED data:
a) First review: this section contains information regarding the data collection, which is not the same as comparing data. Please replace this information under the data collection heading cfr supra.(MER)
Answer from the authors: The manuscript has been changed accordingly
Second review: OK. No further action required.

b) First review: I am missing the description of the appropriate methods for comparing the weekly trends generated by the different tools and data sources; no statistical tools were described such as Spearman’s rank correlation coefficient to compare temporal trends (used in the study by Brabazon et al (ref 3); neither the graphical methods and software packages were mentioned (MCR)

Answer from the authors: Changes in the manuscript have been made to better describe the descriptive analysis of trends and in the discussion section to address the level of analysis. The focus of the article is on data collection methodology. The analysis was confined to observations to detect ILI seasonal trends and comparison between what could be observed in currently used ED surveillance and the proposed GP surveillance. We have concerns about the use of Spearman’s rank correlation coefficient for this study due to auto-correlation and seasonality.

Second review: I agree that the statistics to compare the time trends are very sophisticated and that in your work a lot of detailed information is missing to do it properly.

But could you give the name of the graphical software package you used for the figures? (MER)

3) a) First review: the information under the heading: “Data interpretation” is part of the data collection description.(MER)

Answer from the authors: We moved this text accordingly

Second review: OK. No further action required.

b) First review: “When measuring sentinel activity, we used the average percentage of patients with ILI by site rather than the number of ILI cases. This ensured that summary measures were not unduly influenced by the contributions of individual sites.” : I am not sure what is meant by his statement. This is a partial solution because I presume that percentages are measured as number of cases/number of consultations/practice/week (please add this information to this part of the Methods) and that adjustment by means of weighting these percentages on the basis of state population is still lacking.(MCR)

Answer from the authors: We have adjusted this description to better explain the process. Weighting of means was not done as the study sought to measure sentinel activity rather than estimate overall community prevalence of ILI.

Second review: Can you explain how average percentages were measured/calculated: what are the nominator and denominator? How the denominator was extracted from the data? Please, add this information to the method section. (MCR)
3. Are the data sound?

First review: In general the data reported are not very detailed. No general characteristics of the cases and patient population (gender, age) and no total number of cases/consults/practice or ED/week during the registration period were given. (MCR)

Answer from the authors: Age and gender data were not reported as the aim of the study was to detect overall ILI activity in the sentinel sites and compare with currently used systems for ED surveillance for ILI. Collection of age and gender is however a good idea and is included in the tool’s capabilities for future study. We did not use ILI counts in our comparison, as explained in our methods, but we have included information about Total counts of visits to EDs and sentinel GPs in the results section in the revision.

Second review: OK for the additional information, but in the method section you argued the use of percentages, and in the results no percentages are given together with the count numbers, no connection can be made between nominator and denominator. Is it possible to add percentages to the number of weekly ILI presentations? (MCR)

1) First review: testing of the tool: reporting of sensitivity and specificity:
A completed two by two table is missing; the percentages given cannot be recalculated. Please provide us the missing data. (MCR)

Answer from the authors: First review: comparing the GP and ED data: denominators are missing, only the range of absolute case numbers were given, which makes reliable comparison impossible. Only a description on sight of the graphical results is made. No attempt has been made to really estimate the correlation between the two data sources, which is a pity. (MCR)

Answer from the authors: The 2X2 table has been supplied in the revision.

Second review: OK. No further action required.

2) First review: Free text extraction: same remark as supra: no statistical analyses of the differences given (MCR)

Answer from the authors: Discussed above

Second review: OK. No further action required.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? First review: The quality of the reporting and data deposition is low: not exceeding description, scarcity in data provided cfr previous remarks (MCR)

Answer from the authors: See previous discussion

Second review: see previous remarks

5. Are the discussion and conclusions well balanced and adequately supported by the data?
1) First review: The authors conclude that “The tool produced a more robust signal than PHREDSS and is likely to detect increased influenza activity more reliably,”: this study is not evaluating the reliability to detect influenza cases with the new tool. Therefore a comparison with laboratory confirmed cases is needed. Their conclusions are not very sound and only based on a visual impression of graphics. (MCR)

Answer from the authors: The terminology has been adjusted in the revision. Influenza has been changed to ILI, and the observation of stronger seasonal signals is specified to refer to ILI as per the case definition. The study does not seek to identify influenza prevalence, but syndromic influenza like illness. In order to test the sensitivity and specificity of the case definition, we would require inclusion of a laboratory component in the study. This study focused on the Canning Flu Tool’s ability to identify records of cases meeting the case definition of ILI. The conclusions made refer only to syndromic surveillance capability intended to monitor trends.

Second review: OK. No further action required.

2) First review: The following sentence must be mentioned in the method section: “Feedback to GPs was achieved by giving them access to a password-protected, secure website containing weekly surveillance reports including both practice-specific and area-wide surveillance data and interpretations.” (MER)

Answer from the authors: The sentence has been moved accordingly

Second review: OK. No further action required.

3) First review: last paragraph of discussion: please give references for “the United Kingdom and Ireland” (MER)

Answer from the authors: References included accordingly

Second review: OK. No further action required for my previous remark, but the numbers of the references in the text and at the end of the text are not corresponding. (MER)

6. Are limitations of the work clearly stated? First review: No, very few limitations of the study were mentioned by the authors (MCR)

Answer from the authors: The limitations described in the manuscript are:

1) The tool provides syndromic data only, rather than influenza data specifically.
2) The study was performed in a metropolitan area with relatively high socioeconomic status. The findings cannot be applied to the state of NSW or Australia more widely.
3) The extraction abilities varied slightly between the two compatible medical records packages. This resulted in some differences in the percentages of ILI between the two versions, but did not appear to affect trends.
Second review: OK. No further action required.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes, no problem

8. Do the title and abstract accurately convey what has been found?
1) First review: In the title there is stated that a “comparative analysis of influenza like illness trends” will be given, which suggest a thorough comparison and in fact the manuscript only provides a description of ILI curves with a comparison on sight.(MCR)

Answer from the authors: We have changed the title of the manuscript to: “Automated data extraction from general practice records in an Australian setting: Trends in Influenza like illness in sentinel general practices and emergency departments” We think this reflects better the nature of the study

Second review: OK. No further action required.

2) First review: In the abstract the research question (cfr. point 2) is not reflecting adequately the Aim which consists of two distinct elements.

Methods: last sentence: what is meant by “raw ED data”?

Results: “the curve of seasonal ILI was more sensitive”: on what grounds this statement is made?(MCR)

Answer from the authors: We have included the research questions in the abstract. We have removed “raw”. We have changed the word “sensitive” to “responsive”. We made this statement based on what we saw on the ILI curves of the PHREDSS data compared with those of the GP data. The five local EDs did not produce a noticeable seasonal trend except during 2009 while the GP data demonstrated a clear seasonal trend in each year.

We also described the difference in ILI percentage in EDs when free text extraction was used, as opposed to current PHREDSS.

Second review: the corrections made are OK. Additionally I refer to my remark about the research questions. Please adjust also the results with average percentages because this is your main outcome measure cfr supra. The background section of the abstract could be made more concise.(MER)

9. Is the writing acceptable? yes

Level of interest: An article whose findings are important to those with closely related research interests

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'