Reviewer's report

Title: An End-to-End Hybrid Algorithm for Automated Medication Discrepancy Detection

Version: 1
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Reviewer: David Perez-Rey

Reviewer's report:

This paper describes a system to automatically detect medication discrepancy. A gold standard has been manually annotated to train and evaluate this algorithm, involving a significant effort that has been properly described in the manuscript.

- Discretionary Revisions

“Data sources” section, first paragraph.

“The discharge prescriptions were stored in the EHR database, which were extracted using database queries (Figure 1c).”

A more detailed technical description would be useful here to give a better perspective when considering to implement such approach.

“Automated medication discrepancy detection” section, first paragraph.

“It then linked the attributes to the corresponding medication names on the basis of a rule-based method (Process 2)”

Listing the rules in an appendix (or as additional material) would be beneficial for certain readers that are looking for a more detailed technical description.

“Medication entity detection and attribute linkage” section, first paragraph.

“Finally, the CRF model was trained on a set of clinical notes with gold-standard annotations (Figure 1) before executing entity detection on the separated test set.”

Clarify that there is no bias in the training and test set.

“Medication entity detection and attribute linkage” section, second paragraph.

“Mathematically, each identified attribute was linked to the identified medication name of which the end position (or the start position if the attribute was in front of the medication name) was closest to that of the attribute in absolute character distance”

“Mathematically” is probably too general for many readers looking for a technical description of the proposed algorithm.

“Performance tests of medication discrepancy detection” section, second
paragraph.

This paragraph is probably better explained with a figure.

“Figure 2”

Graphical components would facilitate understanding, e.g. a database symbol next to “Extract from a patient’s medication list via database queries”. Figure 3 is similar but easier to understand.

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