Reviewer's report

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

Version: 1 Date: 14 January 2015

Reviewer: Alin Moldoveanu

Reviewer's report:

A very good article, presenting a significant development and experimental work in the field of automated medication reconciliation. This field is critical for today's healthcare. In particular, as part of their more end-to-end solution, the authors address one of the most highly topic in the field, which is dealing with free-text medical data.

The article is very well written, structured, easy to follow, presenting the topic, the approach and the results in a gradual way from a basic view to the details.

The authors manage to master very well the complexity of the problem, creating an end-to-end solution including correct handling of the complexity of dealing with the medical data regulations and standards, as well as a hybrid algorithm that appears to reach significantly better results that previous attempts in the field.

The clinical study size is excellent, comprising 271 patients.

The patients group profile appears very well suited to validate the strength of the algorithms, including patients with long medication lists, multiple care providers, and frequent transitions.

The statistical analysis of the results is very well performed.

In particular, I appreciate how the authors extended the analysis in the chapter "Error analysis, limitations and future work", reaching some very interesting conclusions, with relevance for their future work but also interesting for related solutions operating on medical data in other areas.

Minor Essential Revisions:

- Regarding patients' profiles, it remains not investigated how the solution would perform for patient groups with significantly different profiles (e.g. few illnesses, non-chronic, shorter medication lists, which are common situations). The authors should at least try to filter their data if it includes such cases, to address this aspect, or consider extrapolating how their solution would perform; might also consider a next study with significantly different patients' profiles.

- The algorithms could be described with some more details, to make more easy to understand their key points, advantages and limitations.

- It would help the reader to give captions to figures, as there are for tables.
Level of interest: An article of outstanding merit and interest 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