

Author's response to reviews

Title: Screening pregnant women for suicidal behavior in electronic medical records: diagnostic codes vs. clinical notes processed by natural language processing

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Author's response to reviews:

Dr. Mike Conway

BMC Medical Informatics and Decision Making Editorial Office

Re: MIDM-D-17-00368R2

Screening pregnant women for suicidal behavior in electronic medical records: diagnostic codes vs. clinical notes processed by natural language processing

Dear Dr. Conway,

Thank you very much for the review of our manuscript.

We appreciate the insightful comments and suggestions provided by you and the expert reviewers. We have revised the manuscript taking into account the reviewers' comments. We have indicated the changes by highlighting the changes.

Below, we provide point-by-point response to the reviewers' comments.

Thank you again for providing us the opportunity to revise and improve our manuscript.

Sincerely,

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Technical Comments:

1. Please provide email address of all authors.

We now added the email address of all authors on Page 23. We also provided this information in the online submission system.

Reviewer Reports/Editor Comments:

Reviewer #1: The author responses to reviewer comments are comprehensive and appropriate, and the revised version is much improved.

However, one response was not directly addressed in the manuscript, which I think would be important to include in a published version: the motivation for the sampling procedure (1:30 ratio and 1:100 ratio). The response provided by the authors is fine, but it was not added to the manuscript as far as I could tell.

We apologize for our omission. We now added the motivation for the sampling procedures in our manuscript (please see Page 8-9 and Page 11).

The added points to the discussion section are very good, however some additional relevant references might be good to add here with some further discussion on the complex challenge of prompt/timely detection of suicide risk, e.g.

Metzger, M.-H., Tvardik, N., Gicquel, Q., Bouvry, C., Poulet, E., Potinet-Pagliaroli, V., 2017. Use of emergency department electronic medical records for automated epidemiological surveillance of suicide attempts: a French pilot study. *Int J Methods Psychiatr Res* 26. <https://doi.org/10.1002/mpr.1522>

Walsh, C.G., Ribeiro, J.D., Franklin, J.C., 2017. Predicting Risk of Suicide Attempts Over Time Through Machine Learning. *Clin. Psychol. Sci.* 5, 457-469. <https://doi.org/10.1177/2167702617691560>

Thank you for the references. We added the references in our discussion with further discussion (please see Page 20).

Reviewer #2: The reviewers have addressed all of my comments. Unfortunately, one comment was only addressed in the reply to reviewers, and not in the manuscript itself:

P9L12 - I made my original point on this section, as I think it is important to show how the method described would be operationalised - especially as the authors claim this as a tool to be used to screen for suicidal behaviour. If you were to use it for screening, you say in your reply:

"In terms of a real time screening tool, we would use the entire screening tool (term search + cTAKES) every time a patient had encounter with the hospital. If a search term occurs later in time (T2) than the text that cTAKES

(C1) identifies as suicidal behavior, the term (T2) would be captured by the cTAKES performed after that specific term (C2) (T1→C1→T2→C2)."

1. The fact that you are intending to use both cTAKES and the term search in any real-use screening tool is not made clear in the paper, and needs to be.

2. If you are using both, is a positive (for the real-use tool) found when someone is found from either tool, or from both tools? This is never stated.

3. If the piece of text that led to cTAKES (i.e. NLP) finding this positive case was written *after* the text that led to the search term finding the case, and a positive is only found when both term search and cTAKES are positive (i.e. your "NLP group"), then my point 1 in my earlier review still stands. In real life screening, this patient would not be found at this visit. She is only positive because you have access to parts of the record written after the search term that led to you including her.

I think this needs to be clarified, and operational use commented on, at some point in the text.

We apologize for our omission. We now clarified that we intend to use both term search and cTAKES as the screening tool (please see Page 10-11, 15 and 21). We apologize again for misunderstanding your comments earlier. We agreed with the reviewer that we might miss those women described in point 3 and we now included it as a limitation (please see Page 20).