Reviewer's report

Title: Medication error in primary care: mapping the problem, working to a solution - a systematic review of the literature.

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Reviewer: Rodney W. Hicks

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Review of Manuscript

Summary

This study makes an original contribution to the safety literature by mapping the problems that lead to medication errors in primary care. The broad approach at looking at the system level is refreshing and demonstrates that opportunities abound for less than desirable outcomes in the medication management system. The intriguing element was the blend of the mapping process along with evidence to draw inferences about rates of errors. Together, the two processes will contribute to the knowledge base.

The methodology was sound. The author’s are commended on the time investment for retrieving and reviewing and designing the map. The authors then use the findings to call for additional research and theory development.

This complex process is both a strength and weakness. The authors are talking about two important elements – the process of the mapping exercise and then next steps. Most of the discussion on the last next steps is philosophical. While all is true, it weakens the paper by being a bit abstract. This is a true dilemma as it important information. As the intent is to discuss approaches for creating improvement, this in fact is not given sufficient detail. The paper’s figures and tables support the mapping process. Can there be any additional table or details for the improvement techniques?

The authors’ use of the UK healthcare system limit the ability to generalize world-wide, however, the value of the paper outweighs this finding.

Finally, it must be stated that the grammar detracts from the overall quality of the paper. The lead author should engage an editorial specialist to ensure that tenses are aligned and active voice is used and proper punctuation.

Major Revisions

1. Increase discussion on the opportunities for improvement (see specific section on Creating Improvements). This section teases the reader with suggestions of opportunities and only briefly explains a limited number. More substance is needed and the author must verify that the RCA was indeed the process described rather than the FMEA.

2. Creating improvement: Would it be helpful if the authors give some examples
of “management techniques” which improve reliability….. This teases the reader, and I think it would be helpful if the author tells the reader some of the tools. The bottom paragraph was well written.

3. Once the process is stable, RCA can be used as a tool to reduce error rates by identifying the solutions. I think the wording is off, the correct tool may be FMEA if looking for solutions. – the RCA looks for casual factors. This is a fine line but I believe the wording is incorrect. Also, the following line about extrapolation leads more to FMEA than RCA.

4. I would challenge the statement that this approach allows the development of a systematic approach to the reduction of error. Rather, it uncovers the weaknesses of the system. The map alone is merely a guide as to where to deploy intervention. The sentence as written is a bit to big of a leap (though I know why you want to take that leap).

Minor Essential Revisions

1. Abstract: I believe that the author team should review the manuscript and adjust the tense throughout the section. Some of the past tense sentences are followed by present tense and vice versa, a style that is distracting. The authors should consider active voice to the extent possible.

2. Background: First, I recommend the opening paragraph share a common tense. In the second paragraph, the authors pose the question that how the errors interact and if problems in one part of the system would lead to significant reductions. I would urge the authors to consider that Bates and colleagues have demonstrated that CPOE systems does eliminate errors downstream. The authors should disclaim what interventions have reduced discrepancies (Just give at least one example). I think the line beginning ‘.. However, there is little evidence…. In my mind, this line appear prematurely, it may be best served as a concluding sentence or next to last sentence.

3. In this same paragraph, consider eighty percent as 80%. In this same line, the author needs to clarify that 80% of medication expenses occur in primary care. The reason it is unclear is that as it reads,, more than 80% of medication is prescribed. When in actuality, it is 100% of medications are prescribed. But I think the intent is that the 80% of the pharm. Budget comes from primary care???

4. Page 6. Top full paragraph beginning We included studies if they (I would remove pronouns from this paragraph, change to the study (there are no proper nouns in the paragraph).

5. Mapping The system: I question the placement of the reference [17] at the end of the sentence as written. I believe the author’s intent is to give credit to the [17] and they followed that process. As written, the “I” and [17] would be the same person, which can be changed easily by saying something like in accordance with established processes, then cite.

6. Page 7, last paragraph: Again, adjust tense.

7. Results (Page 8). Adjust text in last line, we do not becomes we did not.
8. Discussion: I would state the UK’s healthcare system – rather than a country.

9. Limitations. The 4 groups were not easily identified (because of the conjunctions). Is there an easier way? Such as numbering or adding a semi colon before the last (Minor).

10. Second paragraph. There is a dearth of evidence relating to some parts of the system. The examples that follow are limited to prescribing activities, which is only part of the system. So this is a slight disconnect between the opening line (plural parts) and the example (Singular part). The solution would be to add at least one example from another part of the system.

11. This is followed by a paragraph that says In other areas of the system. If the logic follows, other areas of the system would not include prescribing. I think this is an honest oversight. I challenge the authors to accept that methodologies have a problem in the first step. Is the intent to say that methodologies have been problematic, regardless of area in the system?

12. The statement “Conversely, some prescribing errors may not stay in the system if these are identified and rectified by a pharmacist at later state. This is not a true statement, as if an error is detected and fixed, it is still an error. So I fail to see the value of the line “stay in the system”.

13. The line “Difficulties also arise when determining rates of errors in medication taking history … Is the subject supposed to be errors in medication history? Or errors when taking the medication history? The position of “taking” was awkward to this reader.

14. Suggest rephrase: Studies have classified discrepancies as intentional or unintentional when patients are issued repeat prescriptions after being discharged from hospital.

15. Page 10, bottom paragraph. The second line has a period that precedes the citations. This should be removed as the sentence continues. The inclusion of the references should be done in past tense terms.

16. Page 13. Once data has been collected, the analysis indicates…. (flows better)

17. Reference List:
Reference 9, 10, 11 and several other citations - - Why is there bold font?
Reference 17: Learning to See (I think the See should be lower case)
Some of the journal names are in abbreviation format, some are full text. I would be consistent and follow the editorial style.

The supplemental table of studies screen did not print well. It may have been in the conversion to PDF.

Which journal?: Not appropriate for BMC Medicine: an article whose findings are important to those with closely related interests and more suited to BMC
Health Services Research

**What next?:** Offer publication in BMC Health Services Research after discretionary revisions

**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