**Reviewer’s report**

**Title:** Implementation and acceptability of a heart attack quality improvement intervention in India: a mixed methods analysis of the ACS QUIK trial

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**Reviewer:** Anne Lambert-Kerzner

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Implementation and acceptability of a heart attack quality improvement intervention in India: a mixed methods analysis of the ACS QUIK trial

This is a very interesting manuscript describing the development of the ACS QUIK intervention and evaluates its implementation, acceptability, and sustainability. I believe the manuscript would add insight and informational details supporting implementation and evaluation of large multisite interventions. It is unfortunate that the results do not provide any new insights regarding barriers or facilitators to implementation science. Yet, with more details of the individual contextual environments and the intervention interaction, the paper would be greatly strengthened.

There are some specific issues with the manuscript that could be addressed to strengthen its impact and contribution.

1. **Overall:** As the Background in the Abstract clearly states, "We describe the development of the ACS QUIK intervention and evaluate its implementation, acceptability, and sustainability." Yet, I found there was a lack of clarity and specificity regarding the "intervention" vs the "toolkit", while reading the manuscript. Multiple titles were used, such as: study, toolkit, trial, clinical trial, intervention, and toolkit intervention. To obtain a better understanding, I needed to read the initial published manuscript. Therefore, I would highly recommend being very specific in addressing the whole intervention or the specific toolkit components.

2. **The term participant is used throughout the manuscript and it is not clear if you are referring to the hospitals, providers, or the patients. Please be specific as to who the participants are.**

3. **Please go into further detail regarding the people involved in the interviews and the surveys. It appears that 22 were involved in the surveys and 28 in the interviews. Yet, the total of both = 39. Also, please clarify why 63 is used as the denominator, even though 2 people were recruited at each site and if these were the people surveyed and interviewed.**
4. It would be important to understand the impact of the hospital type and size for each of the findings.


6. Methods Section:

   a. The Formative work to develop the toolkit.

      i. The qualitative work is described in detail, but little is discussed about the systematic literature review. None of these results are discussed in the Results section but then you do address them in the Discussion of which we have no reference in the results section. The final Toolkit is described in the Methods - should this not be a component in the results section? Please see below in the Discussion section as this part of the manuscript may be omitted and summarized using the reference to your previously published papers.

      ii. The Toolkit has 4 components described on pages 6-7: 1) Audit and feedback; 2) Checklists; 3) Educational material; 4) Access to online training. You then describe telephone messaging groups, quarterly newsletters, and comparison ratings to other hospitals - why are they not #5,6, and 7 components of the toolkit?

   b. ACS QUIK toolkit training - It appears this training was much more involved than just the toolkit. It appears there was the creation within each hospital of a "Quality improvement team" and these teams were "clinically" trained to decrease inappropriate thrombolysis, increase use of specific meds, and selection of reperfusion strategies. Therefore, these trainings were much more than the toolkit. Suggestion would be to label the sub-section b. ACS QUIK Trainings.

   c. What is the difference between a code team and a rapid response team? These were not fully defined on page 7 line 12.

   d. Page 7 line 27 identifies "zonal project coordinators". Who are they and what role to they perform?

   e. Online surveys were sent to "all" site investigators. Please be more specific as there were 63 participating hospitals identified. Page 5, line 56-58 describes that each hospital identified 2
members of the quality improvement team to participate. Therefore, please be specific in how many surveys were sent out and what exactly a "site investigator" is.

f. A discussion of the temporal trends and how they affected the intervention implementation would be useful.

7. Analysis Section:


b. The integration of the qualitative data into the mixed effects logistic regression was very interesting.

8. Results Section:

a. Online survey - what was your response rate?

i. How many and description of the intended recipients of the surveys would be good to know?

ii. Clear description of who did answer the survey would be nice.

b. Interviews: The title of the section is "Physician in-depth interview results: Implementation and acceptability of toolkit" yet, there are discussion of other components of the intervention.

i. Please review the number and description of who was interviewed in the results section? How many interviewees were from the same hospitals? I have put together that 28 interviews were from 27 hospitals, correct?

ii. More quotes are needed in the different sections.

iii. It is not clear who used the toolkit components. The sentence on page 12 lines 22-27 is not concise. Who are the "physicians" - ED, cardiologist, general practitioners?
iv. Please describe exactly what the "Toolkit implementation score" is.

v. Audit and feedback reports were sent to "physicians" (page 13 line 26) what/who were these physicians? Are they the ones who were interviewed?

vi. More detail is needed to explain the statement on page 13 lines 29-36. I thought the purpose of the A&F was to help show whether or not the drugs were being utilized?

vii. Page 14 line 26 - if junior physicians are reviewing the data - who are they reporting the findings to?

viii. Checklists - those who had their own checklists, did you ask if they contained similar variables?

ix. Please be consistent in statements. Page 14 line 50 "All physicians reported that checklists were considered important." Page 15 line 8 "Others reported that checklists made minimal difference in their clinical practice."

x. Guidelines for development and deployment of code and rapid response team: It is not clear in the Methods section page 7 lines 7-15 that "development and deployment of the code and rapid response teams" are part of the toolkit. It only states that there is access to the QI training.

xi. Less useful section - Checklists - again, contradicts the statement on page 14 line 50 "All physicians reported that checklists were considered important."

c. The "Intervention adaptation" is this more than the "toolkit"? More details of specific adaptation would be appreciated.

d. Page 16 and 17 under the discussion of payments: up to INR750/US$12 per participant - is this per patient or physician?

e. Page 18 lines 29-34 "... trial participant satisfaction with the care provided..." How was participant satisfaction measured?

f. Page 18 lines 44-49 - please explain what this is talking about and why is this a barrier?

g. Page 19 line 3 "Process evaluation - does that include both the survey and the interview? And "participants" are patients?
h. Please give more description of Table 4 on page 19.

9. Discussion Section:
   a. Page 20 lines 31-49 describes the formative evaluations and refers to the published manuscripts. Why did you not just refer to these in the methods section when describing the formative evaluation and tell us the findings that were used to modify the intervention?
   
   b. Please clarify exactly what you are referring to in the statement on pages 20-21 lines 58-1-2. "Themes related to the strengths and weaknesses of the underlying mechanisms of the facilitation emerged with respect to catalyzing, doing, and reviewing."
   
   c. Page 21 lines 21-37 may be used in the limitation section.
   
   d. Results in on pages 21 lines 41-59 and the Context section are nicely done.

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An article whose findings are important to those with closely related research interests

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Please indicate the quality of language in the manuscript:

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