PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	The practice of Death Surveillance and Response for Maternal, Newborn and Child Health: A framework and application to a South African Health District
AUTHORS	Mukinda, Fidele; George, Asha S.; Van Belle, Sara; Schneider, Helen

VERSION 1 – REVIEW

REVIEWER	Målqvist, Mats International Maternal and Child Health, Department of Womens and ChilDr.ens Health
REVIEW RETURNED	12-Nov-2020

GENERAL COMMENTS	Dear authors, thank you for letting me reveiw this manuscript. It is an important work and it is of essence to evaluate quality improvement mechanisms in place within health systems. Even if the effort, with 45 IDIs and lengthy observations, is ambitious, I have some queries about the analysis process and interpretation of results. Either we can only congratulate the SA health systems for implementing a well-performing system, conducted by the book, or we might consider that there might be some systematic bias in the reporting and observations. The discussion is lacking reflection on potential biases, such as social desireability and Hawthorne effect. What is described is a DSR system that is performed according to intention. Were there no conflicts or flaws? It seems a bit odd that everything was conducted just like intended. It might be contextual, but we have just performed a similar qualitative study in Tanzania, and results that emerge show that everyone knows what is expected, but yet it all turns out in a most imperfect way, with a lot of untintended consequences. What are the chances of modified behaviour in your study? This needs to be addressed in the Discussion. The usefulness of a framework that only fulfils the expectations of the system can also be questioned. In Discussion it is stated that it was possible to explore enabling and constraining factors, but I can not find any constraining factors in Results, how come? You touch upon referability, but more discussion on the possible uniqeness of the study setting needs to be added. My experience of SA is that the governance is a lot of lip service and if this is not the case in this specific setting it needs to be highlighted and analysed more than just stating that the leadership was committed.

	The difference between review of maternal and perinatal deaths could be highlighted and discussed more. Analysis methods need to be described in more detail. Who did the analysis, what was the theoretical framework for the deductive analysis? I also lack a section on reflexivity. Who has conducted the study, what is the relation to study participants, pre-understanding etc. ? Minor revisions: Excerpt 1, mixing letters and numbers for order number Table1: ***-reference is missing

REVIEWER	Smith, Helen Bradford Institute for Health Research Yorkshire Quality and Safety Research Group
REVIEW RETURNED	14-Jan-2021

GENERAL COMMENTS	Manuscript ID: BMJ Open – 2020-043783 Assessing the practice of Death Surveillance and Response for Maternal, Newborn and Child Health: A framework and application to a South African Health District General comments The paper tackles an important aspect of the continued effort towards reducing preventable maternal, newborn and child deaths. The extent to which death surveillance and response systems are functional, capable of initiating the right 'responses' and achieving impact on mortality and morbidity varies, and the framework introduced here is a good starting point for assessing functionality in practice. However, I think the results could be less descriptive and more analytical and the paper would be strengthened with a more detailed consideration of the 'action' component of the DSR process. While it is evident that different forms of DSR are functional to varying degrees in the district you studied – the case study is missing a critical analysis of the 'action' or 'response' component. It is my experience, and evident in the existing literature, that despite having functioning systems for identifying and reviewing deaths, all the right actors and processes and systems to identify and disseminate actions, many countries (South Africa included) still struggle to implement actions. 'Actions' is a component in your framework, and it appears you collated some evidence on actions in table 3, yet the results and discussion do not touch on this important aspect. I recommend you include this to strengthen the paper. Specific comments 1. How did you decide which existing frameworks and 'elements' from the literature to include in the proposed framework? What process did you follow, or what criteria did you use? 2. Selection of sub-districts is not clearly justified; the reason why districts chosen for a prior

	study would be relevant for this case study needs more explanation 3. Page 7 line 57/58 states semi-structured interviews yet on page 8 'in-depth' interviews are described as the method used – please clarify this discrepancy 4. What exactly did you observe during the meetings? What kinds of prompts were on the observation sheet? What topics did the in-depth interviews cover? 5. A detailed account of ethical implications is missing - particularly in relation to doing nonparticipant observation. Also an account of researcher positionality and potential impact of this on the research process, especially the observations. In addition, where were interviews held, was this after/during the meetings you attended? What were the implications for privacy and confidentiality? 6. The results relating to 'forms' or types of death surveillance and response are largely descriptive and seem to summarise mandated processes – so it's not clear what the new insights are here. If this section were to highlight where mandated processes are not followed or where there are deviations, then the reader would get a better sense of the authenticity and/or fidelity of these processes. 7. Table 3 contains a lot of information – its quite hard to grasp the main points or insights. The top half appears to summarise 'functioning' and could be separated from the detail on mechanisms in the bottom half. Does the x indicate that you observed the element, or that the element is expected to be present? Its not clear. The 10 mechanisms don't seem to exactly match the 9 elements in the original framework in table 1, and I wondered why. 8. For all the themes, a more apparent and consistent compare and contrast across the various types of DSR to highlight what worked well and in accordance to policy, what problems affected functioning and where there was deviation from policy would perhaps offer a deeper level of insight. The theme 'no blame, no blame' seems to achieve this to a greater extent than the other themes. 9. The theme on the three delays approach is very brief and doesn't really offer much insight into usefulness or otherwise, or participant views on this as an approach, or how this was differently applied in PIPP/CHIP versus MRU for example? You could also elaborate on what is important to note from the excerpt – the reader is left to interpret this themselves. 10. Similarly, the theme on 'DSR process institutionalised' is brief and makes a bold statement about DSR processes being anchored in routines and contributing to improvement at facility level. The quote provided doesn't really offer enough convincing evidence. From my experience, institutionalising DSR processes at subnational level is rarely achieved and there

	are many individual, service and system level barriers. I think you should be cautious making this statement without direct supporting evidence from facilities. 11. It is not clear from the discussion what the implications of this work are – are you suggesting that the framework could be used by district teams to assess functioning or diagnose problems in different types of DSR? If so, what modifications might be needed, and how and when would the framework be used and by whom? There may be other possible implications for practice or policy and clear articulation of these would strengthen the paper. 12. Some minor grammatical errors throughout

VERSION 1 – AUTHOR RESPONSE

B. RESPONSE TO REVIEWER 1

Q/ Dear authors,
thank you for letting me reveiw this manuscript. It is an important work and it is of essence to evaluate quality improvement mechanisms in place within health systems. Even if the effort, with 45 IDIs and lengthy observations, is ambitious, I have some queries about the analysis process and interpretation of results. Either we can only congratulate the SA health systems for implementing a well-performing system, conducted by the book, or we might consider that there might be some systematic bias in the reporting and observations. The discussion is lacking reflection on potential biases, such as social desireability and Hawthorne effect.

What is described is a DSR system that is performed according to intention. Were there no conflicts or flaws? It seems a bit odd that everything was conducted just like intended. It might be contextual, but we have just performed a similar qualitative study in Tanzania, and results that emerge show that everyone knows what is expected, but yet it all turns out in a most imperfect way, with a lot of untintended consequences. What are the chances of modified behaviour in your study? This needs to be addressed in the Discussion.
The usefulness of a framework that only fulfils the expectations of the system can also be questioned.

Response: Thank you for highlighting this.

We recognise this was not a typical district as it had recently benefited from a DSR strengthening intervention and have emphasised this further in the manuscript. As the title indicates the key intention of the paper is to propose a holistic framework for appraising DSRs and showing how it can be applied in practice. Despite the favourable setting, practices were not uniformly positive and our appraisal nevertheless picked up variations in practices – both between mechanisms and subdistricts. While it is possible that our methods led to a biased assessment, we think it is more likely that the district was a positive outlier.
We have also added a limitations section in the discussion describing potential biases and how we dealt with these.

Q/In Discussion it is stated that it was possible to explore enabling and constraining factors, but I can

not find any constraining factors in Results, how come?

Response: Thank you for highlighting this important aspect. Indeed, we did not create a separate section for the constraining factors to DSR functioning, they are included and presented within the elements of the functioning highlighted in yellow in the manuscript.

Q/You touch upon referability, but more discussion on the possible uniqueness of the study setting needs to be added. My experience of SA is that the governance is a lot of lip service and if this is not the case in this specific setting it needs to be highlighted and analysed more than just stating that the leadership was committed.

Response: Thank you for this suggestion. We have added in the section 'c. Ongoing Review and Response Structures' to read 'Strong involvement of a facilitator from the National Department of Health was observed as one of the enabling factors of these meetings; a factor unique to the study setting.'

Q/The difference between review of maternal and perinatal deaths could be highlighted and discussed more.

Response: Thank you for the suggestion. We have added a sentence in the discussion to read: 'However, this level of scrutiny was not observed in instances of perinatal deaths, showing the difference between maternal and perinatal DSR processes'.

Q/ Analysis methods need to be described in more detail. Who did the analysis, what was the theoretical framework for the deductive analysis?

Response: Thank you for raising this. We have stated that data was analysed by the first author (PhD student) with ongoing discussion and input from supervisors (co-authors). A reference to detailed analysis of the data is added. For the deductive analysis, we have highlighted (in blue) in the manuscript that reads:' Key themes were identified following both a deductive approach based on a preset list of themes from the criteria of DSR functioning'

Q/ I also lack a section on reflexivity. Who has conducted the study, what is the relation to study participants, pre-understanding etc. ?

Response: We have included A section on 'Reflexivity, rigour and ethics considerations' describing who conducted the study, previous involvement and relation to study participants.

Q/ Minor revisions:
Excerpt 1, mixing letters and numbers for order number
Table1: ***-reference is missing

Response: Thank you for these remarks. Correction was made to numbering of cases in Excerpt 1 and references added to *** in Table 1.

C. RESPONSE TO REVIEWER 2

Q/ General comments: While it is evident that different forms of DSR are functional to varying degrees in the district you studied – the case study is missing a critical analysis of the 'action' or 'response' component. It is my experience, and evident in the existing literature, that despite having functioning systems for identifying and reviewing deaths, all the right actors and processes and systems to identify and disseminate actions, many countries (South Africa included) still struggle to implement

actions. ‘Actions’ is a component in your framework, and it appears you collated some evidence on actions in table 3, yet the results and discussion do not touch on this important aspect. I recommend you include this to strengthen the paper.

Response: Thank you for highlighting this. Indeed, ‘Actions’ is an important component of the framework. The ‘Actions’ are highlighted in the manuscript in green in the abstract, results and discussion sections of the manuscript.

Q1/ How did you decide which existing frameworks and ‘elements’ from the literature to include in the proposed framework? What process did you follow, or what criteria did you use?

Response: Thank you for raising this. The literature presents guidelines for implementation and practical examples of Death Surveillance and Response. The following terms, reported in the methodology, were combined to search/identify the literature: ‘Maternal Death Review’, ‘Audit’ ‘Maternal Death Surveillance and Response’, ‘Maternal and Perinatal Death Surveillance and Response’, ‘surveillance and review of child deaths’.
We have edited the methodology section (Conceptual framework) to include “We conducted a search of the literature using the above terms and consulted with experts in the field to identify the elements of well-functioning DSR. On the basis of these, a conceptual framework was developed”.

Q2/ Selection of sub-districts is not clearly justified; the reason why districts chosen for a prior study would be relevant for this case study needs more explanation

Response: We have added further explanation regarding the choice of the district to read: “In these respects, therefore, the District could be regarded as having relatively well-functioning DSR at the time of the research. Although not nationally representative, it was nevertheless well suited for the qualitative exploration of criteria in a DSR assessment framework”.

Q3/ Page 7 line 57/58 states semi-structured interviews yet on page 8 ‘in-depth’ interviews are described as the method used – please clarify this discrepancy

Response: Thank you for this observation. We have edited the text to read “Semi-structured in-depth interviews’

Q4/ What exactly did you observe during the meetings? What kinds of prompts were on the observation sheet? What topics did the in-depth interviews cover?

Response: Thank you for raising this. The observation sheet was published in another study and a reference is provided. We have added in the methods section to read: “During a meeting, apart from the general observation schedule, we specifically observed the structure of the meeting, standard agenda, actors involved, presentation and discussion of cases, decision process, and related actions (capacity building, provision of resources or community engagement)”. Discussions of death cases focused on the identification of causes of death based on the ‘three delays’ approach.
The content of the in-depth interview can be found on the interview guide (Appendix File 1)

Q5/ A detailed account of ethical implications is missing - particularly in relation to doing non-participant observation. Also an account of researcher positionality and potential impact of this on the research process, especially the observations. In addition, where were interviews held, was this after/during the meetings you attended? What were the implications for privacy and confidentiality?

Response: Thank you for this. We have edited the section on ‘ethics considerations’ to include ‘Positionality, reflexivity and ethics considerations’. The text to read: “Interviews and participant

observation can face ethical challenges given the sensitive nature of a research topic that can potentially expose hidden realities.39 The conduct of this study was facilitated by our previous engagements in the study setting, and subsequently as part of the first author's PhD study. These involved a period of immersion and observation, which allowed for the building of trust with participants, and to be able to contextualise and interpret the interviews and observations. To minimise descriptive and interpretive biases, regular feedback and discussion of the findings were conducted during follow-up meetings in the district; and iterative processes engaged between the first author (PhD student) and the co-authors (PhD supervisors) involving continuous questioning of the understanding of data and reviewing of findings."

Q6/ The results relating to 'forms' or types of death surveillance and response are largely descriptive and seem to summarise mandated processes – so it's not clear what the new insights are here. If this section were to highlight where mandated processes are not followed or where there are deviations, then the reader would get a better sense of the authenticity and/or fidelity of these processes.

Response: Thank you for raising this. The intention of this section is to describe each mechanism, its mandate and the actors involved. Any deviation or fidelity of the process is either included in the description or summarised in the "Functioning" and discussion sections (see edited in red).

Q7/ Table 3 contains a lot of information – its quite hard to grasp the main points or insights. The top half appears to summarise 'functioning' and could be separated from the detail on mechanisms in the bottom half. Does the x indicate that you observed the element, or that the element is expected to be present? Its not clear. The 10 mechanisms don't seem to exactly match the 9 elements in the original framework in table 1, and I wondered why.

Response: Thank you for these observations. We have split Table 3 in two to read: Table 3a: Summary of the functioning of DSR Mechanism in practice; Table 3b: Functioning of DSR Mechanism compared to elements from the literature
We have also marked the observed element by tick (✓).
We have also edited Table 3b to match the elements in Table 1

Q8/ For all the themes, a more apparent and consistent compare and contrast across the various types of DSR to highlight what worked well and in accordance to policy, what problems affected functioning and where there was deviation from policy would perhaps offer a deeper level of insight. The theme 'no blame, no blame' seems to achieve this to a greater extent than the other themes.

Response: We have addressed this comparative approach in the 'new' Table 3a that actually highlights what worked well according the guideline. This is further elaborated in Table 3b showing the functioning compared to the international literature, but also highlighting the variations between the mechanisms. We have pointed out the variations in the manuscript.

Q9/ The theme on the three delays approach is very brief and doesn't really offer much insight into usefulness or otherwise, or participant views on this as an approach, or how this was differently applied in PIPP/CHIP versus MRU for example? You could also elaborate on what is important to note from the excerpt – the reader is left to interpret this themselves.

Response: Thank you for the suggestion. We have expanded the text to read "Because of the managerial aspect of MRU, the three delays mostly focused on the system factors for action, while PPIP/CHIP meetings were mostly clinically oriented to providers and, to some extent, patient's factors. In both cases, any matters related to community engagement were discussed with the board chairpersons to liaise with the community leadership. We have also added an explanation to the Excerpt to read: The 'three delays' approach was applied in the discussion of death cases to identify

the modifiable factors associated with death events including patient or community factors (Case 1), the provider (Case 2) or the system (Cases 3 and 4).

Q10/ Similarly, the theme on 'DSR process institutionalised' is brief and makes a bold statement about DSR processes being anchored in routines and contributing to improvement at facility level. The quote provided doesn't really offer enough convincing evidence. From my experience, institutionalising DSR processes at subnational level is rarely achieved and there are many individual, service and system level barriers. I think you should be cautious making this statement without direct supporting evidence from facilities.

Response: We have elaborated to include more details highlighting challenges and more benefit; and discussed the requirement for institutionalised DSR processes.

Q11/ . It is not clear from the discussion what the implications of this work are – are you suggesting that the framework could be used by district teams to assess functioning or diagnose problems in different types of DSR? If so, what modifications might be needed, and how and when would the framework be used and by whom? There may be other possible implications for practice or policy and clear articulation of these would strengthen the paper.

Response: Thank you for the suggestion. We have provided more details on the implications of the framework to read: " This framework may be of value in other similar settings. It can be used by researchers or health service managers to explore the functioning of DSR system, diagnose challenges; and to promote an inclusive organisational culture of holistic scrutiny into the causes of death.

Q12/ Some minor grammatical errors throughout

Response: We have corrected the grammatical errors throughout the manuscript

VERSION 2 – REVIEW

REVIEWER	Målqvist, Mats International Maternal and Child Health, Department of Womens and ChilDr.ens Health
REVIEW RETURNED	09-Feb-2021

GENERAL COMMENTS	Dear authors, thank you for a revised manuscript and for your responses to my queries. I think the ms has improved and is now more balanced and thoughtful, even. if I am hesistant to your conclusion that this should be a positive outlier. You have however discussed the potential limitations well. The ms could still be improved in relation to clarity. I am not completly sure what is the research question, even if it is more clear this time. What is the scientific methods used in this study that sets it apart from an internal organisational evaluation? You have performed IDIs, but the analysis is not clearly reflected in the Results and you are mixing the application of the developed framework with themes. The first part of Results seems to be an account of the different mechanisms in place, and might as such be better fitted under Methods or Introduction. Not sure how this description fits with the study aim as stated in the end of the

	Introduction. There you have a "how"-question, but the description is more of the "what". The framework is mentioned in the introduction, but later treated as a result. Was the process of developing the framework the scientific purpose, or was it a deductive frame for analysis? I would make the description more stringent and not mention the framework in Introduction. Then one research question could be to test the feasibility of the suggested framework, which could then be described as it is in the Methods. The framework could also be re-arranged to follow a logical chain of events. First there is surveillance and reporting, then there is identification of causes according to the three-delays and investigation, and then there is actions and implementation. The components in the framework are good, but needs to be arranged and related in a more logical way. From p 18 and on I guess the real results are presented as a deductive analyis. I would advice to follow the structure of the framework when presenting results. Now a. is before b. in results, but in framework it is the opposite. It is also not clear why 'no naming-no blaming', which has a yes/no character is in table 3a and not in Table 3b. Not all components in the framework have been commented on, what about institutional support culture, continuous surveillance and evidence-based practices? I like the Discussion, here you synthesize results and lessons learnt nicely. This is also the place to do so.

REVIEWER	Smith, Helen Bradford Institute for Health Research Yorkshire Quality and Safety Research Group
REVIEW RETURNED	15-Feb-2021

GENERAL COMMENTS	Thank you for responding to my initial comments, most of which have been addressed. My general comment about ‘action’ related to evidence that actions had been carried out…not just documenting that DSR processes had led to identification of actions. It is clear that many of the DSR processes were functioning, and able to proactively identify actions and disseminate action plans and you have highlighted where this is the case…but the implementation of those actions is the missing part of the story. And it is what most countries struggle with. It would be really insightful to include mention of where you found evidence of implementation of actions and perhaps change in practice or policy as a result of DSR processes. On the contrary, if there isn’t much evidence, then it would be worth acknowledging that this remains a weak-point in any DSR cycle. Thank you for adding further justification for selection of the district, however my comment was about why the sub-districts chosen for a prior study would be relevant for this case study, and some further explanation for that.

	My comment about the type of interviews was intended to clarify whether you conducted semi-structured interviews or in-depth interviews. They are different. You either used semi-structured interviews (i.e. typically used when you have an idea of the topic, using a fairly structured topic guide with open ended questions, same qu's posed to all participants) or in-depth interviews (i.e. much less structured using a list of topics to explore, aiming to probe experiences and behaviours in much more depth, and often used to generate theory).

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1
Dr. Mats Målqvist, International Maternal and Child Health
Comments to the Author:
Dear authors,

- thank you for a revised manuscript and for your responses to my queries. I think the ms has improved and is now more balanced and thoughtful, even. if I am hesistant to your conclusion that this should be a positive outlier. You have however discussed the potential limitations well.

Response: Thank you

- The ms could still be improved in relation to clarity. I am not completly sure what is the research question, even if it is more clear this time.

Response:
Thank you for this remark. We have now narrowed the research question (also in response to point 3 below) to read: "This paper seeks to answer the following question: Based on a comprehensive assessment framework, how functional are the district's DSR mechanisms?"

- What is the scientific methods used in this study that sets it apart from an internal organisational evaluation? You have performed IDIs, but the analysis is not clearly reflected in the Results and you are mixing the application of the developed framework with themes. The first part of Results seems to be an account of the different mechanisms in place, and might as such be better fitted under Methods or Introduction. Not sure how this description fits with the study aim as stated in the end of the Introduction. There you have a "how"-question, but the description is more of the "what".

Response:
Based on this feedback, we have reorganised the manuscript so that the results focus on DSR functioning, based on the framework, while the description of forms is moved to the setting.
We have edited the aim of the study to read: "this paper proposes an assessment framework using criteria drawn from the literature and then applies the framework to evaluate existing maternal, peri/neonatal and child DSR mechanisms in one South African district."
We trust the research question, aim and presentation of findings are now better aligned.

- The framework is mentioned in the introduction, but later treated as a result. Was the process of developing the framework the scientific purpose, or was it a deductive frame for analysis? I would make the description more stringent and not mention the framework in Introduction. Then one research question could be to test the feasibility of the suggested framework, which could then be described as it is in the Methods.

Response:
Thank you for this suggestion. As per the previous responses, we have removed the mention of the framework from the introduction. The development of the framework is now described in the methods section - Conceptual framework- and its application to DSR mechanisms described in the methods section – study setting.

- The framework could also be re-arranged to follow a logical chain of events. First there is surveillance and reporting, then there is identification of causes according to the three-delays and investigation, and then there is actions and implementation. The components in the framework are good, but needs to be arranged and related in a more logical way.

Response:
We thank the reviewer for this remark. We have re-arranged the framework to follow a logical chain of events from the framework description in the methods (Table 1) and in the results (Table 13b).

- From p 18 and on I guess the real results are presented as a deductive analyis. I would advice to follow the structure of the framework when presenting results. Now a. is before b. in results, but in framework it is the opposite. It is also not clear why 'no naming-no blaming', which has a yes/no character is in table 3a and not in Table 3b.

Response:
Thank you for the advice. We have edited the results and presented them following the logic of the framework in three main sections to read as follows:
a. Surveillance and reporting process
b. Following a holistic (three delays) approach to identifying and acting on modifiable factors
c. Implementation of actions
We have also fixed the ‘no naming, no blaming’ presentation in Table 3b.

- Not all components in the framework have been commented on, what about institutional support culture, continuous surveillance and evidence-based practices?
I like the Discussion, here you synthesize results and lessons learnt nicely. This is also the place to do so.

Response:
Thank you for highlighting this. We have now provided short comments of all components of the framework in the result section. A summary and lesson learnt are also included in the discussion. (See text highlighted in yellow).

Reviewer: 2
Dr. Helen Smith, Bradford Institute for Health Research Yorkshire Quality and Safety Research Group
Comments to the Author:
- Thank you for responding to my initial comments, most of which have been addressed.
My general comment about ‘action’ related to evidence that actions had been carried out…not just documenting that DSR processes had led to identification of actions. It is clear that many of the DSR processes were functioning, and able to proactively identify actions and disseminate action plans and you have highlighted where this is the case…but the implementation of those actions is the missing part of the story. And it is what most countries struggle with. It would be really insightful to include mention of where you found evidence of implementation of actions and perhaps change in practice or policy as a result of DSR processes. On the contrary, if there isn’t much evidence, then it would be worth acknowledging that this remains a weak-point in any DSR cycle.

Response:
We thank you the reviewer for highlighting this. Following the logic of the framework, we have added in the results a section on Actions to read: “c. Implementation of actions” Following the three delays model, the identified actions targeted the community (community education facilitated by the hospital board chairpersons and community leaders); the system (provision of resources); or the providers (skills building). Actions toward community were limited and only addressed by one DSR mechanism (MRU). We observed evidence of implementation of actions recommended from DSR processes which were perceived to result in improved MNCH outcomes. For instance, during the study period outreach training in surgical skills (caesarean section and anaesthesia) was organized by a provincial team of specialists; DCST members were actively involved in organising training and mentoring programmes; and the district paediatrician supported facilities to set up and ensure availability and functioning of the Continuous Positive Airway Pressure (CPAP) therapy machines for neonatal care.”

Even though the study presented some evidence of implementation of actions, we have acknowledged the limited scale of this implementation in the discussion to read: “Finally, DSR processes were able to systematically and proactively identify and plan actions based on the framework. Though tracking implementation of these actions can be limited in scope, this study nevertheless presented evidence of responsive action implemented as part of DSR.”

- Thank you for adding further justification for selection of the district, however my comment was about why the sub-districts chosen for a prior study would be relevant for this case study, and some further explanation for that.

Response:
Thank for clarifying this. We have edited the text to read:” The sub-districts were purposefully selected in a prior study as representing the range of buy-in to one particular DSR strategy (MRU);33 the implementation of DSR mechanisms in these sub-districts was also perceived by district managers as representative of what was happening in the district as a whole.”

- My comment about the type of interviews was intended to clarify whether you conducted semi-structured interviews or in-depth interviews. They are different. You either used semi-structured interviews (i.e. typically used when you have an idea of the topic, using a fairly structured topic guide with open ended questions, same qu’s posed to all participants) or in-depth interviews (i.e. much less structured using a list of topics to explore, aiming to probe experiences and behaviours in much more depth, and often used to generate theory).

Response:
Thank you for this remark. We worked with the understanding that an in-depth interview can also be semi-structured; however, to avoid any potential confusion, we have removed ‘in-depth’ from the manuscript.

VERSION 3 – REVIEW

REVIEWER	Målqvist, Mats International Maternal and Child Health, Department of Womens and ChilDr.ens Health
REVIEW RETURNED	24-Mar-2021

GENERAL COMMENTS	Thank you for an updated version of the manuscript. I think it is now more stringent and it has improved considerably. I have some minor comments:

	1. The two last bullets in Strengts and Limitations are expressing opposite opinions. I suggest to be more bold and delete the one on limited generalizability, or maybe replace with “needs to be further tested in other contexts” , or something like that. 2. It can of course be questioned how feasible this approach of evaluating a DSR system is, since you have put in considerable effort in data collection, both with many interviews and participant observations. If the framework should be useful it might be worth testing it in a more condensed format. Just food for thought.

REVIEWER	Smith, Helen Bradford Institute for Health Research Yorkshire Quality and Safety Research Group
REVIEW RETURNED	01-Apr-2021

GENERAL COMMENTS	Thank you for persevering and responding to both reviewers' comments. The paper has improved; the methods are more clearly presented, the findings are presented more logically and reflection on functioning of DSR processes is more considered.

VERSION 3 – AUTHOR RESPONSE

Reviewer: 1
Dr. Mats Målqvist, International Maternal and Child Health
Comments to the Author:
Thank you for an updated version of the manuscript. I think it is now more stringent and it has improved considerably.

Response: Thank you

I have some minor comments:

1. The two last bullets in Strengths and Limitations are expressing opposite opinions. I suggest to be more bold and delete the one on limited generalizability, or maybe replace with “needs to be further tested in other contexts” , or something like that.

Response:
The suggestion is noted with thanks. We have edited the section to read: “The framework was applied to one rural district that had developed functioning DSR practices; it needs to be further tested and validated in other contexts”.

2. It can of course be questioned how feasible this approach of evaluating a DSR system is, since you have put in considerable effort in data collection, both with many interviews and participant observations. If the framework should be useful it might be worth testing it in a more condensed format. Just food for thought.

Response:
Thank you for highlighting this. Indeed, we have put in a lot to build and apply the framework. We are planning further study to test (and validate) the framework in another setting using, as you highlighted it, a more condensed format and process.

Reviewer: 2

Dr. Helen Smith, Bradford Institute for Health Research Yorkshire Quality and Safety Research Group
Comments to the Author:
Thank you for persevering and responding to both reviewers' comments. The paper has improved; the methods are more clearly presented, the findings are presented more logically and reflection on functioning of DSR processes is more considered.

Response:
Thank you for your much appreciated contribution in this process.