PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Rural emergency care 360°: Mobilizing healthcare professionals, decision-makers, patients and citizens to improve rural emergency care in the province of Quebec, Canada: a qualitative study protocol
AUTHORS	Fleet, Richard; Dupuis, Gilles; Fortin, Jean-Paul; Gravel, Jocelyn; Ouimet, Mathieu; Poitras, Julien; Legare, France

VERSION 1 - REVIEW

REVIEWER	Barbara Pesut University of British Columbia, Canada
REVIEW RETURNED	29-Mar-2017

GENERAL COMMENTS	This is an important study as emergency departments do play a unique role for rural populations, and the goal of this study is to build recommendations for improving services. I do, however, have a number of questions about the study protocol. I am not clear on whether the objective of supporting operationalization is truly realized in this protocol. It appears that participating sites will be provided with recommendations and studied afterward. But, perhaps this does not constitute "supporting operationalization"? Similarly, I am not clear on how this will constitute participatory action research which typically has an action-feedback-action cycle? I see the participation of stakeholders in the creation of recommendations, but from the protocol it does not seem that the research team is involved in the action cycle? For example, under the methods section the rationale for using PAR is to facilitate implementation of recommendations. This leads me to believe that this is more integrated KT than PAR? All of the steps outlined would make sense within an integrated KT framework. Introduction P6 Line 25-27: I am not clear on how the claim stated here about 24/7 access to a surgeon, ICU, and CT scans support the case for rural inequities? I am wondering if this statement is actually about urban EDs? P6 Line 51: Should remote read rural? P6-7 Lines 51-18: More about how these recommendations and management guides fit in relation to what is being proposed here is required for the reader to fully understand the import. P 7 Paragraph starting “potential solutions”: This paragraph proposes several solutions which seem to preface the next few subheadings. However, these do not match up well. Perhaps the

	language could be made congruent. Methods P10 Lines 20-25: Recruitment and selection are treated as separate steps but with the same criteria. It might be useful to simply combine to avoid confusion. Focus groups will be held in stakeholder groups: I wonder if this is the best approach if one needs good data on feasibility. For example, each group may be able to identify potential solutions from their perspective. But, commenting on the feasibility of those solutions requires multi-sectoral engagement. Fruitful data may be lost by segregating stakeholders. Phase 2: If only potential solutions are being brought forward to the panel of experts, how will feasibility and context be dealt with? In phase one, feasibility and context is consider alongside solutions, and so I assume that these are someone site dependent – what works in one context might not work in another. How might your expert panel conduct this evaluation in an a-contextual sense? Further, I am not sure what “selection criteria based on peer recognition and individual credibility” or “security and negative externalities” means. Could you explain this a bit more? Phase 3: Will results of the online survey be shared with participating sites? Also, it would be helpful to have more information about the construction of, and evaluation by, the monitoring indicators. Little is said about these, but it seems they are an important part of the overall evaluation. Overall I think this study protocol will make an important contribution.

REVIEWER	Gail Bellamy Florida State University College of Medicine USA
REVIEW RETURNED	06-Apr-2017

GENERAL COMMENTS	This paper is about a proposed study not the report of results of a completed study. The paper reads like a proposal for funding. As such, I think there is merit in the work they propose to do and I would be interested in reading an article that speaks to what was done, how it worked or didn't, and what they found but as it is there is nothing here that adds to the literature.

REVIEWER	Pasqualina Santaguida McMaster University Canada
REVIEW RETURNED	06-Apr-2017

GENERAL COMMENTS	Thank you for the opportunity to review this very interesting and timely protocol. I believe this work will address a very important need in the provision of emergency care in rural areas and the participatory action research approach appears appropriate. As a peer reviewer I must disclose that my expertise in not in this area of research method but I do have sufficient background in theories and

	methods used in knowledge translation. It is from this perspective that some of my comments are generated. It is not clear to me where Participatory Research methods overlap with those that are used in the evaluation of “knowledge transfer” which I have assumed to be equivalent to “knowledge translation. I believe that if greater clarification in this aspect of the protocol is provided, it will benefit the work undertaken and the reporting of this research approach. Below are for the most part comments that would require minor revisions. **ABSTRACT** Page 4: Line 52. Please note that this point form may be missing a word “Time-consuming involvement numerous and busy participants may limit recruitment”. Consider rephrasing as follows: “Interviews and committee participation is time-consuming and participants with busy schedules may decline participation or may not continue to the end of the study. **INTRODUCTION** The introduction is very well written and makes a compelling case for the need for this type of research, particularly in the context of inequities. However there are a few areas that would benefit from clarity. Consider these editorial changes: 1) Page 7:ine 15: Consider replacing the word “crying” with “urgent” or . The term “crying” suggests colloquial language. 2) Page 7: line 18: To whom is the term “their” referring to? Do you mean managers of ED? 3) Page 7: line 32. Consider replacing the phrase “realities on the ground” with “constraints of real world concerns”. It is not clear that non-English natives will understand this phrase. Page 7: Line 46: Part of this first sentence is missing. Perhaps this was lost with track changes. It may perhaps be a subtitle heading…but it is not bolded or underlined and as such appears as an incomplete sentence. Please clarify. Page 7: Line 48. Have you published your extensive literature review? If not then please consider citing the sources you have consulted. Page 7 Lines 48 to Page 8: line 10. This sentence is a run-on sentence. Please check grammar and spacing. In addition, it is not clear why the solutions to the problems are presented in the introduction. If these solutions were to be considered in part of the methodology, then why not describe these in the methods? Were these the solutions that participants were queried about? If so then I would suggest these are better placed in the methods section.

	Page 8: line 48: Again this paragraph starts with an incomplete sentence or likely a subheading. Please clarify. Page 8: Line 49: Consider rephrasing “including trauma” to “including managing trauma related injuries”. The way this sentence is phrased would suggest it is their own (i.e. the physicians’) exposure to trauma rather than the traumatic injuries experienced by patients coming to the ED. Page 8: Line 56. What does “extra” emergency medical training refer to? Do you mean post-residency training in emergency medicine? Not sure what extra implies? In addition, it is not clear what the ED physicians’ need that can be addressed by the simulation training or clinical immersion programs. As well, this paragraph seems to suggest that you only have data on the training needs of physicians. Is there evidence that other emergency medicine health professionals require this type of training? Page 9: Line 20. I am not sure the evidence would support the statement that “the use of care protocols are not known in “urban” contexts”. Perhaps you mean to say the **differences in impact** are not known in both rural and urban. It would seem to me that the majority of the quality improvement literature and guideline implementation literature is quite focused on using or implementing care protocols. So it is not clear if the authors are implying that there is no knowledge about the impacts on patient care generally. Please clarify this statement. **OBJECTIVES:** Page 9: Line 32: Please prove a definition of quality. Some definitions include the concept of “performance”. Please note that “mobilise” should be “mobilising”. Page 9: Line 39. Although it is well known that there is some heterogeneity in the exact understanding of many terms associated with knowledge transfer, there is no framework or definition provided in this protocol. Nor is there any link between Participatory Action Research and KT. The authors use the term “Knowledge Transfer” which this reviewer intends to mean the same things and “Knowledge Translation”. If this is not the case then perhaps this can be clearly specified. Do the authors intend to include all types of Knowledge Translation activities that could include “diffusion, education, dissemination, implementation and uptake activities”. Alas the term Knowledge transfer is now generally understood to encompass several steps from “awareness” to actual implementation. Do the authors wish to focus on only some aspects of the different activities? I believe it would be more helpful to have a clear specification of which of these activities you are addressing. It should be also reflected in your evaluation plan but does not appear to be the case. My understanding is that there are several theories (perhaps too many) currently available that would assist in understanding why individuals

	and organizations (and even systems within organizations) change. Although none is the clear winner, it may be helpful to overlay or contextualize your discussion about knowledge transfer within one of these theories. Several come to mind but the PARiHS may be one that more closely models the activities you have labelled as participatory research. The purpose of your study suggests that the use of a particular method for educating relevant stakeholders to some extent will improve implementation and uptake (two different things requiring different methods of evaluation (i.e. different outcomes). This is the focus of KT science….being specific about which stage and which method. As I have stated previously, my particular background is not in Participatory Action Research, but it would seem to me that some aspects of this complex intervention are indeed a knowledge translation intervention. As such it would be important to consider it within this framework as you are proposing to evaluate the implementation of the recommendations. In my view, not doing this would add one more paper that has no particular theoretical framework to better understand what worked and what didn't. Even the Particpatory Research methods you cite (Jagosh 2012) interprets the "benefits of this PAR approach within a theoretical framework and notes that the approaches and methodologies are quite heterogeneous; for this reason a theoretical framework to design an intervention (i.e. your Knowledge transfer objectives) and the evaluation would be better interpreted within such a framework. Page 9: Line 41. Apologies but the term "operationalization" is not defined and not clear to this peer reviewer. Do you mean the care provided? Do you mean the ways in which resources are administered (for example changing the complement of health professionals or hiring more ambulance drivers)? I suspect you possibly thinking that it will apply to many aspects of health service delivery. I feel it would be important to identify at least the top 3 or 4 in these objectives. Otherwise it seems very nebulous and non-specific. I would not be able to assess if you have met this objective as specified. **METHODS** **Selection of EDs and study participants** Page 10 Line 22: Please note that reference 33 is incorrectly noted. It is Savoie Zajc that is the author not S-Z. Page 10 Line 22: The authors do an excellent job of detailing the general characteristics of how they wish to assemble participants. However, it is not clear what some of these characteristics are. For example, it is stated that participants will have diverse viewpoints. This begs the question about what specifically will they have diverse viewpoints about. Perhaps suggesting a few areas would be illustrative; for example, diverse viewpoints about staffing levels, or diverse viewpoints about the professional complement in ED. For purposes of reproducibility it would be helpful to know how you

	would determine these diverse viewpoints prior to selection. Page 10: Line 32: Which professions are not relevant in ED and in this way we can be clear which ones are relevant. Will this include only physicians? Are radiology technologist considered one of the professions. Would administrators be considered a relevant professional? It may be helpful to be more specific as to the categories of professions this particular research team considers relevant. Page 10: Line 40: Would the authors provide some additional description of how the criteria they might use to select a champion…would this be anyone who volunteers, a physician only? **Data collection:** ***Objective 1: Mobilise stakeholders to propose solutions for improving quality and performancein rural EDs*** Page 11: Line 11: By "particularities of each rural region" do you mean that you will solicit these through open ended questions? If not then, could you provide some examples of what such "particularities" refers to. Page 12: Line 9-10: I find the phrase "consensual recommendations" not clear. I believe what you are suggesting is that consensus methods will be used to make final recommendations. You cite Jones 1995 (reference 41) and this paper describes several completely different methods (for example, nominal processes and the Delphi technique where one is not anonymous (face to face) and the other is anonymous). Which of these "consensual" processes will you consider? I suspect in a participatory action framework you are interested in a nominal technique. If so then, this requires more details since this is a protocol. Whichever method is being used, it is not clear about how decisions will be reached. ***Objective 2: Formulate and prioritise recommendations based on solutions* identified** Page 12: line 23: How will you control for conflict of interests? Will you formally assess this? In essence you are forming a "recommendation panel" which in many respects will be similar to a "clinical practice guideline panel". Are there any concerns for potential biases that you might wish to control for or explicitly identify and declare after selection of the panel? Page 12: Line 53> It is still not clear to me how these "deliberations" will differ from a formal nominal group process and you continue to suggest that the aim is to achieve consensus. If nominal consensus methods are what you intend then perhaps specify this. **3) Transfer knowledge of recommendations to improve quality and performance in rural EDs and support their operationalisation**

	This section is quite nebulous with no particular KT framework that would be guiding the "adopting" phase of the recommendations. There are a number of frameworks for example COM-B (Michie) that would suggest that you must design a specific intervention (based on specific domains of behaviour change). What I believe you are really intending is that the stakeholders (who already understand this process implement the recommendations). It is not clear that all stakeholders have the authority to implement or make significant change to the current systems they are part of. The strategies (web conferences, etc.) reflect dissemination activities and do not reflect implementation strategies. The media exposure to the benefits of exercise is a clear example. Is there one magazine or news story that doesn't expound on the benefits…yet people to do not change their lifestyle. I might suggest that the authors actually cite evidence that these methods have been shown to be effective. My understanding is that these methods are limited overall. In my view this section reflects my earlier comment, that these authors may not be clear about the various components of knowledge transfer. If their intended goal is to comprehensively disseminate the findings, then this section is adequate. If these methods suggest that the intent is to promote adoption and implementation then these stated methods are in my view limited. **Objective 4: Assess knowledge transfer and explore further impacts of the participatory action research project** I am not clear on why some of these questions would be asked at the end of phase three. For example, how can one assess the identified barriers and facilitators if recommendations have not been implemented? I do understand that one would like to assess pre and post changes, but not all questions can be assessed pre. Is there any plan to pilot test the phrasing of the survey? There are several standardized instruments available that have made some attempts to assess implementation and other aspects of KT. Can a justification be made for the lack of use one of these standardized instruments? Would the authors consider augmenting their evaluation of this objective by including one of these instruments? **RESULTS AND DISCUSSION** Page 15: Line 25. It is not clear how this work would contribute to the science of knowledge translation. Can the authors be more specific? Would it affect our method of evaluating implementation interventions for example? It would be most helpful to assist the reader in understanding where this work could make the greatest contribution with respect to methods.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Barbara Pesut
University of British Columbia, Canada
Please state any competing interests or state 'None declared': I have no competing interests.
****
Please leave your comments for the authors below
This is an important study as emergency departments do play a unique role for rural populations, and the goal of this study is to build recommendations for improving services. I do, however, have a number of questions about the study protocol.

I am not clear on whether the objective of supporting operationalization is truly realized in this protocol. It appears that participating sites will be provided with recommendations and studied afterward. But, perhaps this does not constitute "supporting operationalization"?
Response : This was detailed as much as we can anticipate (at this stage) under objective 3. Since writing of this proposal, the Quebec health care system has undergone major reforms that may impact services offered in rural settings. In this context, it is not possible to be more specific on "supporting operationalization". We have no Health ministry mandate nor budget to implement specific interventions. Our hope is that creative solutions and momentum for change will emanate from this considerable effort in mobilizing all stakeholders. We will however, through our knowledge transfer activities, publicize all creative solutions and suggest possible strategies to implement them to all stakeholders. We will follow them as described, for the limited time that funding allows. Further grant proposals will hopefully help us pursue this work.

Similarly, I am not clear on how this will constitute participatory action research which typically has an action-feedback-action cycle? I see the participation of stakeholders in the creation of recommendations, but from the protocol it does not seem that the research team is involved in the action cycle? For example, under the methods section the rationale for using PAR is to facilitate implementation of recommendations. This leads me to believe that this is more integrated KT than PAR? All of the steps outlined would make sense within an integrated KT framework.
Response : At the time of writing these lines (April 19Th 2017), we have completed a pilot study on three centers. Multiple contacts were made with participants and various stakeholders at different stages of the early phases of the project. We have noted that stakeholders are not passive participants. They are already seeking solutions on their own and implementing these. We have no control over their actions. Their feedback renders this study protocol dynamic. It is expected that certain questions in qualitative stages of the study will be modified as we move along as geographical variation in health care needs and services are considerable in these areas. Despite close to a decade of work in rural emergency medicine by our team, we have uncovered realities that were impossible to predict: regional conflicts, retirement issues, economic changes (mine closures, etc.), health care reforms, new buildings, locum issues, etc.
Introduction

P6 Line 25-27: I am not clear on how the claim stated here about 24/7 access to a surgeon, ICU, and CT scans support the case for rural inequities? I am wondering if this statement is actually about urban EDs?
Response : No. this does refer to the fact that rural EDs in the province of Quebec have access to these services and most rural EDs in other provinces do not. We have published this information Fleet et al. BMJ Open 2013; 3 (11) see ref. 3.

P6 Line 51: Should remote read rural?
P6-7 Lines 51-18: More about how these recommendations and management guides fit in relation to what is being proposed here is required for the reader to fully understand the import.

Response : This is not a major focus of this study. We have published a study on this (ref 16): Fleet et al BMC Health services research 2015; 15:572. A more detailed study on how this Guide is used is under review in another journal.

P 7 Paragraph starting “potential solutions”: This paragraph proposes several solutions which seem to preface the next few subheadings. However, these do not match up well. Perhaps the language could be made congruent.
Response : We have added a missing subtitle to clarify.

Methods
P10 Lines 20-25: Recruitment and selection are treated as separate steps but with the same criteria. It might be useful to simply combine to avoid confusion.
Response : We clarified this section.

Focus groups will be held in stakeholder groups: I wonder if this is the best approach if one needs good data on feasibility. For example, each group may be able to identify potential solutions from their perspective. But, commenting on the feasibility of those solutions requires multi-sectoral engagement. Fruitful data may be lost by segregating stakeholders.
Response : We understand this. However, our pilot study has generated very interesting data with segregated groups, allowing these to express themselves freely without fear of judgment from other professionals. Ex. Nurses with doctors or paramedics. Moreover, it was logistically less complex to meet several professional groups in their administrative settings. Various stages of the knowledge transfer process will allow for multidisciplinary and citizen stakeholders to express themselves.

Phase 2: If only potential solutions are being brought forward to the panel of experts, how will feasibility and context be dealt with? In phase one, feasibility and context is consider alongside solutions, and so I assume that these are someone site dependent – what works in one context might not work in another. How might your expert panel conduct this evaluation in an a-contextual sense? Further, I am not sure what “selection criteria based on peer recognition and individual credibility” or “security and negative externalities” means. Could you explain this a bit more?
Response : The end result of this project will be a list of solutions that will represent various stakeholder perspectives from various sites. While these solutions will be evaluated for feasibility and potential priority, it will be impossible to predict which solutions will be implemented according to which priority in the different sites. Our research team does not have authority on the implementation of any of the solutions. We do however expect that certain solutions will be more feasible than others for ex. simulation-based training, care protocols an improvement of interfacility transfers. The opinions of the expert panels as well as feedback from the stakeholders will either confirm or invalidate this hypothesis.

Phase 3: Will results of the online survey be shared with participating sites? Also, it would be helpful to have more information about the construction of, and evaluation by, the monitoring indicators. Little is said about these, but it seems they are an important part of the overall evaluation.
Response : Yes. The results of the online survey will be shared with the participating sites. At this stage, we cannot be more specific on the construction evaluation and monitoring of the indicators. Québec’s informatics and databases are in mutation stages.

Overall I think this study protocol will make an important contribution.
Response : We thank you very much for this very helpful review.

Response to reviewer no 2 comments:

Reviewer: 2
Gail Bellamy
Florida State University College of Medicine, USA
Please state any competing interests or state 'None declared': None declared
****
Please leave your comments for the authors below
This paper is about a proposed study not the report of results of a completed study. The paper reads like a proposal for funding. As such, I think there is merit in the work they propose to do and I would be interested in reading an article that speaks to what was done, how it worked or didn't, and what they found but as it is there is nothing here that adds to the literature.
Response : We thank you for your comments. This is indeed a study protocol. Surprisingly, the literature on rural emergency care in Canada and even in the United States, is scarce. We hope that this novel study will contribute to help develop solutions to improve access to quality rule emergency care internationally. The methods used are easily reproducible and applicable to any setting.

Response to reviewer no 3 comments:

Reviewer: 3
Pasqualina Santaguida
McMaster University, Canada
Please state any competing interests or state 'None declared': No competing interests
****
Please leave your comments for the authors below
Please review attached file for my comments.

Thank you for the opportunity to review this very interesting and timely protocol. I believe this work will address a very important need in the provision of emergency care in rural areas and the participatory action research approach appears appropriate. As a peer reviewer I must disclose that my expertise in not in this area of research method but I do have sufficient background in theories and methods used in knowledge translation. It is from this perspective that some of my comments are generated. It is not clear to me where Participatory Research methods overlap with those that are used in the evaluation of "knowledge transfer" which I have assumed to be equivalent to "knowledge translation. I believe that if greater clarification in this aspect of the protocol is provided, it will benefit the work undertaken and the reporting of this research approach. Below are for the most part comments that would require minor revisions.

ABSTRACT
Page 4: Line 52. Please note that this point form may be missing a word "Time-consuming involvement numerous and busy participants may limit recruitment". Consider rephrasing as follows: "Interviews and committee participation is time-consuming and participants with busy schedules may decline participation or may not continue to the end of the study.
Response : We included the proposed rephrasing.

INTRODUCTION
The introduction is very well written and makes a compelling case for the need for this type of

research, particularly in the context of inequities. However there are a few areas that would benefit from clarity.
Consider these editorial changes:
1) Page 7:ine 15: Consider replacing the word “crying” with “urgent” or . The term “crying” suggests colloquial language.
Response : We included the proposed rephrasing.

2) Page 7: line 18: To whom is the term “their” referring to? Do you mean managers of ED?
Response : We rephrased the sentence as follows : “In spite of appeals for change, there is thus an urgent need for standards for rural EDs that managers of these EDs can turn to”.

3) Page 7: line 32. Consider replacing the phrase “realities on the ground” with “constraints of real world concerns”. It is not clear that non-English natives will understand this phrase.
Response : We included the proposed rephrasing.

Page 7: Line 46: Part of this first sentence is missing. Perhaps this was lost with track changes. It may perhaps be a subtitle heading…but it is not bolded or underlined and as such appears as an incomplete sentence. Please clarify.
Response : We modified the heading

Page 7: Line 48. Have you published your extensive literature review? If not then please consider citing the sources you have consulted.
Response : We modified the sentence to clarify the situation.

Page 7 Lines 48 to Page 8: line 10. This sentence is a run-on sentence. Please check grammar and spacing.
In addition, it is not clear why the solutions to the problems are presented in the introduction. If these solutions were to be considered in part of the methodology, then why not describe these in the methods? Were these the solutions that participants were queried about? If so then I would suggest these are better placed in the methods section.
Response : We added a sentence in order to clarify the situation.

Page 8: line 48: Again this paragraph starts with an incomplete sentence or likely a subheading. Please clarify.
Response : We modified the heading

Page 8: Line 49: Consider rephrasing “including trauma” to “including managing trauma related injuries”. The way this sentence is phrased would suggest it is their own (i.e. the physicians’) exposure to trauma rather than the traumatic injuries experienced by patients coming to the ED.
Response : We included the proposed rephrasing.

Page 8: Line 56. What does “extra” emergency medical training refer to? Do you mean post-residency training in emergency medicine? Not sure what extra implies? In addition, it is not clear what the ED physicians’ need that can be addressed by the simulation training or clinical immersion programs. As well, this paragraph seems to suggest that you only have data on the training needs of physicians. Is there evidence that other emergency medicine health professionals require this type of training?
Response : We specified the specialisations.

Page 9: Line 20. I am not sure the evidence would support the statement that “the use of care protocols are not known in “urban” contexts”. Perhaps you mean to say the differences in impact are not known in both rural and urban. It would seem to me that the majority of the quality improvement literature and guideline implementation literature is quite focused on using or implementing care

protocols. So it is not clear if the authors are implying that there is no knowledge about the impacts on patient care generally. Please clarify this statement.
Response : We modified the sentence to clarify the situation.

OBJECTIVES:
Page 9: Line 32: Please prove a definition of quality. Some definitions include the concept of "performance".
Response : We thank the reviewer for the comment, but we believe that the concept of quality of care is sufficiently precise for the moment. We will consider defining the concept further when we will consult the experts in the second phase of the research.

Page 9: Line 32: Please note that "mobilise" should be "mobilising".
Response : We changed mobilise for mobilising.

Page 9: Line 39. Although it is well known that there is some heterogeneity in the exact understanding of many terms associated with knowledge transfer, there is no framework or definition provided in this protocol. Nor is there any link between Participatory Action Research and KT.
The authors use the term "Knowledge Transfer" which this reviewer intends to mean the same things and "Knowledge Translation". If this is not the case then perhaps this can be clearly specified. Do the authors intend to include all types of Knowledge Translation activities that could include "diffusion, education, dissemination, implementation and uptake activities". Alas the term Knowledge transfer is now generally understood to encompass several steps from "awareness" to actual implementation. Do the authors wish to focus on only some aspects of the different activities? I believe it would be more helpful to have a clear specification of which of these activities you are addressing. It should be also reflected in your evaluation plan but does not appear to be the case. My understanding is that there are several theories (perhaps too many) currently available that would assist in understanding why individuals and organizations (and even systems within organizations) change. Although none is the clear winner, it may be helpful to overlay or contextualize your discussion about knowledge transfer within one of these theories. Several come to mind but the PARiHS may be one that more closely models the activities you have labelled as participatory research.
The purpose of your study suggests that the use of a particular method for educating relevant stakeholders to some extent will improve implementation and uptake (two different things requiring different methods of evaluation (i.e. different outcomes). This is the focus of KT science….being specific about which stage and which method. As I have stated previously, my particular background is not in Participatory Action Research, but it would seem to me that some aspects of this complex intervention are indeed a knowledge translation intervention. As such it would be important to consider it within this framework as you are proposing to evaluate the implementation of the recommendations. In my view, not doing this would add one more paper that has no particular theoretical framework to better understand what worked and what didn't. Even the Particpatory Research methods you cite (Jagosh 2012) interprets the "benefits of this PAR approach within a theoretical framework and notes that the approaches and methodologies are quite heterogeneous; for this reason a theoretical framework to design an intervention (i.e. your Knowledge transfer objectives) and the evaluation would be better interpreted within such a framework.
Response : We thank the reviewer for this most interesting and helpful comments on this aspect of the study. This protocol was peer-reviewed and is now funded. This manuscript (summarized and translated from French) reflects the original version, as required. Several of our key collaborators and co-investigators with KT specialization have been informed of your comments. We have also completed a pilot study that will help us gain further insight on how to better integrate KT in the study. Thus, we expect improvements in this aspect.

Page 9: Line 41. Apologies but the term "operationalization" is not defined and not clear to this peer reviewer. Do you mean the care provided? Do you mean the ways in which resources are

administered (for example changing the complement of health professionals or hiring more ambulance drivers)? I suspect you possibly thinking that it will apply to many aspects of health service delivery. I feel it would be important to identify at least the top 3 or 4 in these objectives. Otherwise it seems very nebulous and non-specific. I would not be able to assess if you have met this objective as specified.
Response : We changed the word operationalization to implementation.

METHODS
Selection of EDs and study participants
Page 10 Line 22: Please note that reference 33 is incorrectly noted. It is Savoie Zajc that is the author not S-Z.
Response : We corrected the reference

Page 10 Line 22: The authors do an excellent job of detailing the general characteristics of how they wish to assemble participants. However, it is not clear what some of these characteristics are. For example, it is stated that participants will have diverse viewpoints. This begs the question about what specifically will they have diverse viewpoints about. Perhaps suggesting a few areas would be illustrative; for example, diverse viewpoints about staffing levels, or diverse viewpoints about the professional complement in ED. For purposes of reproducibility it would be helpful to know how you would determine these diverse viewpoints prior to selection.
Response : We clarified this sentence. The selection of participants is not tributary to their view point but of personal characteristics susceptible to give rise to different viewpoints.

Page 10: Line 32: Which professions are not relevant in ED and in this way we can be clear which ones are relevant. Will this include only physicians? Are radiology technologist considered one of the professions. Would administrators be considered a relevant professional? It may be helpful to be more specific as to the categories of professions this particular research team considers relevant.
Response : We clarified this section.

Page 10: Line 40: Would the authors provide some additional description of how the criteria they might use to select a champion…would this be anyone who volunteers, a physician only?
Response : The criteria have been clarified: “The criteria for the recruitment of the champion go as follows: 1) the champion must by familiar with the ED and, 2) the champion may occupy any position as long as he/she knows the ED staff and general operations.

Data collection:
Objective 1: Mobilise stakeholders to propose solutions for improving quality and performance in rural EDs

Page 11: Line 11: By “particularities of each rural region” do you mean that you will solicit these through open ended questions? If not then, could you provide some examples of what such “particularities” refers to.
Response : The section particularities has been removed from the protocol. This information will be collected in another study using a quantitative survey.

Page 12: Line 9-10: I find the phrase “consensual recommendations” not clear. I believe what you are suggesting is that consensus methods will be used to make final recommendations. You cite Jones 1995 (reference 41) and this paper describes several completely different methods (for example, nominal processes and the Delphi technique where one is not anonymous (face to face) and the other is anonymous). Which of these “consensual” processes will you consider? I suspect in a participatory action framework you are interested in a nominal technique. If so then, this requires more details since this is a protocol. Whichever method is being used, it is not clear about how decisions will be

reached.
Response : We clarified this information stating that we will use a nominal process.

Objective 2: Formulate and prioritise recommendations based on solutions identified
Page 12: line 23: How will you control for conflict of interests? Will you formally assess this? In essence you are forming a “recommendation panel” which in many respects will be similar to a “clinical practice guideline panel”. Are there any concerns for potential biases that you might wish to control for or explicitly identify and declare after selection of the panel?
Response : The experts will sign a disclosure for conflict of interests so we will be able to identify and report them in the article.

Page 12: Line 53> It is still not clear to me how these “deliberations” will differ from a formal nominal group process and you continue to suggest that the aim is to achieve consensus. If nominal consensus methods are what you intend then perhaps specify this.
Response : We clarified this information stating that we will use a nominal process.

3) Transfer knowledge of recommendations to improve quality and performance in rural EDs and support their operationalisation

This section is quite nebulous with no particular KT framework that would be guiding the “adopting” phase of the recommendations. There are a number of frameworks for example COM-B (Michie) that would suggest that you must design a specific intervention (based on specific domains of behaviour change). What I believe you are really intending is that the stakeholders (who already understand this process implement the recommendations). It is not clear that all stakeholders have the authority to implement or make significant change to the current systems they are part of.
The strategies (web conferences, etc.) reflect dissemination activities and do not reflect implementation strategies. The media exposure to the benefits of exercise is a clear example. Is there one magazine or news story that doesn’t expound on the benefits…yet people to do not change their lifestyle. I might suggest that the authors actually cite evidence that these methods have been shown to be effective. My understanding is that these methods are limited overall.
In my view this section reflects my earlier comment, that these authors may not be clear about the various components of knowledge transfer. If their intended goal is to comprehensively disseminate the findings, then this section is adequate. If these methods suggest that the intent is to promote adoption and implementation then these stated methods are in my view limited.
Response : We strongly believe that the “mobilization” effect of this project regarding the search for creative solutions to improve emergency care will be the strongest component of the study. We believe that multidisciplinary stakeholders and citizens will come together on this rare occasion to express their concerns and discuss down to earth, geographically specific, or more technologically complex ways to improve care. We cannot however predict the adoption of specific solutions and we do not have a mandate to implement these either. In this context, we agree that the KT aspect principally refers to dissemination of information in the context of “social mobilization”.

Objective 4: Assess knowledge transfer and explore further impacts of the participatory action research project

I am not clear on why some of these questions would be asked at the end of phase three. For example, how can one assess the identified barriers and facilitators if recommendations have not been implemented? I do understand that one would like to assess pre and post changes, but not all questions can be assessed pre.
Is there any plan to pilot test the phrasing of the survey? There are several standardized instruments available that have made some attempts to assess implementation and other aspects of KT. Can a justification be made for the lack of use one of these standardized instruments? Would the authors

consider augmenting their evaluation of this objective by including one of these instruments?
Response : The survey is not yet constituted because it is directly tributary of the consensus. Different methodologies and theoretical approaches will be considered and used to design the data collection tool.

RESULTS AND DISCUSSION
Page 15: Line 25. It is not clear how this work would contribute to the science of knowledge translation. Can the authors be more specific? Would it affect our method of evaluating implementation interventions for example? It would be most helpful to assist the reader in understanding where this work could make the greatest contribution with respect to methods.
Response : As stated in this paragraph, there are few research that mobilised rural communities in order to transfer specific knowledge concerning their own rural areas. It is thus a kind of pilot process and we will report our experience in the article.

VERSION 2 – REVIEW

REVIEWER	P. Lina Santaguida McMaster University Canada
REVIEW RETURNED	30-May-2017

GENERAL COMMENTS

The authors have attempted to clarify the majority of comments. A few that I felt were not addressed are noted in the attached comments in the table below.

Response by Protocol Authors	**Santaguida Comments To Responses**
Page 8: Line 56. What does “extra” emergency medical training refer to? Do you mean postresidency training in emergency medicine? Not sure what extra implies? In addition, it is not clear what the ED physicians’ need that can be addressed by the simulation training or clinical immersion programs. As well, this paragraph seems to suggest that you only have data on the training needs of physicians. Is there evidence that other emergency medicine health professionals require this type of training? Response : We specified the specialisations.	The highlighted text has not been clarified. It seems you are including non-physicians in your PAR panels. Is there any information that other health professionals require additional training?

		Page 9: Line 20. I am not sure the evidence would support the statement that “the use of care protocols are not known in “urban” contexts”. Perhaps you mean to say the differences in impact are not known in both rural and urban. It would seem to me that the majority of the quality improvement literature and guideline implementation literature is quite focused on using or implementing care protocols. So it is not clear if the authors are implying that there is no knowledge about the impacts on patient care generally. Please clarify this statement. Response : We modified the sentence to clarify the situation.	As best as I can tell no changes have been made to the text.	
		Page 9: Line 32: Please prove a definition of quality. Some definitions include the concept of “performance”. Response : We thank the reviewer for the comment, but we believe that the concept of quality of care is sufficiently precise for the moment. We will consider defining the concept further when we will consult the experts in the second phase of the research.	I find this response difficult to understand, perhaps I was not clear in my comments. My understanding is that there is a rich literature on quality (for example Donebidan 3 pronged approach) that have broad domains of quality. To my knowledge there are 30 years-worth of literature (at least) on frameworks to understand quality and quality improvement. Perhaps the authors could specify why the global definition of quality is sufficiently precise. I tis difficult to understand how the concept of quality must emerge…particularly in light of the existing literature. Are the authors suggesting a new framework to understand	

			quality will emerge?
		Page 9: Line 39. Although it is well known that there is some heterogeneity in the exact understanding of many terms associated with knowledge transfer, there is no framework or definition provided in this protocol. Nor is there any link between Participatory Action Research and KT. The authors use the term "Knowledge Transfer" which this reviewer intends to mean the same things and "Knowledge Translation". If this is not the case then perhaps this can be clearly specified. Do the authors intend to include all types of Knowledge Translation activities that could include "diffusion, education, dissemination, implementation and uptake activities". Alas the term Knowledge transfer is now generally understood to encompass several steps from "awareness" to actual implementation. Do the authors wish to focus on only some aspects of the different activities? I believe it would be more helpful to have a clear specification of which of these activities you are addressing. It should be also reflected in your evaluation plan but does not appear to be the case. My understanding is that there are several theories (perhaps too many) currently available that would assist in understanding why individuals and organizations (and even systems within organizations) change. Although none is the clear winner, it may be helpful	Can the authors please explain why there is no theoretical framework considered. If a framework is not considered then this can simply be specified as " no theoretical framework was selected". It is not clear why funding of this project precludes any clarification or changes to what we as peer reviewers have been sent to comment on. It is not clear how the pilot work will clarify selection of a theoretical framework.

		to overlay or contextualize your discussion about knowledge transfer within one of these theories. Several come to mind but the PARiHS may be one that more closely models the activities you have labelled as participatory research. The purpose of your study suggests that the use of a particular method for educating relevant stakeholders to some extent will improve implementation and uptake (two different things requiring different methods of evaluation (i.e. different outcomes). This is the focus of KT science….being specific about which stage and which method. As I have stated previously, my particular background is not in Participatory Action Research, but it would seem to me that some aspects of this complex intervention are indeed a knowledge translation intervention. As such it would be important to consider it within this framework as you are proposing to evaluate the implementation of the recommendations. In my view, not doing this would add one more paper that has no particular theoretical framework to better understand what worked and what didn't. Even the Particpatory Research methods you cite (Jagosh 2012) interprets the "benefits of this PAR approach within a theoretical framework and notes that the approaches and methodologies are quite heterogeneous; for this reason a theoretical framework to design an		

		intervention (i.e. your Knowledge transfer objectives) and the evaluation would be better interpreted within such a framework. Response : We thank the reviewer for this most interesting and helpful comments on this aspect of the study. This protocol was peer reviewed and is now funded. This manuscript (summarized and translated from French) reflects the original version, as required. Several of our key collaborators and coinvestigators with KT specialization have been informed of your comments. We have also completed a pilot study that will help us gain further insight on how to better integrate KT in the study. Thus, we expect improvements in this aspect.		
		clear what some of these characteristics are. For example, it is stated that participants will have diverse viewpoints. This begs the question about what specifically will they have diverse viewpoints about. Perhaps suggesting a few areas would be illustrative; for example, diverse viewpoints about staffing levels, or diverse viewpoints about the professional complement in ED. For purposes of reproducibility it would be helpful to know how you would determine these diverse viewpoints prior to selection. Response : We clarified this sentence. The selection of participants is not tributary to their view point but of	Please check with your editor as I don't believe the term "representativity" is correct. Consider using the term "representation".	

		personal characteristics susceptible to give rise to different viewpoints.		

VERSION 2 – AUTHOR RESPONSE

1) Thank you for your revisions. While we are satisfied with the responses provided to Reviewer 1's comments, we feel the text should have been modified to reflect the clarifications made. You may consider citing your previous publications and the mentioned pilot study conducted for this purpose.

Response: We modified the text in order to reflect the sense of the reviewer's comment. In as such, we clarified the situation in the KT section about what we meant by the terms "support the implementation of the recommendations and identified solutions".
We thus modify this paragraph: "In Phase 3, the consensus recommendations produced in Phase 2 will be presented to all stakeholders involved in Phases 1 and 2 and to others stakeholders from the EDs involved in the research. A variety of strategies will be implemented to connect with stakeholders and accompany them in understanding, adapting, and, eventually, adopting the recommendations. The possible strategies (conferences, videoconferences, websites, social media, communities of practice, etc.) will be defined according to the nature of the recommendations that emerge from the research process and through discussions with the stakeholders (our partners, site champions, etc.). As researchers, we will have a key role in coproducing, presenting and adapting the knowledge. We will also support the reception, adoption and appropriation of knowledge by acting as a networking hub for participating EDs and members of our expert panel and by suggesting tools to implement some solutions. Our collaborators and co-researchers will all contribute to accompany the rural sites depending of the needs expressed in each case, in a spirit of fostering partnership between central and remote locations so that each can understand the situation of the others."

Also, unfortunately, the results of the pilot study have not yet been published.

2) Please provide a complete dissemination plan in the section 'Ethics and dissemination' of your manuscript. Any dissemination plan (publications, data deposition and curation) should be covered here.

Response: We included the sentence in the "Ethics and dissemination" section: "The qualitative material will be kept confidential and the data will be presented in a way that respects confidentiality. The dissemination plan for the study includes publications in scientific and professional journals. We will also use social media to disseminate our findings and activities such as communications in public conferences."

3) Thank you for providing the STROBE checklist. Please note that the STROBE checklist will not be applicable to your qualitative study. Please specify in the methods section that the COREQ checklist for the reporting of qualitative studies will be adhered in the future research manuscript.

Response: We added the following sentence in the section "Data collection: Objective 1" (p.12): "We will provide the COREQ checklist for the reporting of qualitative studies with the manuscript that will present the qualitative results."

Response by Protocol Authors	Santaguida Comments To Responses	Responses to comments
Page 8: Line 56. What does “extra” emergency medical training refer to? Do you mean postresidency training in emergency medicine? Not sure what extra implies? In addition, it is not clear what the ED physicians’ need that can be addressed by the simulation training or clinical immersion programs. As well, this paragraph seems to suggest that you only have data on the training needs of physicians. Is there evidence that other emergency medicine health professionals require this type of training? Response : We specified the specialisations.	The highlighted text has not been clarified. It seems you are including non-physicians in your PAR panels. Is there any information that other health professionals require additional training?	We thank the reviewer for this precision. It is true that we meant to refer to physicians specifically and not health professionals in general. In as such, we changed “emergency medicine professionals” for “emergency physicians”.
Page 9: Line 20. I am not sure the evidence would support the statement that “the use of care protocols are not known in “urban” contexts”. Perhaps you mean to say the differences in impact are not known in both rural and urban. It would seem to me that the majority of the quality improvement literature and guideline implementation literature is quite focused on using or implementing care protocols. So it is not clear if the authors are implying that there is no knowledge about the impacts on patient care generally. Please clarify this statement. Response : We modified the sentence to clarify the situation.	As best as I can tell no changes have been made to the text.	In order to clarify the reviewer interrogation when she wrote “Perhaps you mean to say the differences in impact are not known in both rural and urban.”, we modified the last sentence of the paragraph in the section “**Quality improvement through standardization” (p.9)** as follows in the previous revision: “However, the actual use of care protocols in both rural and urban contexts and their respective impacts on patient-care and health are unknown”. Perhaps this reformulation is not sufficiently clear. If so, we would be happy to have a proposition in order to

		better clarify the situation.
Page 9: Line 32: Please prove a definition of quality. Some definitions include the concept of “performance”. Response : We thank the reviewer for the comment, but we believe that the concept of quality of care is sufficiently precise for the moment. We will consider defining the concept further when we will consult the experts in the second phase of the research.	I find this response difficult to understand, perhaps I was not clear in my comments. My understanding is that there is a rich literature on quality (for example Donebidan 3 pronged approach) that have broad domains of quality. To my knowledge there are 30 years-worth of literature (at least) on frameworks to understand quality and quality improvement. Perhaps the authors could specify why the global definition of quality is sufficiently precise. I tis difficult to understand how the concept of quality must emerge…particularly in light of the existing literature. Are the authors suggesting a new framework to understand quality will emerge?	We added a general definition of performance in the introduction (p. 7). “We use the MSSS definition of performance which includes access, quality and optimisation dimensions. This definition is in accordance with the conceptual framework and the needs of the majority of the stakeholders of the research who are members of the Québec Health System (18) “ This projects aims to find solutions to improve rural EDs, not to redefines or measures the notions of quality or performance.
Page 9: Line 39. Although it is well known that there is some heterogeneity in the exact understanding of many terms associated with knowledge transfer, there is no framework or definition provided in this protocol. Nor is there any link between Participatory Action Research and KT. The authors use the term “Knowledge	Can the authors please explain why there is no theoretical framework considered. If a framework is not considered then this can simply be specified as “ no theoretical framework was selected”.	A sentence on our KT framework has been added in the introduction section (p.7) : “We use the knowledge transfer (KT) framework developed by the National Public Health Institute of Québec (19) which allows us to focus on the different steps from coproduction to use of knowledge. It also

Transfer" which this reviewer intends to mean the same things and "Knowledge Translation". If this is not the case then perhaps this can be clearly specified. Do the authors intend to include all types of Knowledge Translation activities that could include "diffusion, education, dissemination, implementation and uptake activities". Alas the term Knowledge transfer is now generally understood to encompass several steps from "awareness" to actual implementation. Do the authors wish to focus on only some aspects of the different activities? I believe it would be more helpful to have a clear specification of which of these activities you are addressing. It should be also reflected in your evaluation plan but does not appear to be the case. My understanding is that there are several theories (perhaps too many) currently available that would assist in understanding why individuals and organizations (and even systems within organizations) change. Although none is the clear winner, it may be helpful to overlay or contextualize your discussion about knowledge transfer within one of these theories. Several come to mind but the PARiHS may be one that more closely models the activities you have labelled as participatory research. The purpose of your study suggests that the use of a particular method for educating relevant stakeholders to some extent will improve implementation and uptake (two different things requiring different methods of evaluation (i.e. different outcomes). This is the focus of KT science….being specific about which stage and which method. As I have stated previously, my particular background is not in Participatory Action Research, but it would seem to me that some aspects of this complex intervention are indeed a knowledge translation intervention. As such it would be important to consider it	It is not clear why funding of this project precludes any clarification or changes to what we as peer reviewers have been sent to comment on. It is not clear how the pilot work will clarify selection of a theoretical framework.	highlights the multiple KT strategies from dissemination to appropriation of knowledge. This framework justifies the participatory research approach used in this project and gives us guidelines to evaluate the KT process." We also made changes to the section "objective 3" (p. 14-15)

within this framework as you are proposing to evaluate the implementation of the recommendations. In my view, not doing this would add one more paper that has no particular theoretical framework to better understand what worked and what didn't. Even the Particpatory Research methods you cite (Jagosh 2012) interprets the "benefits of this PAR approach within a theoretical framework and notes that the approaches and methodologies are quite heterogeneous; for this reason a theoretical framework to design an intervention (i.e. your Knowledge transfer objectives) and the evaluation would be better interpreted within such a framework. Response : We thank the reviewer for this most interesting and helpful comments on this aspect of the study. This protocol was peer reviewed and is now funded. This manuscript (summarized and translated from French) reflects the original version, as required. Several of our key collaborators and coinvestigators with KT specialization have been informed of your comments. We have also completed a pilot study that will help us gain further insight on how to better integrate KT in the study. Thus, we expect improvements in this aspect.		

clear what some of these characteristics are. For example, it is stated that participants will have diverse viewpoints. This begs the question about what specifically will they have diverse viewpoints about. Perhaps suggesting a few areas would be illustrative; for example, diverse viewpoints about staffing levels, or diverse viewpoints about the professional complement in ED. For purposes of reproducibility it would be helpful to know how you would determine these diverse viewpoints prior to selection. Response : We clarified this sentence. The selection of participants is not tributary to their view point but of personal characteristics susceptible to give rise to different viewpoints.	Please check with your editor as I don't believe the term "representativity" is correct. Consider using the term "representation".	We found this word in some published articles but it does not seem to be widespread. We will double check with the editor.