PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	The development and testing of Australian prehospital care quality indicators: study protocol
AUTHORS	Pap, Robin; Lockwood, Craig; Stephenson, Matthew; Simpson, Paul

VERSION 1 – REVIEW

REVIEWER	Stephen J M Sollid University of Stavanger Norway
REVIEW RETURNED	22-Mar-2020

GENERAL COMMENTS	First of all, this is a very interesting project and I agree with the authors that QIs are needed to further develop the quality and academic foundation of prehospital care. I do have some comments that mainly concern the presentation of the protocol. The introduction is far too lengthy with over 4 pages. The content dives much too deeply into the theoretical framework and would partially be much more fitting in a discussion than the introduction. I propose that the authors focus on “why did you do it” and focus on – briefly - explaining why QIs are needed, what they can contribute to and point out the main characteristics of good QIs The introduction is also in stark contrast to the discussion which is very brief. The first paragraph of the discussion is more or less a repetition of some elements from the introduction. I would expect the discussion to include a more thorough reflection on the choice of method and limitations (the limitations discussed are relevant), and maybe also the concept and importance of QIs per se (again, elements from the introduction can be moved to the discussion). A few minor comments: Last sentence in abstract, Methods and analysis (lines 47-8): “This project will develop and test of quality indicators for the Australian prehospital care setting” Please review sentence for typing error. Lines 225-6: “Development of the terms related to prehospital care will guided by search filters created by Olaussen, (…)” Please review the sentence for missing word.

REVIEWER	Leif Rognås Consultant anaesthetist, Department of Anaesthesia, Aarhus University Hospital Lead Clinician (HEMS Base Skive) and Research Lead, Danish Air Ambulance Associate Professor in Prehospital Care, Aarhus University Denmark
REVIEW RETURNED	23-Mar-2020

GENERAL COMMENTS	Dear colleagues, Congratulations on a very well constructed research plan on a really important topic. Please see the attached pdf for a few suggestions and comments. Good luck with the project! All the best, Leif The reviewer provided a marked copy with additional comments. Please contact the publisher for full details.

REVIEWER	Janette Turner ScHARR University of Sheffield, UK
REVIEW RETURNED	02-Apr-2020

GENERAL COMMENTS	This is a clear and well written protocol. The figures in particular are clear and concise illustrating the different phases. There are 3 minor items which would help clarity for the reader 1) The background sets out clear arguments about the lack of relevant QI indicators and inadequacies of existing measures. For a non-expert reader it would be useful to provide a couple of examples of existing performance measures or indicators and explain why they are problematic 2) I think I understand the purpose of phase 2a and the development of the evidence summaries but it is not completely clear what the difference is between the searches in phase 2 and those already carried out in phase 1. In what way are they different? 3) Part 2 of phase 3 describes some services "testing" the candidate indicators. The main quantitative data appears to be a survey to ask how services managed this. There is nothing wrong with this and it will be an important source of information but will any attempt be made to report the actual measures themselves - that is, if some services collect data and calculate the indicators over time will examples be provided of what they show with repeated measurement in the real world. I think this will be important in helping understanding of what these potential indicators might look like in routine use.

VERSION 1 – AUTHOR RESPONSE

Comments		Response
R1(SJMS)	The introduction is far too lengthy with over 4 pages. The content dives much too deeply into the theoretical framework and would partially be much more fitting in a discussion than the introduction. I propose that the authors focus on "why did you do it" and focus on – briefly - explaining why QIs are needed, what they can contribute to and point out the main characteristics of good QIs.	We found this feedback to be especially useful and important, too. We have revised this section to be more concise and have moved some aspects to the *Discussion*.
R1(SJMS)	The introduction is also in stark contrast to the discussion which is very brief. The first paragraph of the discussion is more or less a repetition of some elements from the introduction. I would expect the discussion to include a more thorough reflection on the choice of method and limitations (the limitations discussed are relevant), and maybe also the concept and importance of QIs per se (again, elements from the introduction can be moved to the discussion).	We have revised the Discussion to include more detail about rationale for using the chosen methods and incorporated aspects previously included in the *Introduction*.

R1(SJMS)	Last sentence in abstract, Methods and analysis (lines 47-8): "This project will develop and test of quality indicators for the Australian prehospital care setting" Please review sentence for typing error.	This has been corrected.
R1(SJMS)	Lines 225-6: "Development of the terms related to prehospital care will guided by search filters created by Olaussen, (...)" Please review the sentence for missing word.	This has been corrected.
R2(LR)	The Institute of Medicine has defined six quality dimensions that should be addressed when measuring the overall quality of a health service12: patient centredness, safety, effectiveness, efficiency, equity and timeliness. In addition, we have found that the attributes of feasibility, rankability, variability, actionability and documentation are necessary for a QI to be really valuable for service development. For further information please see: Scand J Trauma Resus Emerg Med. 2017 Feb 15;25(1):14. doi: 10.1186/s13049-017-0362-4. and BMJ Open. 2019 Nov 3;9(11):e030626. doi: 10.1136/bmjopen-2019-030626.	We are aware of the IOM's dimensions of quality. These were included in the scoping review and are being incorporated in the preparatory work for phase 2 (page 7). Thank you for pointing out some additional important attributes of quality indicators. We found the provided references very useful. The first one was in fact included in our scoping review. Whilst we acknowledge the importance of the additional attributes, including these now would require significant changes to our research plan and ethics approval.

R2(LR)	Why limit your work to only including Australian experts? Might there be an advantage of getting the views of international experts?	This is a good question and we agree that international consensus on prehospital care quality indicators (QIs) is an important research endeavour. Our project aims to develop and test QIs for the Australian setting. We recruit an Australian expert panel to optimise an assessment of contextual validity. This rational was is included in our manuscript.
R2(LR)	It might be worth considering including a patient panel at this stage, especially in light of the results from e.g. the "Paramedic 2" study where patients' wives on what was important to them played an important role. Please see their "Core Outcome Set for Cardiac Arrest" for further information: N Engl J Med 2018; 379:711-721	This to be a valid comment and we absolutely acknowledge the importance of patient and public involvement (PPI). Similar to the point above, including PPI now would require significant changes to our research plan and ethics approval. We can, however, see how this project could be continued in the future with PPI.
R2(LR)	We found that the variability and actionability of a QI were often overlooked in the development process	As above
R3(JT)	The background sets out clear arguments about the lack of relevant QI indicators and inadequacies of existing measures. For a non-expert reader, it would be useful to provide a couple of examples of existing performance measures or indicators and explain why they are problematic.	Thank you for the positive feedback. We have made amendments to the background section as suggested.
R3(JT)	I think I understand the purpose of phase 2a and the development of the evidence summaries, but it is not completely clear what the difference is between the searches in phase 2 and those already carried out in phase 1. In what way are they different?	We have re-phrased some sentences that should make this clearer in the manuscript. The purpose of the initial scoping review was to "simply" chart QIs. No evaluation of supporting evidence was done in this phase. To assess the validity of the aggregated QIs the panel needs to understand underlying evidence. This is the purpose of the rapid reviews and evidence summaries.

R3(JT)	Part 2 of phase 3 describes some services "testing" the candidate indicators. The main quantitative data appears to be a survey to ask how services managed this. There is nothing wrong with this and it will be an important source of information but will any attempt be made to report the actual measures themselves - that is, if some services collect data and calculate the indicators over time will examples be provided of what they show with repeated measurement in the real world. I think this will be important in helping understanding of what these potential indicators might look like in routine use.	We agree that an analysis of actual ambulance service performance would be useful. However, we set out to focus strictly on testing the QIs. We think of the ambulance service as a tool to assess the quality of the proposed QIs. As such, how ambulance services perform on each QI is less relevant. We do acknowledge that this would be a beneficial study too, but it would require significant changes to our current research plan and ethics approval.

VERSION 2 – REVIEW

REVIEWER	Stephen J M Sollid University of Stavanger Norway
REVIEW RETURNED	13-May-2020

GENERAL COMMENTS	I have no further comments at this point. The authors have addressed my previous concerns adequately.

REVIEWER	Leif Rognås Danish Air Ambulance
REVIEW RETURNED	08-May-2020

GENERAL COMMENTS	Dear authors, Congratulations on this much improved manuscript. I still think it is a bit lenghty and that the method would have been stronger had you included additional aspects in the evaluation of your QIs but I accept your reasons for not doing this. Best of luck with the study. Kind regards, Leif Rognås

REVIEWER	Janette Turner ScHARR University of Sheffield, UK
REVIEW RETURNED	21-May-2020

GENERAL COMMENTS	Previous comments have been addressed adequately. Flow improved and the discussion is now more thoughtful and substantial. A similar programme of work has been carried out in the UK which you might want to consider https://www.journalslibrary.nihr.ac.uk/pgfar/pgfar07030/#/abstract