Reviewer’s report

Title: Rationale and methods of an Evaluation of the Effectiveness of the Community Paramedicine at Home (CP@home) program for frequent users of emergency medical services in multiple Ontario regions: a study protocol for a randomized controlled trial

Version: 0 Date: 30 Oct 2018

Reviewer: Bridie Evans

Reviewer’s report:

Thank you for the opportunity to review this paper which proposes research on a very important topic. I wish you well in the study and look forward to reading the results.

The paper is well written and I have just a few comments to make.

I am pleased to see that members of the paramedic service are among the project team and co-authors. Involvement in research by those with expertise and experience to complement academic roles increases the relevance and quality of research. The perspective of patients would further strengthen the make-up of the research team. The target population for this study will potentially include harder-to-reach populations - individuals with chronic physical and mental health conditions who make frequent calls to emergency services for needs which are not met by existing primary and community services. By involving public and patient members who share characteristics with the harder-to-reach populations, the research team can benefit from their input into understanding how this proposed study addresses the needs of harder to reach patients. Public and patient involvement (PPI) is increasingly required by funders and publishers. Could the authors consider how PPI can support this study.

Related to this point, the authors note that recruitment could be challenging but report they are confident the target numbers will be reached. However, the easiest to reach patients will most likely be those recruited and patients with the more challenging needs, arguably the greatest needs, may persist in needing to use emergency services. This risks widening inequity and inequality among patients. Could the authors consider this issue and how they will use data about participant characteristics to explore the reach of this service. PPI (noted above) is arguably one route to help address this potential issue.

How generalisable will these results be beyond the Canadian setting? Questions of widening scope of paramedic practice, avoiding hospital admissions, over-demand for emergency ambulance and emergency department services are internationally relevant. Could you consider generalisability.

P7 - could the authors provide a reference for their two pronged approach to reducing unnecessary healthcare utilisation, or say if this is an approach they have developed.
Primary and secondary outcome measures - are the number of patients conveyed also counted? Apologies if I missed this.

Process outcomes - how are participant satisfaction data collected? Are the views of carers also collected? If not, why not? How are the interviews conducted and data recorded?

It is possible that the target participants respond to human contact generated by the CP@home intervention as much, or maybe more, than the clinical elements of the intervention. How will the authors understand how the intervention is working? How will they know whether attention and visits are the characteristics which affect emergency calling behaviour rather than clinical input? This is important since it could mean that the intervention may be delivered by people in other roles, at least to some of the population. This could have implications for resources and management.

P14 - could the authors clarify the referral process - are appointments automatically made for participants or do they need to follow up advice given by paramedics.

I can't see any information about data being collected from other services providing care or treatment to the CP@home participants as a result of the paramedics' input. While use of emergency services may reduce, input from other services is likely to increase, so currently proposed health care resource utilisation costs will not provide an accurate assessment if the whole service input is not counted. Could the authors respond to this please?

Could the authors provide some references for their analysis and health economics methods.

P17 L378. What are 'assertions' which will be analysed along with themes. It is not a term I am familiar with.

I have no statistical expertise so cannot comment on the proposed sample size or statistical analysis methods.

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