Reviewer's report

Title: Home-based versus hospital-based cardiac rehabilitation: Literature review, study design and rationale of the Birmingham Rehabilitation Uptake Maximisation Study (BRUM): a randomised controlled trial (ISRCTN72884263)

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Reviewer: Heather M Arthur

Level of interest: A paper whose findings are important to those with closely related research interests

Advice on publication: Unable to decide on acceptance or rejection until the authors have responded to the compulsory revisions

The authors have chosen to embark on an important study in the area of cardiac rehabilitation (CR), having identified that there is little accumulated research which compares the CR outcomes in hospital versus home-based settings. The purpose of this manuscript is to present the design and rationale for the Birmingham Rehabilitation Uptake Maximization Study (BRUM). It appears that BRUM has already been funded and is now being implemented; thus, it may be too late to modify the protocol on the basis of this review. Nonetheless, there are important issues to be examined which ought to be addressed prior to publication of this manuscript.

Compulsory Revisions

1. Throughout the manuscript there is inconsistency in how the term cardiac rehabilitation is being used. This is an important issue in the field at this time. Historically, CR was understood to mean exercise training, almost exclusively. More contemporary definitions of CR consider it to be a comprehensive multidisciplinary and multifactoral intervention. It appears that CR, as a treatment in this trial, is defined as the comprehensive model. However, there are places in the literature review where citations of exercise-only CR are used to support the rationale for this trial. As well, the abstract opens with the statement "exercise-based cardiac rehabilitation...." which implies a particular focus.

2. The abstract clearly states that "this trial evaluates the cost-effectiveness of home-based compared to hospital-based cardiac rehabilitation". To the reader this suggests that BRUM is primarily a cost-effectiveness trial, which is not the case. In fact, as the manuscript develops, the cost-effectiveness part of the study becomes progressively more secondary.
3. The abstract lists 5 key outcomes as the primary outcomes of the study. Later in the paper there are many more outcomes listed and their priority is not clear. Overall, the abstract needs to be revised to better reflect the body of the paper.

4. In the background section, paragraph 2, line 4, it is important to qualify that the observed reductions in cardiac mortality have been over a 1-3 year time frame.

5. The reference to Beckie’s study (Bottom of page 1) is unsuitable for inclusion in this section of the paper since Beckie did not provide CR in any accepted definition of the term. She simply provided telephone follow-up to patients after hospital discharge.

6. The authors have omitted review of a recent paper by Arthur et al. 2002 (Medicine and Science in Sports and Exercise), which was a randomized controlled trial of hospital versus home-based exercise training in patients following coronary artery by-pass graft surgery. This study comprised a larger sample size than other such published reports.

7. The literature review related to uptake of CR, while interesting and accurate is not really related to the hypotheses of BRUM, which is not intended to affect uptake. The section on adherence issues is relevant.

8. I may have misunderstood the manuscript but the statement that BRUM is purposively multi-ethnic may be misleading. It appears that this is more focused on selective inclusion of patients of South Asian descent. This is important because of the prevalence of cardiac risk factors in South Asians but the study is not really multi-ethnic. I think the use of the word ‘Asian’ should be changed to ‘South Asian’ as well, but I am saying this based on the fact that language translation will be provided for Punjabi-speaking individuals.

9. It is stated that contact with patients in the home-based group will be maintained until 4 months post-event. How often will this contact occur? What is the nature of this contact?

10. A modified Godin questionnaire will be administered at 6, 9 and 12 weeks however, this is not listed as one of the outcome measures. How will these data be used?

11. Given that this a randomized controlled trial, specific details of the primary outcomes should be provided rather than simply saying “cardiac risk factors”. Which cardiac risk factors are being targeted? How are they defined? How are the data collected? The other primary outcome is “uptake measures”. This outcome is not related to the research question, nor are the authors intervening to change uptake. Therefore, this outcome in itself is not clear.

12. Please indicate why baseline measures for exercise capacity will not be available and discuss the impact of not having these data on the analysis of outcomes.

13. I think a more compelling argument could be made for this study than the one suggested in the statistical analysis section where the authors suggest that they are primarily interested in detecting the direction of treatment effects. It could be argued that the existing literature, despite its limitations, has already provided the direction of treatment effects when comparing home versus hospital-based CR.

14. Though I like the idea of including a qualitative component to this study, I would like to suggest that grounded theory may not be the method of choice here. Perhaps phenomenology is more suited to the questions the investigators would like to answer from a qualitative perspective. If grounded theory is indeed their goal, they should discuss the fact that they will be aiming to generate a theory of adherence to CR as an outcome of that analysis.
Discretionary Revisions

1. I would have preferred to see detailed inclusion criteria and definitions for such things as MI, PTCA etc. Exclusion criteria would also have been helpful. Will patients be excluded if this is not their first experience with CR?

2. For the qualitative component, the investigators plan to identify patients who decline to commence rehabilitation and those who do not adhere. It would be helpful to know the definition of non-adherence that they intend to apply in selecting those individuals.

Thank you for the opportunity to review this manuscript. I wish the authors much success in the BRUM trial and look forward to seeing their results

Competing interests:

I have no known competing interests with regard to this manuscript.