Reviewer’s report

Title: A cost-utility analysis of a rehabilitation service for people living with and beyond cancer

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Reviewer: Alison Smith

Reviewer’s report:

Overall this is an excellent paper which is well reported and uses appropriate methodology. The results of this paper have the potential to be useful to decision makers, and the findings are likely to be of interest to any readers with an interest in cancer or hospice/rehabilitation services.

There are some limitations in this paper relating to reporting issues that should be addressed before publication. These are highlighted in the appropriate sections below.

1. Is the question posed by the authors well defined?

The objective of the analysis is clearly defined in the introduction.

[1.1 Major Compulsory Revision] The authors provide no description of what constitutes ‘standard care services’. A brief description of what standard care services consist of is needed in the introduction in order for the results to be meaningful and useful to decision makers. In addition it would be useful to know if there is expected to be significant variation across the UK in what ‘standard care services’ would be provided in current practice (discretionary revision).

[1.2 Discretionary Revision] Most key details of the intervention are provided, and the authors do note that full details of the intervention are supplied in a previous publication; however, some details of the intervention which might aid understanding are missing. For example, who the intervention is delivered by and what grade/level they are, and whether any additional training was required for the health care professionals involved in the intervention delivery.

[1.3 Discretionary Revision] To aid clarification of how the intervention would impact on current services, a brief description of the ‘average patient’ pathway as it stands and how this would change under the new intervention might be helpful.

2. Are the methods appropriate and well described?

Overall the methods used by the authors are appropriate and well described. In particular the authors explore different methods to calculate the Quality Adjusted Life Year (QALY) estimates, highlighting that QALY estimates based on values adjusted for baseline imbalances are more robust. The authors also conduct probabilistic sensitivity analysis, which is the most appropriate method to use in
order to adequately reflect parameter uncertainty. The authors use appropriate diagrams (cost-effectiveness acceptability curves) to show the results of the probabilistic sensitivity analysis.

[2.1 Discretionary Revision] It may be helpful to readers who do not have a background in health economics to include layman explanations of key terms/concepts. In particular I would not expect the average reader to understand what probabilistic sensitivity analysis and cost-effectiveness acceptability curves are, so more explanation here may aid understanding.

[2.2 Discretionary Revision] It would be helpful to include a figure(s) to illustrate the different QALY scenarios considered (i.e. a graph of quality of life by time with the different assumptions illustrated).

3. Are the data sound?

From what the authors have reported, the data appear to be sound. The analysis is based on a small sample size with limited follow-up, but the authors clearly highlight this in the paper.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

The manuscript adheres to the relevant standards of reporting and data deposition.

5. Are the discussion and conclusions well balanced and adequately supported by the data?

The authors provide some interesting comments in their discussion, which are supported by the evidence.

[5.1 Discretionary Revision] The focus of the conclusions in the abstract is on the need to conduct further research due to significant uncertainty surrounding the decision to implement the service. However in the conclusions of the main paper the authors state that ‘Despite the need for further evaluation, given the potential benefits to recipients, the relative ease with which a decision could be reversed, we suggest decision makers consider introducing this intervention more widely’. This conclusion does not sit well with the results of the trial analysis, especially when considering the results based on the more plausible QALY scenarios. The conclusion in the main paper should be changed to reflect the conclusion given in the abstract which rightly focuses on the substantial uncertainty around the results.

6. Are limitations of the work clearly stated?

The authors clearly highlight the limitations of their analysis due to the small sample size, lack of long term data on health and cost outcomes, and failure to include all relevant comparators.
[6.1 Discretionary Revision] The authors fail to discuss the limitation of using patient reported resource use data. Although it often necessary to collect resource use data in this way, the limitations of this process should still be highlighted. In particular, patients were asked to recall their use of services over the past 3 months, which is a significant length of time given the number of services patients may have been accessing; there is likely therefore to be a significant risk of recall bias, which should be highlighted in the paper.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

The authors fail to adequately discuss the previous work done on outpatient rehabilitation services. In the discussion the authors state that ‘…no other such services have been tested in an RCT, nor do any services have robust evidence of effectiveness and so at present, this evaluation represents the best possible evidence available to decision makers.’ However, it is unclear if any kind of review of the literature was conducted which would support the claim that no work of this kind has been done before. In addition this study needs to be put in context with what has been done before it the introduction of this paper, rather than in the discussion.

[7.1 Discretionary Revision] Some form of literature search should be conducted in order to assess what, if any, previous cost-effectiveness studies of this or similar outpatient rehabilitation services have been conducted. A discussion of whatever evidence is found should be included in the introduction, in order to put the current study in context and support the authors claim in the discussion that no other such services have been adequately assessed in previous work.

[7.2 Discretionary Revision] If any relevant cost-effectiveness studies are identified in a literature search then these should be used to conduct an external validation of the authors results: i.e. the authors should compare the results of their analysis to those previously conducted to assess how likely it is that the results of this study are valid. If significant differences are found between the current study results and previously reported results then the authors should attempt to locate potential reasons for these differences.

8. Do the title and abstract accurately convey what has been found?

The title and abstract of this paper accurately convey the findings of the study.

9. Is the writing acceptable?

Overall the standard of writing in this paper is very high. The paper is easy to read, follows a logical order, and there doesn’t appear to be any serious grammatical errors.

[9.1 Minor Essential Revision] The acronym ‘DTU’ (Scenario Analysis section, paragraph 6) does not appear to have been defined anywhere.
[9.2 Discretionary Revision] In the scenario analyses section, paragraph 2, the sentence beginning ‘It is only where benefit is maintained for nine months or longer is the…’ should be changed to ‘Only where benefit is maintained for nine months or longer is the…’.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.