Reviewer’s report

Title: The acceptability of using a lottery to allocate research funding: A survey of applicants

Version: 0 Date: 03 Nov 2019

Reviewer: Jonathan Shepherd

Reviewer's report:

This is a very original and informative study that will be of great interest to the field. It is very interesting that this is the first example, world-wide, of the use of a lottery scheme to award research funding. The fact that it commenced in 2013 and it is only now that this study has been conducted makes me wonder why this wasn't evaluated and reported on earlier? (though, granted, there would have been fewer applicants available and thus fewer data to analyse). Nonetheless, this article should have a good impact in the field of research funding and peer review in the health sciences, and beyond. My suggestions below are to enhance the clarity of the text.

Page 3 line 36. It isn't immediately obvious why using a lottery would mean shorter application forms. I understand what you mean here but presumably some funders would still require a sufficient level of detail to be given in order to assess eligibility for the lottery. Later In the discussion section it is commented that a surprising finding is that the lottery didn't reduce the time spent writing applications. Also it is suggested that for larger grant schemes random allocation would only be used for applications in the grey zone between not fundable and outstanding. Thus, there would remain a requirement for sufficiently detailed proposals. Please consider how this issue might be better introduced, for example by citing the literature (refs 22 and 23) earlier.

Page 3 line 47. You could also consider mentioning other biases that occur in peer review, such as ageism, and professional/disciplinary prejudices in the sciences (e.g. certain specialities or sub-disciplines seen as 'the poor relation', which sometimes happens in the health sciences, and beyond).
Page 3 line 52. The end of the sentence "which occurs because the review process is likely to have an element of randomness". I am not sure what is meant here. I imagine it is a reference to the often unpredictable views of peer reviewers and lack of consensus between peer reviewers on applications which could be seen as happening at random. However, the sentence as written is ambiguous, so please clarify.

Page 4 line 2 - I think the sentence would be better if it said "peer review score was a poor predictor of the quality/productivity of the subsequent research output". You could also consider using "impact" instead of "output".

Page 5 line 48, if applications are selected randomly and thus treated equal how can they be ranked as the sentence states?

Page 6 line 57. It would be informative if the sentence could mention what type of questions these were i.e. fixed response categories of yes/no/unsure (even though the questions themselves are reported later in the manuscript).

Page 7 line 54 state in full the CHERRIES acronym.

Page 8 line 41 there was less support for random allocation of funds for other grant types - do you know how many applicants had successfully applied for funding from these other grant types? Could there be a bias here because applicants are less informed about the other grant types? Perhaps there could be a similar survey done of applicants to the other grant types to assess their views?

Page 14 - Limitations. You could consider whether there is any bias from the survey being conducted by the funder, as opposed to a more neutral agent. The respondents (particularly those who have received Explorer Grant funding) may have been inclined to give more desirable, positive, responses about the random method of funding (notwithstanding the anonymous nature of the survey responses). I think the risk of this bias is probably low, but you might like to consider whether you think it is plausible.

Page 14 - line 59 add the word "funding" before "success rate".
There isn't much in the way of recommendations for funding agencies and applicants, other than there should be further uptake of lottery systems for awarding research funding. You might consider qualifying this statement with the fact that the evidence presented only currently supports the use of a lottery for transformative research funding schemes. Further research is needed in the use of lottery schemes in other research funding schemes, particularly larger scale funding programmes. Also, in relation to innovation in health research funding processes you could, if space allows, refer to other funding models such as 'sandpits' which have been used in recent years as an alternative to the standard peer review model.

**Level of interest**
Please indicate how interesting you found the manuscript:

An article of importance in its field

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests
I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal