Reviewer’s report

Title: The current application of the Royston-Parmar model for prognostic modelling in health research: a scoping review

Version: 0 Date: 20 Sep 2017

Reviewer: Michael Crowther

Reviewer's report:

This paper conducts a systematic review of the use of the flexible parametric Royston-Parmar survival model, specifically within a prognostic modelling context. The paper is well written, with a good explanation of the fundamental model, and the core methods papers captured, which will serve as a good reference for future prognostic model development. I only have minor comments:

1. More emphasis is needed on the useful measures that can be obtained following a fully parametric model, such as survival differences, standardised survival etc. The usefulness of the stpm2 command is mainly due to its extensive post-estimation prediction tools.

2. P4 line 99, add that lambda and gamma must both be > 0

3. P5 1119, please add linear with respect to log time

4. P6 spline description. Please add more details, i.e. that the default knot positions imply that the function is linear beyond the boundary knots, and the spline function assumes continuous 0,1,2 derivatives. Please also make it clear when talking about total number of knots, and the difference between internal and boundary knots.

5. P6 1147, "correctly specified". We can never know if it is correctly specified. Please change to something like "well specified".

6. There are 2 R implementations that I know of, within flexsurv and Rstpm2. Rstpm2 also allows penalised splines, which should also be mentioned. https://www.ncbi.nlm.nih.gov/pubmed/27587596

7. P15 ;357, how was the PH assumption tested?

8. More emphasis should be placed on encouraging the reporting of knot locations, spline coefficients, whether the splines were orthogonalised (please mention this as a separate aspect of the model in the paper). Authors should also be encouraged to provide code used to fit the reported model.
9. Table 2 reports number of knots (df-1). Please clarify how you define df, are you including the intercept term?

**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