Reviewer's report

Title: Accounting for parameter uncertainty in the definition of parametric distributions used to describe individual patient variation in health economic models

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Reviewer: Shuling Liu

Reviewer's report:

General:
Overall, this manuscript is well written and well organized. The authors provided useful guidelines for researchers with regards to how to take into account parameter uncertainty in sensitivity analysis. They considered two commonly used approaches and provided recommendations. The simulation and case studies are also good illustrations of their proposed approaches.

My comments mainly focus on the following issues.

Major:

1. Based on the description, the manuscript intended to provide a general guidance in sensitivity analysis. However, only PSA method was considered and no other sensitivity analysis approaches were assessed in terms of parameter uncertainty. Therefore, it might be better to specify PSA in both the title and the article so that it is clearer to researchers what they should expect and how to justify.

2. Related to the first point, the authors evaluated the impact of different sample sizes on the uncertainty. In order to be a more general guidance, other scenarios should be evaluated as well. For example, the simulations could also be run for different numbers of patients in each treatment strategy. In addition, one case study also seems to a special case. One or two more examples of health economic outcomes would be better.
3. In the case study, since the data is from real life study, it is critical to have meaningful analysis results and it seems that the stratification does not lead to satisfying results. Therefore, the authors should consider other stratification strategies to obtain more meaningful results. Also, it is unclear to me how to deal with extreme and unlikely parameter values in MVNorm approach. In the simulation studies, it is easy to exclude them. However, if those situations are met in practice, what should be done?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.
Yes

Are the conclusions drawn adequately supported by the data shown?
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