Reviewer’s report

Title: Population pharmacokinetic-pharmacodynamic model of propofol in adolescents undergoing scoliosis surgery with intraoperative wake-up test: a study using Bispectral Index and composite Auditory Evoked Potentials as pharmacodynamic endpoints

Version: 0 Date: 18 Oct 2018

Reviewer: Tobias Piegeler

Reviewer's report:

In their manuscript, entitled "Population pharmacokinetic-pharmacodynamic model of propofol in adolescents undergoing scoliosis surgery with intraoperative wake-up test: a study using Bispectral Index and composite Auditory Evoked Potentials as pharmacodynamic endpoints" the authors are reporting a new PK-PD model for propofol in adolescents derived from data obtained from a small clinical study in patients undergoing scoliosis surgery.

The overall idea of the study is interesting and the manuscript is well-written. The presentation of the results and the discussion is extensive and puts the results very well into context. However, there are some issues, which I would like the authors to address:

1. Awareness & pain: The authors discuss results from their own previous study (Ref. 29), in which they have tested a similar group of patients regarding a possible recall or sensation of pain during the wake-up test. Did the authors also do this for this particular study?

2. Due to the fact that I am just a clinician-scientist anesthesiologist, and not a specialist in statistical or pharmacologic models, unfortunately I am not able to fully assess and comprehend the quality of the presented calculations. However, in order to increase the appeal of the manuscript to a broader audience of anesthesiologists, i.e. the readers of BMC Anesthesiology, in my opinion the authors should aim at the following things:

   a. Streamline the discussion.

   b. Explain not only your model better but also its implication into daily practice: Possible topics might be:

      i. Why might this model be important?
      ii. Will it be applicable, e.g., in a new form of infusion pump?
      iii. How does it improve daily clinical practice?
      iv. Did the authors already change anything in their daily practice because of these results?

Minor: […]
1. Typo: p14, line 26: "Schider" should be "Schnider"

**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?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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

Acceptable

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