Reviewer's report

Title: Comparison of serious inhaler technique errors made by device-naive patients using three different dry powder inhalers: a randomised, crossover, open-label study

Version: 2 Date: 18 July 2015

Reviewer: Andre Schultz

Reviewer's report:

The question posed by the authors is well defined. The methods are generally appropriate and well described, but I do have some queries about the scoring of device technique. The data appears to be sound. The figures appear to be genuine. The manuscript adheres to the relevant standards for reporting and data deposition. The discussion and conclusion are generally well balanced and adequately supported by the data but some important findings have been ignored. The limitations of the work are clearly stated. The title and abstract clearly describe the study. The writing is of high quality.

- Major Compulsory Revisions

1. I have questions about some of the steps that the investigators scored when assessing device technique. The authors should explain why these steps were seen as device technique errors and/or remove these steps from the analysis.

   Diskus: Not inhaling forceful/as fast as possible was scored as a serious error. However, as opposed to the Turbuhaler, inhalation from a diskus like the Accuhaler inhaler should actually be slow to ensure optimal drug delivery.

   Turbuhaler: Shaking during preparation was scored as a serious error and shaking after preparation was also scored as a serious error. However, shaking is only an error if performed after twisting the base. Shaking before twisting the base will not affect drug delivery in any way.

2. The first sentence of the conclusion should read: “In patients with asthma and/or COPD who were given inhaler devices without proper training, fewer errors were made when using the Pulmojet for the first time when compared to Diskus and Turbuhaler devices”.

3. A major finding of the study, that is not mentioned at all in the current manuscript, is how many errors in device technique remained after the instructional video. So am not convinced that instructional videos should be provided for all devices to complement training, as instructional videos would still likely be inferior to personal instruction that should be provided by the health care provider. Shouldn’t the conclusion be that instructional videos are useful, but still not adequate to ensure optimal device technique?

The author must respond to these before a decision on publication can be
reached.

- Minor Essential Revisions

The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

- Discretionary Revisions

These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

1. Determination of sample size: please describe the primary care audit data (in a supplemental document if necessary). Please explain what is meant by discordant pairs. Please explain how the investigators estimated the success rates and discordant pairs.

2. Secondary endpoint: please elaborate on how errors were recorded by the spirometer.

**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