Reviewer’s report

Title: Economic and organizational impact of a clinical decision support system on laboratory test ordering

Version: 3 Date: 21 Aug 2017

Reviewer: Nicolas Delvaux

Reviewer’s report:

1. The manuscript improved very much after the previous review. The design of the study and the aims are much clearer now. I think that the description of the study design may be debatable. It is considered a controlled before-after study (CBA), but I assess it more as an observational study. The control sites are wards with a very different focus, different pathology, and a much smaller amount of laboratory tests ordered in the studied periods. Therefore, they do not seem comparable. I think that the rationale for including this data is not as comparable control sites, but to compare the difference in laboratory test ordering trend (decrease in 'intervention' wards and increase in 'control' wards). However, this is not a major comment on my behalf.

2. The results and the way they are presented is much better, but I still remain confused. The manuscript would benefit from a more common build-up: present patient characteristics in table 2 (instead of table 3), present the results for your main objective second in table 3 (instead of table 4), and elaborate on some specifics (change per analyte) in table 4. Now you start with some details per analyte, then report patient characteristics and finally results for your main objective. This is confusing.

3. The description of the surveyed population remains unclear. If I understand correctly, the survey was distributed among 149 staff members of the post-acute and long-care wards of the Cento and Delta hospitals. From the description of the study design, these wards never received the intervention. How can they report pre- and post-intervention satisfaction?

4. On p16/18: line 46-47 is untrue. There was no evaluation of "untoward effects on patient care" since no patient-important outcomes were measured. This is a very difficult outcome to measure and requires the assessment of morbidity of patients exposed to the intervention and establishing a causal relationship between change in morbidity and the laboratory test order. This was not part of this study and therefore the final conclusion of the manuscript should be reformulated.

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 am able to assess the statistics

**Quality of written English**
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Needs some language corrections before being published

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