Author’s response to reviews

Title: Experimental application of Business Process Management technology to manage clinical pathways: the pediatric kidney transplantation follow up case.

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Editor Comments:

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Reviewer reports:

Ying Wang (Reviewer 1): This study seeks to adopt business process management technology to management clinical pathways. However, it requires more work to clarify the methods, and better explanation of some important definitions and concepts in paper.

1. First, the structure of this paper needs to be improved. From the introduction to discussion, the authors listed many key points related to the topics. However, there was lack of smooth connection between these points in context. For example, in the introduction when they tried to introduce the BPM, it might be better to explain the feasibility of applying BPM to
clinical pathways (line 70-85). It will help the readers to better understand why they adopted the BMP.

2. From lines 64 to 87, the authors need better explanation about the current issues in clinical pathways implementation. It is difficult to capture why the specific time points in clinical pathways are important? How would these points affect the clinical outcome on patients? Why all patients can follow a standard clinical pathway, doesn't individual care plan depend on patient's demographics?

3. The authors should refer to the specific literature when they first introduced the technique or just platform. E.g., line 168.

4. Line 113, please clarify the patient data.

5. From lines 21-130, a table including a check list might be a better way to describe everything in a more clear way.

6. Line 133, please be clear what 'scheduling' is.

7. The structure of Methods should be reorganized. E.g., move the technology section to the back of the approach section.

8. Please reconsider the title of 'Process definition and architecture', and use more descriptive title to specify the definition, as the context described an example case.

9. Lines 148 to 150, this paragraph does not belong here. It might be better to move it to the introduction or discussion section.

10. Regarding the performance evaluation, is the time reduction statistically significant? How is p value? It will also help to provide the range of time spent per patient.

11. Please enrich the discussion with more comparison with recent literature.

Zhengxing Huang (Reviewer 2): Authors of this paper developed an BPM-based approach to optimize clinical pathway management in hospital. The idea is interesting. However, there are some deficiencies as well. In my opinion, this manuscript can be published after revision.

1. First and most importantly, authors mentioned the difficulties to manage clinical pathway. They claimed they adopted BPM to optimize the performance and obtained a good result in next section while they got the conclusion just by statistics. It will be helpful to make the
illustration more clearly if authors can show readers a specific example to illustrate the advantages of BPM compared to the current method.

2. Second, in the Section "Process definition and Architecture", authors emphasized the necessity of having a flexible process was the main reason for adopting the innovative architecture. Actually, readers may not understand what the "architecture" is because it seems that BPM cannot deal with the case that clinical pathway itself were modified. More explanations would be appreciated.

3. Third, in the Section "our case", authors used too many words to introduce their hospital. I suggest the authors rewrite it in a brief and concise manner.

Response to comments from reviewers:

We greatly appreciate the time and efforts by the editor and referees in reviewing our manuscript. We have addressed all issues indicated in the review report, and believed that the revised version can meet the journal publication requirements.

Response to comments from Reviewer #1

1. Thank you for this advice. We have explained better the feasibility of applying BPM to clinical pathways (see text at lines 62-64, 66-70, 74-77) thus, we hope that the additional information will help the readers to better understand.

2. Thanks for the suggestion. We have improved the text providing more details about the issues (see text in lines 82-92). Additionally, as explained in line 74-81, clinical pathways are an evidence-based multidisciplinary care plan tool used to manage the quality in healthcare. Apply BPM techniques for the management of clinical pathways concern the standardization of care processes based on scientific evidences applied to specific clinical problem or treatment.

3. We have added the references of platform’s specific literature at lines 237-239.

4. We have listed into brackets the patient data took into account. (see lines 145-146)

5. Thanks for the suggestion, we have included a point checklist to better describe the process (see lines 145-150) followed by further clarification and information at lines 151-156.

6. At lines 153-155 we have better explained what 'scheduling' is.
7. We really appreciate the reviewer's comment. We have reorganized the structure of Methods as suggested.

8. We changed the title of 'Process definition and architecture' at line 337.

9. Thank you for this direction, we have addressed this issue. We have moved the paragraph at line 136-138.

10. Regarding the performance evaluation, results were reported in the text at lines 400-418. In particular, time reduction resulted statistically significant and the p values were listed at lines 401-404. We have also provided the range of time spent per patient (see lines 417-418).

11. Thank you for this advice. We agree with your assessment, we have enriched the discussion (see lines 467-494).

Response to comments from Reviewer #2

1. Thanks for the suggestion, in the section: “other benefits obtained” were listed some specific benefits to demonstrate the advantages of the use of BPM in the hospital.

2. At lines 356-357 we have better explained this issue.

3. Thanks for the suggestion, we agree with you and we have rewrite the paragraph in a brief and concise manner as suggested (see lines 136-156).