PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (see an example) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Experiences of Leaders in the Implementation of Lean in a Teaching Hospital: Barriers and Facilitators in Clinical Practices
AUTHORS	Aij, Kjeld; Simons, Frederique; Widdershoven, Guy; Visse, Merel

VERSION 1 - REVIEW

REVIEWER	John s Toussaint M.D. CEO Thedacare Center for Healthcare Value
REVIEW RETURNED	17-Aug-2013

THE STUDY	It is unclear to me what the "action points" are. I would like to see a list of them or at least a summary of the key action points. There is new evidence that a lean management system shows improved patient outcomes. It would be nice to include this from JAMA Internal Medicine march 2013. K. John McConnell, PhD; Richard C. Lindrooth, PhD; Douglas R. Wholey, PhD; Thomas M. Maddox, MD; Nick Bloom, PhD JAMA Intern Med. 2013;173(8):684-692. doi:10.1001/jamainternmed.2013.3577.
RESULTS & CONCLUSIONS	I think the final several paragraphs are rambling and need to be tightened up. There is too much speculation. Stick to the conclusions based on the interviews and don't over analyze or read into the interviews ideas that aren't there.
GENERAL COMMENTS	My experience in implementing lean in hospitals is consistent with the findings of the researchers interviews. I think this paper accurately identifies the barriers to lean implementation in healthcare.

REVIEWER	Dr David M Rea, Associate Professor and Head of Public Health and Policy Studies, College of Human and Health Sciences, Swansea University, Singleton Park, Swansea I know of no competing interests
REVIEW RETURNED	23-Aug-2013

THE STUDY	Statistical methods were not used in this study, so have answered "no" to two of the questions. Another question relates to the use of actual patients and this is inappropriate for this study, so I have also answered no to it. I do have a question about the reference to axial coding in that I'd like more detail and justification. Just a sentence or two. It's origins are in grounded theory, but this study clearly was not of that type. Indeed, it's not clear what type of study this was. Addressing the 'meaning of leadership' would suggest a grounded theory approach or maybe symbolic interactionist approach. Nothing is made explicit

	about this. The account of the methods used is fair enough, given the restriction of word limitations, but interviews might not have been the only method possible in this kind of study and some direct observation of events/phenomena would have added considerably. So, would like to know if these were considered and if not why? And if they were, why were they rejected? Or were they made but just not included? The references are up-to-date, but the paper does not refer to any previous research evidence about improving quality management to health care. It also does not provide a definition of leadership. Leaders were simply selected and it's not clear how they were defined as leaders. We're merely told they were 'team leaders' and they were selected for LTP training. Given all that can be (and has been) written about team leadership and devolved leadership, this seems inadequate. Does going on a four-day training programme make someone a leader? This is issue is important because the study's objective is to address a gap in the literature regarding the perceptions of leaders and 'the meaning of leadership'. Moreover, the study goes some way towards addressing the questions raised above - if leaders are defined as people who think they are leaders.... or if four days of training is not enough
RESULTS & CONCLUSIONS	There is no discussion of previous evidence regarding leadership, improvement, or change within health care. The message is rather vague - the conclusion recounts things that could be recommended about managing any organisational change anywhere. I'd prefer to see direct linkage between these conclusions and some of the evidence of the study. This brings me to the issue of credibility - I would like to see more richness in the accounts of what was done. I would rather have this than some managerial generalities in the conclusion.
GENERAL COMMENTS	Despite my comments and questions above, I really would welcome publication of this study

VERSION 1 – AUTHOR RESPONSE

Reviewer #1:
John s Toussaint M.D.
CEO Thedacare Center for Healthcare Value, Appleton Wi, 54911, USA

1. It is unclear to me what the "action points" are. I would like to see a list of them or at least a summary of the key action points.

Response:
Yes, we are aware that we did not mention a list of action points. The success of specific action points is not part of the aim of our paper; therefore, the nature of specific action points as formulated by participants seems to be inconsequential for our purposes. – We did mention key action points in the results-section, paragraph ‘Action points’: … The executed action points included expanding lean knowledge, using lean tools (e.g., 5S, stand-ups, value stream mapping (VSM)), measuring key performance indicators, adjusting one's own work structure, learning to recognise waste, asking ‘Why’ five times, improving care processes/eliminating waste, giving co-workers time for improvement, involving senior management, improving the culture, and educating colleagues about lean. However,

we adjusted [figure 1] to make it more explicit.

2. There is new evidence that a lean management system shows improved patient outcomes. It would be nice to include this from JAMA Internal Medicine march 2013.
K. John McConnell, PhD; Richard C. Lindrooth, PhD; Douglas R. Wholey, PhD; Thomas M. Maddox, MD; Nick Bloom, PhD
JAMA Intern Med. 2013;173(8):684-692. doi:10.1001/jamainternmed.2013.3577.

Response:
We agree with the reviewer. We have included this article in the references and we have added a sentence on this in the introduction-section, second paragraph.

3. I think the final several paragraphs are rambling and need to be tightened up. There is too much speculation. Stick to the conclusions based on the interviews and don't over analyze or read into the interviews ideas that aren't there.

Response:
We agree with the reviewer. Please see the adjustments in the last two paragraphs of the discussion-section.

4. My experience in implementing lean in hospitals is consistent with the findings of the researchers interviews. I think this paper accurately identifies the barriers to lean implementation in healthcare.

Response:
We are pleased with this comment.

Reviewer #2:
Dr David M Rea, Associate Professor and Head of Public Health and Policy Studies, College of Human and Health Sciences, Swansea University, Singleton Park, Swansea, SA2 8PP, UK

1. I know of no competing interests

Response:
We agree with the reviewer.

2. I do have a question about the reference to axial coding in that I'd like more detail and justification. Just a sentence or two. It's origins are in grounded theory, but this study clearly was not of that type. Indeed, it's not clear what type of study this was. Addressing the 'meaning of leadership' would suggest a grounded theory approach or maybe symbolic interactionist approach. Nothing is made explicit about this.

Response:
We agree with the reviewer. We have changed this. The analysis has been carried out as an inductive thematic analysis approach (Saldana, 2013). The process has been described under ‘data analysis’ section. Axial coding is a way to relate open codes into categories. Originally this approach has been developed by Glaser and Strauss, but our study is indeed not conducted from a Grounded Theory approach. We have updated the reference.

3. The account of the methods used is fair enough, given the restriction of word limitations, but interviews might not have been the only method possible in this kind of study and some direct

observation of events/phenomena would have added considerably. So, would like to know if these were considered and if not why? And if they were, why were they rejected? Or were they made but just not included?

Response:
Yes, we are aware that some direct observations could have added considerably to our study. However, in our study we have focused specifically on the experiences of employees. We argued that this kind of information was best collected through interviews. Besides that, we had to take into account the limited available budget for this study.

4. The references are up-to-date, but the paper does not refer to any previous research evidence about improving quality management to health care.
Response:
We agree with the reviewer. We have included an article from McConnell et.al. (2013) in the references and we have added a sentence on this in the introduction-section, second paragraph.

5. It also does not provide a definition of leadership.
Leaders were simply selected and it's not clear how they were defined as leaders. We're merely told they were 'team leaders' and they were selected for LTP training. Given all that can be (and has been) written about team leadership and devolved leadership, this seems inadequate. Does going on a four-day training programme make someone a leader? This is issue is important because the study's objective is to address a gap in the literature regarding the perceptions of leaders and 'the meaning of leadership'. Moreover, the study goes some way towards addressing the questions raised above - if leaders are defined as people who think they are leaders.... or if four days of training is not enough

Response:
We agree with the reviewer that leadership is an ambiguous term. The purpose of a four-day training programme was not to make someone a leader. In this study, we understood leaders to be those people who were the head of a team of at least 30 team members with a minimum of 3 years of team leader experience; we did not discriminate between the level of education of either team members or team leaders. We have added a sentence in the method-section to clarify this issue. We also changed a sentence in the abstract-section, objective paragraph to clarify that our study focused on experiences of leaders themselves, rather than the meaning of leadership.

6. As above, there is no discussion of previous evidence regarding leadership, improvement, or change within health care.

Response:
Yes, this is an interesting comment we have considered. Partly due to limited word counts, we argued that these topics were out of the scope of our current research that focussed solely on the topic of lean implementation, independently from the success of lean in comparison with other leadership or change interventions.

7. The message is rather vague - the conclusion recounts things that could be recommended about managing any organisational change anywhere.
I'd prefer to see direct linkage between these conclusions and some of the evidence of the study.

Response:
We agree with the reviewer. In line with the reviewers comment, we have changed the text and used terms more congruently in order to create more linkage between the conclusion-section and results/discussion-section.

8. This brings me to the issue of credibility - I would like to see more richness in the accounts of what was done. I would rather have this than some managerial generalities in the conclusion.

Response:
We have added an example in the text to give more insight of what was done.

9. Despite my comments and questions above, I really would welcome publication of this study
Response:
We much appreciate this recommendation.