

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	The Effectiveness and Meaningful Use of Pediatric Surgical Safety Checklists and Their Implementation Strategies: A Systematic Review with Narrative Synthesis
AUTHORS	Lagoo, Janaka; Lopushinsky, Steven; Haynes, Alex; Bain, Paul; Flageole, Helene; Skarsgard, Erik; Brindle, Mary E

VERSION 1 – REVIEW

REVIEWER	Arivid Steinar Haugen Department of Anaesthesia and Intensive Care, Haukeland University Hospital, Bergen, Norway
REVIEW RETURNED	26-Feb-2017

GENERAL COMMENTS	<p>This study aims to investigate the effectiveness of pediatric surgical safety checklists (SSCs) within a systematic review of literature. The manuscript is well written and the review target patient safety for pediatric patients including parents' involvement in the use of surgical safety checklists. Effect studies of the WHO SSC introduction have largely been studied in adult populations, so raising patient safety checklist usage in pediatric surgery is highly welcome. Even though this review is very transparent on how it has been carried out, there are a few minor issues that could be clarified. The study aim needs to be stated more explicit in the introduction section. In page 5 and lines 22-33, the authors explain what has been performed rather than stating the aim for the study. Preferably, this sentence could be transferred to the introduction of the Method section. In the Method section (page 5, lines 44-46) the aim is stated. Study aim belongs in the Introduction section and not in the Method section. Please amend this.</p> <p>Further, results should be reported under Results, i.e. page 7, line 49-52. As far as I understand, this sentence includes results and should be rephrased or moved into the Result section.</p> <p>For the general reader it would be helpful to provide a definition for the term "pediatric patients". This is also important for understanding which studies that have been excluded. Some information about this is provided in Appendix I, and could additional be clearly stated in the Method section.</p> <p>A limitation of this study worth being mentioned is that some WHO SSC published studies that include all patient ages (also pediatric patients) might not have been identified through the PICO and the search strategy. These studies might not have been explicit for pediatric patient, though they could be part of the studies.</p> <p>Overall, this manuscript was very interesting to read and the authors have focused on a SSC research area with limited evidence. They make a well balanced summary of the existing literature.</p>
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REVIEWER	James O'Leary Hospital for Sick Children, Toronto, Canada
REVIEW RETURNED	25-Apr-2017

GENERAL COMMENTS	<p>GENERAL COMMENTS</p> <p>The rationale for undertaking this review is clear, but considering the limited number of publications in this field and diversity of outcomes used the subject does not easily lend itself to evidence synthesis. The authors are commended for their approach to assimilating a comprehensive review source, but a narrative or realist review may be more efficient for conveying this information and would allow for a more in-depth and nuanced discussion. The paper would also benefit from an increased emphasis on differences between pediatric and adult surgical populations, and the roles of communication and family in pediatric healthcare, especially in the context of the mechanisms of action proposed for surgical safety checklists.</p> <p>SPECIFIC COMMENTS</p> <p>MAJOR</p> <p>1. Some of the original research identified and included in the review by the authors may not meet the study eligibility criteria or answer the study questions, please justify or revise:</p> <p>i). Considering the definition used for the study intervention (page 5, line 58: that a physical and/or electronic checklist is performed), references 26 (Khoshbin) and 27 (Norton) would be excluded. Although both measure novel methods of communication in the operating room they did not employ (surgical safety) checklists.</p> <p>ii). Jenkins et al. (ref 20) evaluated the effectiveness of a comprehensive change strategy, not surgical safety checklists alone, using multiple interventions focused on perioperative safety, communication, staff empowerment and education. This study cannot discriminate the effectiveness of surgical safety checklists to improve outcomes in a pediatric surgical population and improvements in outcomes demonstrated here cannot be attributed to surgical safety checklist implementation.</p> <p>iii). Skarsgard's survey of Canadian Surgical Chiefs measures physicians perceptions of aspects of surgical safety checklists and does not directly evaluate parental involvement in checklists.</p> <p>2. Idea webbing and Figure 2 have the potential to organize and structure information, but in this iteration give the reader the impression that you have demonstrated a casual relationship between implementation strategy and outcomes. This is misleading and, in addition, it is incorrect to describe the Ontario studies as having no implementation strategy - they were implemented in 100+ hospitals each with individual implementation and maintenance strategies. If you decide to keep Fig 2, the connections between "comprehensive implementation strategies" and outcomes needs to be cleaned in the diagram.</p> <p>3. As a narrative synthesis, I would expect a more systematic summary and interpretation of findings. The synthesis often lacks explanation in the reporting of individual studies results, and in the Discussion there are several summary statements that are not explained by the results of the review, particularly in the first and last paragraphs.</p> <p>MINOR</p> <p>1. The authors describe this research as a systematic review with a</p>
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	<p>narrative synthesis but, considering the non-specific research questions generated and minimal data synthesis, it would be more appropriate to describe this research as an advanced literature search and narrative review.</p> <p>2. page 4, line 51: "Communication strategies have evolved to anticipate a short preoperative period accompanied by significant stress when the patient enters the OR prior to induction." - references needed.</p> <p>3. Methods: The aim stated here (page 5, line 44: explore the effectiveness of pediatric surgical safety checklists) does not accurately reflect the research questions asked.</p> <p>4. Kappa coefficients are reported but include how disagreement was resolved.</p> <p>5. "Subgroup themes were identified in an iterative fashion through examination of extracted data" - It needs to be clarified earlier in the text whether research questions and outcomes were chosen a priori or determined from the results of the literature search.</p> <p>6. Page 6, line 6: "Any study involving an interventional procedure undertaken with a general anesthetic was considered." - general anesthesia was not used as a search term.</p> <p>7. Page 9, line 42: "O'Leary's study only reported a single death in the entire study." This sentence is not useful, as mortality was not a study outcome here. In addition, the population used by O'Leary was described as being "common" pediatric surgical procedures which excluded CV surgery. This difference is important to make when comparing with Urbach's Ontario data and results, for reporting Table 1, and for generalizing the review results to other pediatric healthcare settings.</p> <p>8. The Discussion would read better using a more ordered structure, such as: 1. State the Major Findings of the Study; 2. Explain the Meaning of the Findings and Why the Findings Are Important; 3. Relate the Findings to Those of Similar (in this case adult) Studies; 4. Consider Alternative Explanations of the Findings; 5. State the Clinical Relevance of the Findings; 6. Acknowledge the Study's Strengths and Limitations; 7. Give the "Take-Home Message" in the Form of a Conclusion.</p> <p>9. Page 25: "Selection bias may have resulted in suppression of negative results." - this sentence would benefit from an explanation.</p> <p>10. Appendix 1. Some of the search strategy terms are incongruous: e.g., you searched for "universal protocol" but not "surgical safety checklists", please justify.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Arvid Steinar Haugen

Institution and Country: Department of Anaesthesia and Intensive Care, Haukeland University

Hospital, Bergen, Norway

Competing Interests: None declared.

Review report:

Comment:

This study aims to investigate the effectiveness of pediatric surgical safety checklists (SSCs) within a systematic review of literature. The manuscript is well written and the review target patient safety for

pediatric patients including parents' involvement in the use of surgical safety checklists. Effect studies of the WHO SSC introduction have largely been studied in adult populations, so raising patient safety checklist usage in pediatric surgery is highly welcome. Even though this review is very transparent on how it has been carried out, there are a few minor issues that could be clarified.

The study aim needs to be stated more explicit in the introduction section. In page 5 and lines 22-33, the authors explain what has been performed rather than stating the aim for the study. Preferably, this sentence could be transferred to the introduction of the Method section. In the Method section (page 5, lines 44-46) the aim is stated. Study aim belongs in the Introduction section and not in the Method section. Please amend this.

Response:

We moved our methods description into the method section and stated our study aim at the end of the introduction. This seems much clearer. Thank you.

Comment:

Further, results should be reported under Results, i.e. page 7, line 49-52. As far as I understand, this sentence includes results and should be rephrased or moved into the Result section.

Response:

We agree that the line "The resulting subgroups explored effectiveness, implementation strategies and attitudes towards the checklist" is more appropriate for the results section given that the subgroups are identified in the process of the analysis. We have removed this line from the methods and have added this statement at the end of the first paragraph of the results section "Outcomes assessed within selected studies included attitudes, barriers/facilitators, and effectiveness in terms of clinical and process measure outcomes."

Comment:

For the general reader it would be helpful to provide a definition for the term "pediatric patients". This is also important for understanding which studies that have been excluded. Some information about this is provided in Appendix I, and could additionally be clearly stated in the Method section.

Response:

Thank you. We have now included the following statement in the second paragraph of our methods section "For the purposes of our work, we defined pediatric patients as those less than 18 years of age."

Comment:

A limitation of this study worth being mentioned is that some WHO SSC published studies that include all patient ages (also pediatric patients) might not have been identified through the PICO and the search strategy. These studies might not have been explicit for pediatric patient, though they could be part of the studies.

Response:

Good point! We had performed a search without restricting our search to pediatric patients and the number of citations generated by the search was unmanageable. We have now included as a limitation "Some WHO SSC published studies that include pediatric patients within studies of patients of all ages might not have been identified through our search strategy."

Comment:

Overall, this manuscript was very interesting to read and the authors have focused on a SSC research area with limited evidence. They make a well balanced summary of the existing literature.

Response:
Thank you.

Reviewer: 2
Reviewer Name: James O'Leary
Institution and Country: Hospital for Sick Children, Toronto, Canada
Competing Interests: None declared

Thank you for the opportunity to review this manuscript.

GENERAL COMMENTS

Comment:
The rationale for undertaking this review is clear, but considering the limited number of publications in this field and diversity of outcomes used the subject does not easily lend itself to evidence synthesis. The authors are commended for their approach to assimilating a comprehensive review source, but a narrative or realist review may be more efficient for conveying this information and would allow for a more in-depth and nuanced discussion. The paper would also benefit from an increased emphasis on differences between pediatric and adult surgical populations, and the roles of communication and family in pediatric healthcare, especially in the context of the mechanisms of action proposed for surgical safety checklists.

Response:
Thank you for your suggestions. We particularly appreciate your suggestion to look further into the role of communication and family in checklists and have made a concerted effort to explore that further in our paper and have done significant editing especially in our discussion to bring out these differences. There is a clear need for additional studies looking specifically at communication strategies in checklist use in pediatrics. We hope to explore this in our future work.

SPECIFIC COMMENTS

MAJOR

1. Some of the original research identified and included in the review by the authors may not meet the study eligibility criteria or answer the study questions, please justify or revise:

i). Considering the definition used for the study intervention (page 5, line 58: that a physical and/or electronic checklist is performed), references 26 (Khoshbin) and 27 (Norton) would be excluded. Although both measure novel methods of communication in the operating room they did not employ (surgical safety) checklists.

Response:
It was not our intention to require that a checklist is physically completed for the study to be included but that a physical checklist exists and is used as a tool to aid in the perioperative safety process. We have corrected our wording to emphasize that. We elected to include checklist tools that existed before or around the time that the WHO checklist was developed. Some of the terminology used in these earlier papers is vague but we have followed up with these institutions to ensure that we are correctly interpreting their use of a checklist.

Khoshbin's study does describe the use of a checklist "At SickKids the surgical time-out consists of a 9-point checklist (Box 2)." We regarded this as a physical checklist as it was described in the sentence that followed the previous statement " In all ORs there is a 1-page laminated poster highlighting the key components of huddles and time-outs to facilitate and guide the discussions"

The Norton paper (ref 27) does describe the use of checklists although in the presentation of the paper, these descriptions are buried within the text. "The policy champion developed a time out and site verification checklist to be used in the OR to meet recommendations from the Joint Commission" (p. 1189). There is further description of this checklist although they refer to it is a timeout script (but is used as a checklist): "The Universal Protocol champion created a script with this information, and the script was placed in all sterile custom packs to act as another visual reminder. The scrub person was responsible for placing the bold, orange time out script on the Mayo stand." (p 1190) This was eventually developed to be the "Preprocedure Patient Safety Checklist" which is described as a physical page to be completed (Table 1).

ii). Jenkins et al. (ref 20) evaluated the effectiveness of a comprehensive change strategy, not surgical safety checklists alone, using multiple interventions focused on perioperative safety, communication, staff empowerment and education. This study cannot discriminate the effectiveness of surgical safety checklists to improve outcomes in a pediatric surgical population and improvements in outcomes demonstrated here cannot be attributed to surgical safety checklist implementation.

Response:

We completely agree with this observation and one of the challenges of evaluating the performance of a safety checklist is that it is a tool that can only effectively work integrated into a comprehensive strategy. The checklist does form a key tool within Jenkin's study to provide a method of reinforcing desired behaviours. Although we had mentioned this in our discussion, we have further emphasized this especially as it comes to interpreting the impact of the checklist.

iii). Skarsgard's survey of Canadian Surgical Chiefs measures physicians perceptions of aspects of surgical safety checklists and does not directly evaluate parental involvement in checklists.

Response:

We agree and have further developed our discussion around this element of Skarsgard's survey. The impression of the surgical chiefs on the value of parental involvement is relevant in that it will act as either a barrier or facilitator to developing a strategy of parental participation. This ties into your initial comments on exploring the role of parents within a checklist and we have further emphasized this.

2. Idea webbing and Figure 2 have the potential to organize and structure information, but in this iteration give the reader the impression that you have demonstrated a casual relationship between implementation strategy and outcomes. This is misleading and, in addition, it is incorrect to describe the Ontario studies as having no implementation strategy - they were implemented in 100+ hospitals each with individual implementation and maintenance strategies. If you decide to keep Fig 2, the connections between "comprehensive implementation strategies" and outcomes needs to be cleaned in the diagram.

Response:

We agree and do not want this misinterpreted. Given the broad range of potential implementation strategies that may have occurred in O'Leary's study, we removed this from the idea web. As above, we have tried to emphasize that these are conceptual relationships and not necessarily causative. We have cleaned up Figure 2 to make it clearer.

3. As a narrative synthesis, I would expect a more systematic summary and interpretation of findings. The synthesis often lacks explanation in the reporting of individual studies results, and in the Discussion there are several summary statements that are not explained by the results of the review, particularly in the first and last paragraphs.

Response:

We have edited our results and systematically summarized findings within tables and under headings. We are more succinct in describing our major findings at the outset of the discussion and link summary statements with support. We agree that our final statement was a departure from the results of our review and we have concluded with a finding more in line with our synthesis.

MINOR

1. The authors describe this research as a systematic review with a narrative synthesis but, considering the non-specific research questions generated and minimal data synthesis, it would be more appropriate to describe this research as an advanced literature search and narrative review.

Response:

Regarding the type of review, we agree that this study is not a traditional systematic review. There are, however, other systematic reviews that have taken a similar broad scope combining different study types and mixed methods of synthesis setting some precedent for this in the literature.

Popay, Jennie, et al. "Guidance on the conduct of narrative synthesis in systematic reviews." A product from the ESRC methods programme Version 1 (2006): b92.

Harden, Angela, and James Thomas. "Methodological issues in combining diverse study types in systematic reviews." *International Journal of Social Research Methodology* 8.3 (2005): 257-271.

Bélanger, Emmanuelle, Charo Rodríguez, and Danielle Groleau. "Shared decision-making in palliative care: a systematic mixed studies review using narrative synthesis." *Palliative Medicine* 25.3 (2011): 242-261.

Response:

We have made substantial efforts to keep with the search strategies, screening and narrative synthesis strategies of a systematic review. We have altered the title to indicate the scope of the study. We have also now emphasized in our discussion that this review is not a traditional systematic review and presents a broader scope. We do understand that this study could be described as some other type of knowledge synthesis. We are happy to consider other alternative descriptions if this is still desired.

2. page 4, line 51: "Communication strategies have evolved to anticipate a short preoperative period accompanied by significant stress when the patient enters the OR prior to induction." - references needed.

Response:

We have added the reference for this.

3. Methods: The aim stated here (page 5, line 44: explore the effectiveness of pediatric surgical safety checklists) does not accurately reflect the research questions asked.

Response:

We have altered both the title and the aims (now placed at the end of the introduction) to reflect the research question more accurately. This reads "The aim of our study is to investigate the effectiveness and meaningful use of pediatric surgical safety checklists and their implementation strategies within a systematic review of literature"

4. Kappa coefficients are reported but include how disagreement was resolved.

Response:

This is now included. Disagreement was resolved through discussion or third person (author SL) arbitration.

5. "Subgroup themes were identified in an iterative fashion through examination of extracted data" - It needs to be clarified earlier in the text whether research questions and outcomes were chosen a priori or determined from the results of the literature search.

Response:

We did use some a priori questions and outcomes but also included outcomes that arose through the literature search. This is now described in the second paragraph of the methods "Clinical outcomes, process measures, and attitudes are explored as well as elements of implementation are synthesized using a narrative synthesis approach; with exploration of themes and contents through subgroup analyses. A priori, we established clinical outcomes, measures of compliance and assessment of barriers and facilitators as measures of interest. However, we also allowed for the identification of additional measures through the literature search."

6. Page 6, line 6: "Any study involving an interventional procedure undertaken with a general anesthetic was considered." - general anesthesia was not used as a search term.

Response:

General anesthesia was not but used as a search term so that we could cast a broad net. We felt that adding this as a required element in the search would narrow down our results (some OR checklist papers might not specifically mention general anesthesia) but we did exclude any studies that did not involve cases under general anesthetic in our screening process.

7. Page 9, line 42: "O'Leary's study only reported a single death in the entire study." This sentence is not useful, as mortality was not a study outcome here. In addition, the population used by O'Leary was described as being "common" pediatric surgical procedures which excluded CV surgery. This difference is important to make when comparing with Urbach's Ontario data and results, for reporting Table 1, and for generalizing the review results to other pediatric healthcare settings.

Response:

Our purpose in mentioning the single death was to underline that determining an impact on mortality would be challenging when the outcomes are so rare. We have removed this statement. We added the description of cases for O'Leary's study as including common cases in Table 1. We have also added this additional description for O'Leary's and Urbach's studies "O'Leary and Urbach's studies reminds us that a strategy that is primarily focused on mandating checklist use to improve outcomes

in pediatric surgical patients is unlikely to provide much benefit. This is particularly true when dealing with low risk patients in high-income settings”

8. The Discussion would read better using a more ordered structure, such as: 1. State the Major Findings of the Study; 2. Explain the Meaning of the Findings and Why the Findings Are Important; 3. Relate the Findings to Those of Similar (in this case adult) Studies; 4. Consider Alternative Explanations of the Findings; 5. State the Clinical Relevance of the Findings; 6. Acknowledge the Study’s Strengths and Limitations; 7. Give the “Take-Home Message” in the Form of a Conclusion.

Response:

We have extensively revised the discussion with your suggestions in mind. We feel this is improved.

9. Page 25: “Selection bias may have resulted in suppression of negative results.” - this sentence would benefit from an explanation.

Response:

This was an error and should be “reporting bias”. We have edited our discussion and limitations to reflect this

10. Appendix 1. Some of the search strategy terms are incongruous: e.g., you searched for “universal protocol” but not “surgical safety checklists”, please justify.

Response:

The search includes truncated terms for checklists including (in PubMed syntax) checklist*, check list*, prechecklist*, postchecklist*, and several others. These terms, which were extracted from known studies describing checklists, will capture any named checklist that includes these roots ('surgical safety checklist' is captured by checklist*, for instance). We included 'universal protocol' since we were aware of its usage. 'Protocol' alone is not specific to checklist-like instruments.

VERSION 2 – REVIEW

REVIEWER	Arvid Steinar Haugen Department of Anaesthesia and Intensive Care, Haukeland University Hospital, Bergen, Norway
REVIEW RETURNED	04-Jun-2017

GENERAL COMMENTS	<p>The authors have changed the manuscript on several points as raised in the previous reviews. However there are a few minor points to address.</p> <p>The aim and the MS title have been made more accurate, however in the abstract ‘Objective’ needs to be changed accordingly (page 2, line 9-11).</p> <p>The review process of both inclusion and exclusion of titles and abstracts, and the full-text review was measured with Kappa. The authors also performed a quality check of the included studies using a modified tool based on the NIH, Newcastle-Ottawa and CASP quality assessment tools. The studies were rated in three categories “Good”, “Fair” or “Poor”. When developing or modifying tools like this, it would also be reassuring if a Kappa was provided also for the inter-rater reliability for the two raters that performed the quality assessment. The authors should consider to do this analysis if possible.</p>
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	<p>In page 9, under the heading 'Study quality', the authors present results of the quality assessment of the studies. There are several inconsistencies here. For instant, reference number 19 appears both in the "poor" and "good" categories. Please clarify this.</p> <p>Further in this section, there is no presentation of studies categorized as "fair", or no presentation of why a study would be classified as "fair". Please amend this.</p> <p>The quality assessment of the studies could also be listed as a separate column in Table II (or a separate table). That would provide a good overview of how the quality was judged for each study.</p> <p>In general, the authors have addressed some important issues in this revised version and improved accuracy in the manuscript. The study raises important topics on parental participation in the use of checklists and on strategies for implementation of quality improvement in pediatric care.</p>
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REVIEWER	Alexander Macdonald Great Ormond Street Hospital for Children, UK
REVIEW RETURNED	12-Jul-2017

GENERAL COMMENTS	This is a robustly designed and - for the most part - well written review of an important subject area of general interest to those in pediatric surgical practice. However, I am not convinced that the paper has a clear standout message, or that the authors conclusions add anything beyond what is already known or obvious from the existing literature.
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REVIEWER	Bas Verhoeven Radboudumc, Nijmegen, The Netherlands
REVIEW RETURNED	22-Jul-2017

GENERAL COMMENTS	<p>The authors present important results for the use of checklists and the implementation of a pediatric per-operative safety system in which parents could play an important and crucial role. They mention and underline the importance of a (change in) safety culture which can only be achieved by comprehensive methods and cooperation of all caregivers and management. The qualitative review process is written in a clear manner.</p> <p>The reviewer also provided a file in addition to these comments. Please contact the publisher for full details.</p>
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VERSION 2 – AUTHOR RESPONSE

Please see our responses below

1. - Please work on improving the 'take home' message of the paper.

Response:

This editor's suggestion was also noted by Dr. MacDonald (reviewer 3) and we have tried to strengthen our message further.

The take home message of our paper is that "surgical safety checklists can form a key part of initiatives to improve surgical safety for children. Surgical safety checklists, however, require adaptation for the pediatric patient and environment both to improve patient safety and encourage acceptance. Parents may assume a unique role in the pediatric surgical safety checklists which may improve the patient and family experience and ultimately improve surgical safety." We have edited our concluding paragraph to more concisely summarize our take home point.

2. Please shorten the 'Strengths and Limitations' section on page 3. As a reminder, this section should contain up to five short bullet points, no longer than one sentence each, that ideally relate to the design/ methods of the study reported

Response:

We have done this. We now have a total of 5 short bullet points each limited to one sentence.

3. The aim and the MS title have been made more accurate, however in the abstract 'Objective' needs to be changed accordingly (page 2, line 9-11).

Response:

We have changed our objective in line with the aim and MS changes.

4. The review process of both inclusion and exclusion of titles and abstracts, and the full-text review was measured with Kappa. The authors also performed a quality check of the included studies using a modified tool based on the NIH, Newcastle-Ottawa and CASP quality assessment tools. The studies were rated in three categories "Good", "Fair" or "Poor". When developing or modifying tools like this, it would also be reassuring if a Kappa was provided also for the inter-rater reliability for the two raters that performed the quality assessment. The authors should consider to do this analysis if possible.

Response:

Our rating for each study was performed by two reviewers initially independently and then as a group of three where consensus was achieved through discussion and refinement. We did not record independent scores although we had independent agreement on all ratings of "poor". Several studies had two or more components evaluated, often with different levels of quality for each evaluated element (for example many studies evaluated checklist compliance in addition to clinical outcomes or attitudes). In manuscripts that had two different study elements, each were evaluated separately by each reviewer. In the case of disagreement, the third reviewer decided upon the final quality rating.

5. In page 9, under the heading 'Study quality', the authors present results of the quality assessment of the studies. There are several inconsistencies here. For instance, reference number 19 appears both in the "poor" and "good" categories. Please clarify this.

Further in this section, there is no presentation of studies categorized as "fair", or no presentation of why a study would be classified as "fair". Please amend this.

Response:

We have added a description of fair studies: those "that had sufficient numbers of patients and sufficient information about study design but had minor flaws in design such as the use of survey tools that were not validated or the use of compliance measures prone to bias". The apparent inconsistency in quality rating for reference 19 (Avansino) is that the compliance element of the study was judged to

be of “fair” quality while the quality of the survey data was judged to be of “good” quality. These different ratings are provided in Supplementary Table 1 and this is now indicated in the “Study Quality” section of “Results”

6. The quality assessment of the studies could also be listed as a separate column in Table II (or a separate table). That would provide a good overview of how the quality was judged for each study.

Response:

We agree that providing the quality assessments for these studies is useful. Our only table that includes all studies is Supplementary Table 1 and we have a column that includes the quality ratings in this. We now indicate that Supplementary Table 1 contains this information for readers.

7. Dr. Bas Verhoeven (reviewer 4) has made some textual suggestions that we have incorporated in our paper.

VERSION 3 – REVIEW

REVIEWER	Arvid Steinar Haugen Department of Anesthesia and Intensive Care, Haukeland University Hospital. Bergen, Norway
REVIEW RETURNED	18-Aug-2017

GENERAL COMMENTS	Review of Manuscript ID: bmjopen-2017-016298.R2. Title: The Effectiveness and Meaningful Use of Pediatric Surgical Safety Checklists and Their Implementation Strategies: A Systematic Review with Narrative Synthesis A major revision of the manuscript has under been undertaken by the authors. The narrative synthesis on the systematic review outcomes is now much more apparent in the result and discussion sections. The methodological issues that were raised in the review of the previous version have been satisfactory addressed. The relations between SSC and checklist strategies used for implementation of the intervention and compliance and outcomes are presented in a balanced way. I find the manuscript to provide information on pediatric surgical safety checklists and implementation strategies that is very useful.
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