PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	A qualitative study exploring factors influencing escalation of care of deteriorating children in a children's hospital
AUTHORS	Gawronski, Orsola; Parshuram, Christopher; Cecchetti, Corrado; Tiozzo, Emanuela; Ciofi degli Atti, Marta Luisa; Dall'Oglio, Immacolata; Scarselletta, Gianna; Offidani, Caterina; Raponi, Massimiliano; Latour, Jos

VERSION 1 – REVIEW

REVIEWER	Reviewer name Gerri Sefton Institution and Country Alder Hey NHS Children's NHS Foundation Trust, United kingdom Competing interests Also researching deterioration in children in hospital
REVIEW RETURNED	20-Dec-2017

GENERAL COMMENTS	I like the article. Nearly all my comments are about making the English more clearly understood.

REVIEWER	Reviewer name Sue Chapman Institution and Country Great Ormond Street Hospital for Children Competing interests None
REVIEW RETURNED	27-Dec-2017

GENERAL COMMENTS	Thank you for asking me to review this paper. It is an interesting study which provides a useful addition to the field. My main concern is that much of the important information on methodology is presented as supplemental data. So you cannot fully assess how the study was conducted and how data were analysed without reference to the supplemental data. In order for the paper can 'stand alone' information on recruitment of participants, how the focus groups were conducted and data analysis needs to be in the main paper. It would also be helpful to have some background on the support and escalation structure available at the hospital together with some information on the Bedside PEWS for people not familiar with it. For example, do you have a rapid response team and who is it composed of? Who can call the PICU team? Consultant, doctor, nurse, parent? Is there any training for staff on escalation of care for critical deterioration? How are early signs of deterioration managed? What is the role of the home team and ward staff? Just a brief outline would help the reader know whether the structure in place is similar (or not) to their own. Page 5, line 26-28 - the composition of the focus groups needs to be clearer. Were each of the staff groups identified allocated to a single focus group? Or were the focus groups of mixed professional groups? Did the parents in the focus groups know each other? If not, how was this managed?

	Did it create any issues of confidentiality? This could be outlined in the main paper and more detail presented as supplemental data. What was the justification for the approach as there are pro's and cons for each. It would also be helpful to have some outline demographic data (gender, years working in paeds etc) as this may affect the data. Parent participants: page 5, line 37. Did you have any restrictions on the time from the deterioration event to participation? What constitutes a clinical deterioration event? What does 'witness' a CDE mean? Did the parent have to be with the child at the time? This is important as CDE may have different meaning to different people. How did you avoid bias if the nurse manager effectively 'filtered' staff and parent participants? Sampling is critical in qualitative research and this section feels a little lean. Data collection and analysis: This section also feels a little lean on detail. You need to consult the supplemental data to find that data were audio-taped and transcribed. Other than stating that thematic analysis was performed, there is no information on how this was performed and no references. There are a number of approaches to thematic analysis, some more rigorous than others. THis is fundamental to the study and needs to be in the main body of the paper. Were all focus groups conducted in English? If not, the method of translation needs to be clarified, particularly how it was verified. If it was, was this the first language of all participants. Findings: Table 1 only presents 3 staff groups but the text describes 6 focus groups being conducted. It would be helpful to describe the key characteristics of each focus group together with some outline demographic data. Did any parent groups contain a mother and father diad? Why were no nurses recruited from the PICU? How long was each focus group? Did you analyse each group separately or merge the data? Did you do any sub-group analysis? Table 2: This might benefit from some formatting and description as it wasn't clear to me initially what were themes and sub-themes and how these differed from 'dimensions'. A footnote may help. Some terms were not easily understood without some further explanation, such as 'locus of control' (pg 7, line 12-13), 'Thrusting relationship' (line 21), 'fixation errors' (pg 8, line 5), 'continuity or care' (pg 8, line 28). Lines 41-46 on page 8 may be more helpful if presented before Table 2 rather than after. Impact of staff competencies and skills: Page 8, line 51. Where it is noted that 'all participants' identified differences in staff training, do you mean each of the 32 participants or that this theme was discussed in each focus group? Its an important difference. Did this include parents? Paediatric speciality education would seem (on the surface) to require considerable knowledge of medical and nurse training approaches. Page 8, lines 53 to 56 - I was not quite sure what you meant by this. Were the physicians discussing other physicians? Or Nurses? Or parents? Page 9, line 5 - the quote on its own does not make grammatical sense and so it is hard to understand. It may need some additional text adding in or some interpretation...e.g. 'won't listen [to] the less experience nurse'. Impact of relationships and leadership in care: This theme might need more description as it appears on the surface to be 2 different areas: relationships and leadership.

	The first sentance (lines 33-37) didn't quite make sense to me and it would help to have some explanation. Its also quite long and difficult to follow. Lines 42 again states 'all participants' so it just to clarify if this does mean that each of the 32 participants commented on this. Processes identifying and responding to clinical deterioration: Could you clarify what you mean by 'processes' in this theme? Critical thinking is not really a 'process' as such. Terms such as fixation errors need explanation. Influences of Organizational factors: How do these differ from 'processes'? A single sentence that summarises the theme in its entirety at the beginning of each section would really help the reader to understand and orientate themselves to each theme. Page 11, line 10. Can you clarify the term 'second class times'? Are you referring to sub-optimal care out of hours type issues? Discussion: The first sentence doesn't really mention competences and skills as one of your main themes. I'm also not sure that 'clinical skills and situational awareness' 'translate' into sharing risk awareness with the whole team. It seems to simplify what is a complex process involving hierarchy, workload, leadership, organisational culture etc etc. This also runs into the 3rd sentence (lines 46-48) where you describe limited understanding of physiological deterioration signs and reduced critical thinking as common....there is emerging research that indicates that culture, human error, workload and other human factors also affect escalation reliability. Page 12, line 21 - do you mean effect of communication gaps rather than role? Lines 44- page 13, line 15: This part of the discussion needs to be more strongly related to the data. I couldn't see where observations, PEWS and critical thinking were identified by your participants as fundamental. Rather, the findings highlight areas which were not followed reliably. Presenting the focus group schedule of what questions were asked would help the reader interpret this in more detail. Page 13, line 26 - Im not sure you can ever 'presume' anything in research. The term feels too strong in the absence of any evidence. Limitations: It would be helpful to discuss the limitations of focus groups as a method of data collection - groups may be dominated by one or 2 strong characters, some people may be discouraged from participating or expressing their 'true' views, composition of the groups matter - if your manager is present in the group, you may not express your views on the leadership in the organisation etc etc. The method may not be optimal for all participants, in particular parents, of whom 4 were noted to have 'dropped out' (about 1/3 of those recruited). They may each have different experiences, particularly if drawn from different areas, and may not know each other. So an understanding of why focus groups were selected rather than individual interviews, would be helpful. Conclusion: page 14, line 1: the word 'associated' may imply a scientific relationship between these factors and escalation of care. As your study was explorative it may need re-wording to show these are themes identified through your FGs. Line 10 - Are these qualitatively described endpoints? Or factors? Supplimental data: An outline of the Bedside PEWS might be helpful here.

	Much of the supplemental data on data collection and analysis is fundamental to the paper and it is hard for readers to assess the studies rigour without it. Page 24, line 5-9 - these scenarios need to be described. Overall, it would be helpful to have the schedule of questions and scenarios used for each FG in more detail in the supplemental data. Supplemental data 2: a footnote to explain how a dimension differs from a sub-theme would be helpful. Although a third of the focus groups were conducted with parents, there is generally only 1 or 2 quotes from these participants for each theme. It feels a little unbalanced. Minor issues: few typos and grammatical issues which would benefit from correction. Overall a very interesting paper but just needs more detail on the methodology and data analysis and some clarity on the themes and sub-themes. Many thanks

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer name: Gerri Sefton

Reviewer: 2
Reviewer name: Sue Chapman

Reviewer: 1
Institution and Country: Alder Hey NHS Children's NHS Foundation Trust, United kingdom

Reviewer: 2
Institution and Country: Great Ormond Street Hospital for Children

Reviewer: 1

< b>Comments to the Author
I like the article. Nearly all my comments are about making the English more clearly understood.

Reply: We thank the reviewer, we made the suggested amendments on the text to make it more clear.

Answer:
Reviewer: 2

Comments to the Author:
Thank you for asking me to review this paper. It is an interesting study which provides a useful addition to the field.

My main concern is that much of the important information on methodology is presented as supplemental data. So you cannot fully assess how the study was conducted and how data were analysed without reference to the supplemental data. In order for the paper can 'stand alone' information on recruitment of participants, how the focus groups were conducted and data analysis needs to be in the main paper.

It would also be helpful to have some background on the support and escalation structure available at the hospital together with some information on the Bedside PEWS for people not familiar with it. For example, do you have a rapid response team and who is it composed of? Who can call the PICU team? Consultant, doctor, nurse, parent? Is there any training for staff on escalation of care for critical deterioration? How are early signs of deterioration managed? What is the role of the home team and ward staff? Just a brief outline would help the reader know whether the structure in place is similar (or not) to their own.

Reply: We thank the reviewer for these comments. The section on data collection and analysis presented as supplemental data was moved to the main text. Background on the hospital support and escalation structure, including some more information about the BedsidePEWS is added on page 5. The following text was changed:

To respond to clinical deterioration, a Paediatric Intensive Care Unit (PICU) physician on patient duty can be called for advanced support or consultation to the hospital wards. The call is made by the ward physician according to clinical criteria set by a response system policy, which includes the Bedside Paediatric Early Warning System (BedsidePEWS). Nurses may directly call the PICU in case of emergency. Parents are excluded from the PICU calling process. The BedsidePEWS, is an expert driven score composed of seven critical indicators embedded in age specific clinical charts. The scores range between 0 and 26 (16,17).The score is matched to care recommendations which include type and frequency of monitoring, frequency of clinician's reviews and number of patients per nurse according to patient risk. The ward team manages early signs of deterioration until the patient is severely ill. A PICU consult is recommended when the score is ≥7. Ward staff were trained, continuing education is offered, and new staff receive BedsidePEWS education during the induction period.

Page 5, line 26-28 - the composition of the focus groups needs to be clearer. Were each of the staff groups identified allocated to a single focus group? Or were the focus groups of mixed professional groups?

Reply: the text was changed in the Method's section: "Separate focus groups (n=6) for each of staff nurses, nurse managers, ward physicians, PICU physicians and parents of admitted children were performed." Also in the data collection section, the focus group composition is specified: "At total of six focus groups were conducted with 32 participants: one focus group with ward nurses, one with nurse managers, one with ward physicians, one with PICU physicians and two with parents. (Table 1)."

Did the parents in the focus groups know each other? If not, how was this managed? Did it create any issues of confidentiality? This could be outlined in the main paper and more detail presented as supplemental data. What was the justification for the approach as there are pro's and cons for each. It would also be helpful to have some outline demographic data (gender, years working in paeds etc) as this may affect the data.

Reply: Parents did not know each other, as stated in the findings. Demographic data of focus group participants is described on table 1.

The text was changed as follows:
"Participating parents came from different wards. "

In the limitations section, issues of confidentiality are addressed: "Last, the topic may be perceived as threatening to discuss in a group setting, where privacy is limited, other participants may be unknown, discussion may be dominated by specific characters and emotions may be difficult to deal with.

This was addressed by providing a safe setting, avoiding hierarchies among healthcare providers within single groups and facilitating participant's expression of opinions and emotions through appropriate interviewing techniques".

Demographic data of study participants are described in Table 1, which was changed as follows:

Focus Groups
N° participants
Age (mean, range), y
Female, N° (%)
Work
experience in paediatrics (mean, range), y
Surgical ward, N° (%)
Nurses
7
40 (26-49)
7 (100)
15 (3-26)
3 (43)
Ward physicians
6
47 (30-61)
4 (66)
19 (4-33)
3 (50)
Nurse managers
6
42 (30-51)
6 (100)
21 (8-36)
2 (33)
PICU physicians
4
48 (42-58)
-
17 (11-29)
-
Parents
5
43 (35-50)
2 (40)

5 (100%)
Parents
4
43 (33-49)
2 (50)

3 (75%)
Total
32

Parent participants: page 5, line 37. Did you have any restrictions on the time from the deterioration event to participation? What constitutes a clinical deterioration event? What does 'witness' a CDE mean? Did the parent have to be with the child at the time? This is important as CDE may have different meaning to different people. How did you avoid bias if the nurse manager effectively 'filtered' staff and parent participants? Sampling is critical in qualitative research and this section feels a little lean.

Reply:

The definition of clinical deterioration event and timeframe was better specified as follows:

“Ward staff and parents of children who had personally witnessed a clinical deterioration event (PICU urgent admission or PICU consult) of their child during hospital admission within the previous 12 months were asked to participate. We excluded parents whose children were admitted to the PICU at time of enrolment to avoid additional burden. The parent had to be with the child at the time. ”

The description of enrollment was changed as follows:
“Enrolment occurred in two phases: first the nurse manager explored the interest of the most experienced available staff and identified the parents on the ward who had a deterioration event of their child; second, the researcher informed the potential participants of the study objectives and focus group methodology and collected the written informed consent upon agreement to participate. Staff were chosen by the researcher according to experience in paediatric care. A consent form was signed prior to the focus group.”
Bias was avoided by defining the inclusion and exclusion criteria. However, as suggested by the reviewer the bias of the nurse manager could be possible. We have addressed this in the limitation section as follows:
“Second, participant’s first selection was performed through the ward nurse managers, who better knew available staff and parents. Clear inclusion and exclusion criteria were provided to avoid selection bias”.

Data collection and analysis:
This section also feels a little lean on detail. You need to consult the supplemental data to find that data were audio-taped and transcribed. Other than stating that thematic analysis was performed, there is no information on how this was performed and no references. There are a number of approaches to thematic analysis, some more rigorous than others. This is fundamental to the study and needs to be in the main body of the paper.
Were all focus groups conducted in English? If not, the method of translation needs to be clarified, particularly how it was verified. If it was, was this the first language of all participants.

Reply: We thank the reviewer for this comment. We moved the methods description on the supplemental data to the main text.:

“A female researcher trained in qualitative research methods (OG) conducted semi-structured focus groups to explore the experiences and views of parents and healthcare professionals on escalation of care in the deteriorating child. At total of six focus groups were conducted with 32 participants: one focus group with ward nurses, one with nurse managers, one with ward physicians, one with PICU physicians and two with parents. (Table 1). In the two focus groups with the parents, nine parents of 8 children participated. The focus groups were performed in a private room in the hospital. A semi-structured interview schedule guided the discussion (Electronic Supplement Material 1). A female research nurse participated as an observer (GS) and provided field notes of the focus group discussion. All focus groups were audio-recorded and the research team transcribed verbatim the interview data.

Personal names and locations were anonymized, transcripts were translated into English, reviewed by a native English speaker and differences were resolved by discussion with the research team. During the focus groups two examples of clinical deterioration were used to prompt the recall of similar situations experienced by participants. The aim of the scenarios was to trigger the reflection on personal experiences and the expression of opinions on factors associated to different levels of escalation of care. One scenario described an event with timely escalation of care, the second described a scenario where the child deteriorated and was urgently admitted to PICU. First staff were asked to imagine they had a 3-month-old patient admitted from the Emergency Room for diarrhea and vomiting. After four hours, the child keeps having episodes of diarrhea and is not feeding well. His vital signs are moderately altered, the BedsidePEWS= 4. In the evening the nursing assessment results in an increased heart rate and capillary refill with a BPEWS=7. The physician called for a review prescribes an intravenous rehydration. After a few fluid boluses the vital signs improve. Staff was asked to consider factors that might have contributed to escalation of care in this patient. Then, the case of 5-year-old child with chronic kidney disease, just transferred from the PICU to the ward was presented. Her Bedside PEWS score at ward admission is 5 and within 24 hours increases to 9. Her Blood Pressure is constantly below normal ranges, the HR is high, she is on oxygen and work of breathing increases as the hours go by. She is readmitted to PICU after 24 hours. Staff was asked to consider what factors might have prevented escalation of care resulting in an urgent PICU readmission of this child. The two scenarios were used as examples to prompt the recall of clinical deterioration events experienced by participants, to explore factors facilitating or preventing timely escalation of care. Parents were asked to recall their experience of the clinical deterioration of their child on the ward and to describe the response of the ward staff. To trigger the discussion the interviewer described scenarios of clinical deterioration more easily understood by parents, such as of increased work of breathing or deteriorated consciousness. The interviewer asked participants to describe their opinion on what facilitates and what hinders a timely response to a child that deteriorates during hospital ward admission. Finally, they were asked their suggestions for improvement."

We added a description on how thematic analysis was performed and references:

"Two researchers (OG, JML) conducted an independent thematic analysis of the focus group contents. At first, they read the interviews to familiarize with the data. Then, they independently formulated subthemes across the data. They examined the codes to reach a consensus on the themes, by merging or renaming codes to provide a greater understanding of the phenomenon. A third researcher (CP) reviewed the themes and differences in coding were resolved through consensus".

The focus group language and method of translation was clarified by reviewing this text:

"Personal names and locations were anonymized, transcripts were translated into English, reviewed by a native English speaker and differences were resolved by discussion with the research team".

Findings:
Table 1 only presents 3 staff groups but the text describes 6 focus groups being conducted. It would be helpful to describe the key characteristics of each focus group together with some outline demographic data. Did any parent groups contain a mother and father diad? Why were no nurses recruited from the PICU? How long was each focus group? Did you analyse each group separately or merge the data? Did you do any sub-group analysis?

Table 2: This might benefit from some formatting and description as it wasn't clear to me initially what were themes and sub-themes and how these differed from 'dimensions'. A footnote may help. Some terms were not easily understood without some further explanation, such as 'locus of control' (pg 7,

line 12-13), 'Thrusting relationship' (line 21), 'fixation errors' (pg 8, line 5), 'continuity or care' (pg 8, line 28). Lines 41-46 on page 8 may be more helpful if presented before Table 2 rather than after.

Reply: Table 1 was changed into a description of all 6 focus groups.
One focus group contained a mother –father diad. Text was amended in the methods section as follows:
“In the two focus groups with the parents, nine parents of 8 children participated.”
Only ward nurses were interviewed since PICU nurses are not involved in assisting clinical deterioration events outside the PICU. Focus group duration was reported in the findings as follows:
“Mean focus group duration was 63 minutes (range 42-80 min).”
Data analysis: No sub-group analysis was performed.

Table 2. Lines 41-46 on page 8 have been moved before table 2 and changed as follows:
“Subthemes are further described by dimensions, as specific descriptions of the subthemes. (Table 2). Appendix 2 (Electronic Supplement Material 2) presents the themes, subthemes and relevant quotations of the focus groups.”

The following terms were changed as follows:
- locus of control into “Belief on ward responsibility for severely deteriorated patients: keeping high risk patients on the ward”
- thrusting relationships into “trust among staff members”,
- fixation errors into “Tunnel vision of reasons for clinical deterioration”
- continuity of care into “management and relational continuity”.

Impact of staff competencies and skills:
Page 8, line 51. Where it is noted that 'all participants' identified differences in staff training, do you mean each of the 32 participants or that this theme was discussed in each focus group? Its an important difference. Did this include parents? Paediatric speciality education would seem (on the surface) to require considerable knowledge of medical and nurse training approaches.

The sentence on line 51 was written more clearly and subthemes are specified as follows:
“Staff competencies and skills was a theme raised transversely by healthcare providers and parents. Subthemes include issues of standard baseline, specialty and advanced competences on the wards, the role of self perceived ability in decision making and communication in escalation of care, and supporting less expert staff through peer to peer mentoring when a child deteriorates.“

Page 8, lines 53 to 56 - I was not quite sure what you meant by this. Were the physicians discussing other physicians? Or Nurses? Or parents?

Reply: This issue was actually brought up both by physicians and nurses.
Text was changed as follows: “Nurses and physicians identified differences in staff training and lack of paediatric specialty education as potential risk factors. Heterogeneous baseline competency levels due to different educational pathways determine a state of uncertainty and distrust.”

Page 9, line 5 - the quote on its own does not make grammatical sense and so it is hard to understand. It may need some additional text adding in or some interpretation...e.g. 'won't listen [to] the less experience nurse'.

Reply: The text was changed into : “Because the doctor maybe won’t listen to the less experienced nurse”.

Impact of relationships and leadership in care:
This theme might need more description as it appears on the surface to be 2 different areas: relationships and leadership. The first sentence (lines 33-37) didn't quite make sense to me and it would help to have some explanation. Its also quite long and difficult to follow.
Lines 42 again states 'all participants' so it just to clarify if this does mean that each of the 32 participants commented on this.

Reply:
The theme was renamed “Relationships in care” and described with the following sentence:
“Relationships between healthcare professionals and with family members emerged as having an important role on escalation of care. Contributing factors identified in this theme are communication, teamwork, relational continuity of care, parent and nursing empowerment to call for advanced help, the role of hierarchies and leadership.”

Lines 42 was changed as follows:
“Across all focus groups issues of inter-professional communication emerged.”

Processes identifying and responding to clinical deterioration:
Could you clarify what you mean by 'processes' in this theme? Critical thinking is not really a 'process' as such. Terms such as fixation errors need explanation.

Reply: This theme was better described by this sentence:
“Healthcare providers described a series of actions and human factors related to the recognition of the deteriorating child and escalation of care.”

Also critical thinking is redefined as factor rather than a process “per se”, as follows:

“Critical thinking and situational awareness emerged as factors related to the decision-making process of escalating care.”

Fixation error was changed into “restrictive tunnel vision of the child’s condition”.

Influences of Organizational factors:
How do these differ from 'processes'? A single sentence that summarizes the theme in its entirety at the beginning of each section would really help the reader to understand and orientate themselves to each theme.
Page 11, line 10. Can you clarify the term 'second class times'? Are you referring to sub-optimal care out of hours type issues?

Reply:
A sentence summarizing the theme has been added at the beginning of each section. For this theme the following sentence was included:
“Focus group participants referred organizational factors such as staffing, workload, production pressure, continuity of care and patient pathways having an impact on escalation of care.”

Second class time referred to sub-optimal care out of hours; the sentences was changed as follows:
“Participants in all focus groups reported concerns about day and night staffing differences, potentially leading to suboptimal care”.

Discussion:
The first sentence doesn't really mention competences and skills as one of your main themes.

I'm also not sure that 'clinical skills and situational awareness' 'translate' into sharing risk awareness with the whole team. It seems to simplify what is a complex process involving hierarchy, workload, leadership, organizational culture etc, etc. This also runs into the 3rd sentence (lines 46-48) where you describe limited understanding of physiological deterioration signs and reduced critical thinking as common....there is emerging research that indicates that culture, human error, workload and other human factors also affect escalation reliability.

Reply: The first sentence was changed to include a synthesis of all themes, including competences and skills:
“Four main themes emerged from our focus group data describing factors influencing escalation of care: the impact of Staff Competences and Skills, the role of Relationships in Care, the role of Processes Identifying and Responding to Clinical Deterioration and the impact of Organizational Factors.”

The sentence “'clinical skills and situational awareness translate into sharing risk awareness with the whole team” was removed. This theme describes factors related to healthcare provider’s competencies. Other factors such as hierarchy, workload and organizational culture are addressed in other themes, described in later sections of the manuscript.

Page 12, line 21 - do you mean effect of communication gaps rather than role?

Reply: Yes, we changed “role” into “effect”.

Lines 44- page 13, line 15: This part of the discussion needs to be more strongly related to the data. I couldn't see where observations, PEWS and critical thinking were identified by your participants as fundamental. Rather, the findings highlight areas which were not followed reliably. Presenting the focus group schedule of what questions were asked would help the reader interpret this in more detail.

Reply: we thank the reviewer, the focus group questions have been added as Electronic Supplemental Material 1. I

n this section we added this sentence, to describe more clearly this theme:
“In our study we identified processes responding to clinical deterioration on the ward that are relevant to escalation of care. Patient observation, critical thinking supported by the BedsidePEWS, reducing hierarchical barriers to call for advanced help and PICU staff available for deteriorating patients emerged as fundamental elements for patient screening and escalation of care."

We also further described healthcare providers’ experience using the BedsidePEWS in the results section:

“Critical thinking and situational awareness emerged as factors related to the decision making process of escalating care. This is enhanced by the use of a screening tool, such as the BedsidePEWS, allowing for the measurement and visual display of vital signs with a frequency based on the child’s condition. Nurses and physicians recall cases when the BedsidePEWS was useful to identify subtle changes in the child’s condition, even in children with cronic diseases, which may already have baseline alterations of vital signs. On the other hand experiences of PICU referrals made late in the child’s deterioration were reported, when clinicians happened to focus on single aspects of a case resulting in a restrictive tunnel vision of the child’s condition despite elevated BedsidePEWS scores.”

Page 13, line 26 - Im not sure you can ever 'presume' anything in research. The term feels too strong in the absence of any evidence.

This section was rewritten as follows: “Aiken and colleagues described a correlation between nursing staffing and adult in-hospital mortality. Both PICU and ward physician staffing has also been found to be associated to reduced hospital and ICU mortality and LOS, also on weekends. There is also evidence of the impact of nurse staffing on clinical outcomes in children.”

Limitations: It would be helpful to discuss the limitations of focus groups as a method of data collection - groups may be dominated by one or 2 strong characters, some people may be discouraged from participating or expressing their 'true' views, composition of the groups matter - if your manager is present in the group, you may not express your views on the leadership in the organization etc etc. The method may not be optimal for all participants, in particular parents, of whom 4 were noted to have 'dropped out' (about 1/3 of those recruited). They may each have different experiences, particularly if drawn from different areas, and may not know each other. So an understanding of why focus groups were selected rather than individual interviews, would be helpful.

Reply: the reason for selecting focus group is stated in the study design section. This sentence was added: “Data were collected by focus groups because of the unique possibility of interaction and exchange of experiences between participants provided by this method.”

Limitations of focus group as a method of data collection is addressed in the limitations section of the discussion:
“Second, participant’s first selection was performed through the ward nurse managers, who better knew available staff and parents. Clear inclusion and exclusion criteria were provided to avoid selection bias. Third, findings may be subject to the researcher’s interpretation. However, data triangulation using independent analysis of two researchers was confirmed by a third researcher suggesting reproducibility of results. Last, the topic may be perceived as threatening to discuss in a group setting, where privacy is limited, other participants may be unknown, discussion may be dominated by specific characters and emotions may be difficult to deal with, especially with parents of admitted children. This was addressed by providing a safe setting, avoiding hierarchies among healthcare providers within single groups and facilitating participant’s expression of opinions and emotions through appropriate interviewing techniques.

Conclusion:
page 14, line 1: the word 'associated' may imply a scientific relationship between these factors and escalation of care. As your study was explorative it may need re-wording to show these are themes identified through your FGs.
Line 10 - Are these qualitatively described endpoints? Or factors?

Reply: this sentence was changed as follows: “We identified four themes describing factors that may be associated to escalation of care in deteriorating children”.
Also the word “qualitative endpoints” was changed with “factors”.

Supplemental data:
An outline of the Bedside PEWS might be helpful here.
Much of the supplemental data on data collection and analysis is fundamental to the paper and it is hard for readers to assess the studies rigour without it.
Page 24, line 5-9 - these scenarios need to be described.
Overall, it would be helpful to have the schedule of questions and scenarios used for each FG in more detail in the supplemental data.

Supplemental data 2: a footnote to explain how a dimension differs from a sub-theme would be helpful. Although a third of the focus groups were conducted with parents, there is generally only 1 or 2 quotes from these participants for each theme. It feels a little unbalanced.

Reply:
A description of the BedsidePEWS in the manuscript.
“The BedsidePEWS, is an expert driven score composed of seven critical indicators embedded in age specific clinical charts. The scores range between 0 and 26 (16,17).The score is matched to care recommendations which include type and frequency of monitoring, frequency of clinician’s reviews and number of patients per nurse according to patient risk. The ward team manages early signs of deterioration until the patient is severely ill. A PICU consult is recommended when the score is ≥7.”

The focus group questions guide was added to the Electronic Supplemental Data 1

Supplemental data 2: A footnote to explain the difference between subtheme and dimension was added. Also more parent’s quotes have been added.

VERSION 2 – REVIEW

REVIEWER	Reviewer name Sue Chapman Institution and Country Great Ormond Street Hospital for Children Competing interests None
REVIEW RETURNED	20-Mar-2018

GENERAL COMMENTS	Many thanks for asking me to review this manuscript again. I'm grateful to the authors for the time and effort they have made in revising the manuscript and for responding positively to the feedback. Overall the inclusion of more detail on the methodology has assisted greatly in making the paper clearer. I do have some comments, which I've listed below: Page 5, line 10 - what is an expert driven score? Line 1-24 - it might help to make the linkage between the PICU physician, the bedside PEWS and the education a little more explicit. Some of it might be in the ordering - it may be clearer if you discuss the PEWS first (together with how staff are trained) then the involvement of the local physician then the PICU consultant. Lines 33-37 a reference to support the assertion about focus groups might be helpful here. Not sure if it can be characterised as unique. Page 6, lines 1-14. Why did you choose the most experienced staff? And experienced in terms of what - number of years worked, number of CDE? It would help to have a little more justification for why this was chosen as it has the potential to introduce bias. More experienced people may have a different set of experiences to more junior staff. Your discussion highlights the issues that face junior staff yet it appears you did not recruit them to the focus groups. The line 'staff were chosen by the researcher' (who then conducted the interviews) also introduces the possibility of bias. No qualitative studies are free of bias, especially in terms of sampling, but it just needs some discussion either here or in the limitations. Page 7, lines 3-17. The scenario you describe would not be considered a CDE using your criteria. It would be helpful to know why you chose this scenario. The way in which you present the scenario's make it quite explicit that one is 'good' (line 15-17....contribute to escalation) and one is 'bad' (lines 28 ...prevented escalation of care). It may be that this was the approach taken to explicitly pull out facilitators and inhibitors, but real life is rarely so black and white.

	Good and appropriate care may be delivered but the child still requires transfer to PICU. More a comment from my perspective.. Data analysis: This section is much improved. It would be helpful for it to be expanded a little more so the reader can understand the actual process. Did you transcribe tape-recordings of the focus groups? Or was it a transcription service. Did you listen to the tapes? Was there then a translation into English as I note the hospital is in Italy. How was the veracity of this assessed. How did you developed your sub-themes. And was the coding then performed afterwards? what does 'examine the codes' mean? Were sub-themes then grouped to create themes? How did this happen. And where do dimensions fit in? Its such an important part of the methodology and is really where you get a sense of the rigour of the study so more info (still) would be helpful. Findings: Again, much improved. Overall comment in this section is that some of the data is presented more like a discussion rather than the reporting of the findings. For example Page 14, line 28-33...'this is enhanced...' As these are just findings at the moment it would seem better to say 'participants reported that screening tools such as the BPEWS were useful to help them...' Another example is page 12, line 54, 'critical care background are considered' sounds quite definitive as though it is your conclusion based on the data. Table 1 is helpful. I note that the mean age of all the participants is quite high. And that whilst most staff were drawn from medical wards, most parents were drawn from surgical wards. These factors may affect your findings and warrant a mention in the discussion. Table 2 is quite hard to following. It might be easier for the reader if the sub-themes were shaded rather than alternate lines. Page 9, Line 22: Words 'Appendix 2' seem redundant. Page 12, line 31, not sure of the word transversely. Maybe it was just raised in both types of focus groups. Lines 42-45: This is a really difficult sentence to follow..... Page 13, line 2. Still not sure what is meant by a 'locus' of control.... Line 28: 'relational continuity of care' is also difficult to understand. Lines 31 - 35. Might be helpful to split this sentence as it hard to follow. Page 14, line 52-56 doesn't quite make sense. Page 15, lines 5 'production pressure' needs clarifying. Lines 12: not sure 'organisational pressures' is exactly what you mean. Maybe competing clinical priorities?? Lines 28: Off service physicians needs a little explanation or rewording. 'Off service' could mean 'off duty' but I suspect this is more to do with cross-coverage of different specialities out of hours. Discussion: Again improved Page 16, line 2. The sentence starting our data illustrates the importance .... this sounds quite strong. Your study examined clinician thoughts and views but there is no 'hard evidence' to say these are important in terms of managing the deteriorating patient. Rather this is what healthcare professionals and parents consider important, which is a slightly different thing. Line 10-15 this is a hard sentence to follow. Line 14-19: Again, feels quite a strong assertion for a single qualitative study. Prefaced by 'participants in this study considered that standardised paediatric...

	would be more in line with the findings. Lines 51-56: This sentence needs a stronger link back to your data. Page 17: reduced observance of predefined triggers: Firstly you only examined participants thoughts and views so not sure you can comment on the observance of triggers. Secondly are the triggers linked to the bedside PEWS or are they something different? Line 19: Use of the word confirmed sounds very definitive. Only 1 of the studies you cite is set in paediatrics so it seems a little premature. Page 18, line 8-12, Clear inclusion and exclusion criteria - I think this limitation needs a little more discussion. Your methods imply the researcher selected the participants based on ' level of experience'. There may be a bias here, which may be unconscious. There is very little on your inclusion and exclusion criteria. Some studies use sampling criteria to ensure they get a spread of demographics. The participants here were predominantly female, predominantly over 40, with healthcare professionals from mainly medical wards and parents mainly surgery. You cannot avoid bias, whether conscious or unconscious, so line 12 feels too strong. Again, lines 17-29 feels quite strong. Even if you provide a safe space participants may, consciously or unconsciously, be inhibited by what others say. You can reduce the bias, but not completely address it. Conclussion: Lines 32-42 feel a little repetitious. Lines 42-52, again feels a strong assertion for a qualitative study exploring the views of healthcare providers and parents. These may be factors which are important to them, but it seems to early to say this has been 'confirmed'. It might be worth considering the issues of translation and how this may impact on the research findings. I note that the wording of some of the direct quotes has been changed in ESD 2. This raises issues of how your data was processed. Once the data has been 'cleaned up' then the raw data (quotations) generally shouldn't change. You can clarify sentences by adding in words or explanation in parenthesis, but the actual data/quotations that you are basing your findings on are 'fixed'. Quotations should be verbatim what the participant said, not an amended version. This does have issues for how you analysed your data and whether this took place in Italian or English. Either way it needs clarifying and including in the limitations. If the 'raw data' was modified after analysis had taken place, this needs discussion. There are some issues with the use of English and some sections would benefit from close review by a native English speaker. Overall the authors have undertaken a huge amount of work and some sections have improved considerable, particularly the methodology. It is an interesting paper and is a useful addition to the work on deteriorating children.

REVIEWER	Reviewer name Max Johnston Institution and Country Imperial College London Competing interests None
REVIEW RETURNED	21-Mar-2018

GENERAL COMMENTS	Thanks for asking me to review. This paper is, in the main, well written and presents useful results about escalation of care in the paediatric setting. I would like the authors to rework the first two sentences of the introduction and explain how the clinical scenarios were derived. Otherwise very good.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1
Reviewer name: Sue Chapman

Reviewer: 2
Reviewer name: Max Johnston

Reviewer: 1
Institution and Country: Great Ormond Street Hospital for Children

Reviewer: 2
Institution and Country: Imperial College London

Reviewer: 1

< b>Comments to the Author
Many thanks for asking me to review this manuscript again. I'm grateful to the authors for the time and effort they have made in revising the manuscript and for responding positively to the feedback. Overall the inclusion of more detail on the methodology has assisted greatly in making the paper clearer. I do have some comments, which I've listed below:
REPLY AUTHORS: We thank the reviewer for the encouraging comments. We have revised according to the comments taking into account that we were limited due to the author guidelines stating a max word count of 3500 words and max 40 references.

Page 5, line 10 - what is an expert driven score?
REPLY AUTHORS: We thank the reviewer, the definition “expert driven score” has been deleted.

Line 1-24 - it might help to make the linkage between the PICU physician, the bedside PEWS and the education a little more explicit. Some of it might be in the ordering - it may be clearer if you discuss the PEWS first (together with how staff are trained) then the involvement of the local physician then the PICU consultant.
REPLY AUTHORS: We thank the reviewer, we have changed the order of those items, as follows:

“The Bedside Pediatric Early Warning System (BedsidePEWS), composed of seven critical indicators embedded in age specific clinical charts is used for screening patients at risk of clinical deterioration. The scores range between 0 and 26 (16,17). The score is matched to care recommendations, which include type and frequency of monitoring, frequency of clinician’s reviews and number of patients per nurse according to patient risk. Ward staff were trained, continuing education is offered, and new staff receive BedsidePEWS education during the induction period.
The ward team manages early signs of deterioration until the patient is severely ill. To respond to clinical deterioration, a Paediatric Intensive Care Unit (PICU) physician on patient duty can be called for advanced support or consultation to the hospital wards.

A PICU consult is recommended when the score is ≥7. The call is made by the ward physician according to clinical criteria set by a response system policy, which includes the BedsidePEWS. Nurses may directly call the PICU in case of emergency. Parents are excluded from the PICU calling process."

Lines 33-37 a reference to support the assertion about focus groups might be helpful here. Not sure if it can be characterised as unique.
REPLY AUTHORS: As suggested we have added a reference to this sentence. We agree that the word 'unique' is an overstatement and we have delete this.

Page 6, lines 1-14. Why did you choose the most experienced staff? And experienced in terms of what - number of years worked, number of CDE? It would help to have a little more justification for why this was chosen as it has the potential to introduce bias. More experienced people may have a different set of experiences to more junior staff. Your discussion highlights the issues that face junior staff yet it appears you did not recruit them to the focus groups. The line 'staff were chosen by the researcher' (who then conducted the interviews) also introduces the possibility of bias. No qualitative studies are free of bias, especially in terms of sampling, but it just needs some discussion either here or in the limitations.
REPLY AUTHORS: We thank the reviewer for this comment. The criteria for the most experienced staff was specified, as number of years worked in their current pediatric ward or specialty, as follows:

Enrolment occurred in two phases: first the nurse manager explored the interest of the most experienced available staff (>2 years of experience in their current specialty) and identified the parents on the ward who had a deterioration event of their child; second, the researcher informed the potential participants of the study objectives and focus group methodology and collected the written informed consent upon agreement to participate. Staff were invited by the researcher according to experience in paediatric care, assuming this would be a criteria for a more informative discussion and recall of escalation of care cases. A consent form was signed prior to the focus group.

Page 7, lines 3-17. The scenario you describe would not be considered a CDE using your criteria. It would be helpful to know why you chose this scenario. The way in which you present the scenario's make it quite explicit that one is 'good' (line 15-17....contribute to escalation) and one is 'bad' (lines 28 ...prevented escalation of care). It may be that this was the approach taken to explicitly pull out facilitators and inhibitors, but real life is rarely so black and white. Good and appropriate care may be delivered but the child still requires transfer to PICU. More a comment from my perspective.
REPLY AUTHORS: We thank the reviewer for this comment. The scenarios were clarified by adding that a PICU consult was also performed in the first and parent scenarios. It is true that children still may require a PICU transfer despite good care. However the second scenario describes the case of a child urgently admitted to PICU, for whom care on the ward was not escalated on time, despite signs of severe clinical deterioration.
Text was changed as follows: "The physician called for a review, consults a PICU physician and prescribes an intravenous rehydration". "To trigger the discussion the interviewer described scenarios of clinical deterioration involving PICU consults, more easily understood by parents".

Data analysis:
This section is much improved. It would be helpful for it to be expanded a little more so the reader can understand the actual process. Did you transcribe tape-recordings of the focus groups? Or was it a transcription service. Did you listen to the tapes? Was there then a translation into English as I note the hospital is in Italy. How was the veracity of this assessed. How did you developed your sub-themes. And was the coding then performed afterwards? what does 'examine the codes' mean? Were sub-themes then grouped to create themes? How did this happen.

And where do dimensions fit in? Its such an important part of the methodology and is really where you get a sense of the rigour of the study so more info (still) would be helpful.
REPLY AUTHORS: Thank you, we have added more information in the data analysis section i.e. transcribing, translation (the translation was not verified by an official translator but done by the research team), and how the development and analysis of the coding – subthemes - themes was performed.

Findings: Again, much improved.
Overall comment in this section is that some of the data is presented more like a discussion rather than the reporting of the findings. For example Page 14, line 28-33...'this is enhanced...' As these are just findings at the moment it would seem better to say 'participants reported that screening tools such as the BPEWS were useful to help them...' Another example is page 12, line 54, 'critical care background are considered' sounds quite definitive as though it is your conclusion based on the data.
REPLY AUTHORS: We thank the reviewer. Findings have been modified as follows:
On page 14: " Participants reported that screening tools, such as the BedsidePEWS, were useful to help them measure and visually display vital signs with a frequency based on the child's condition."
On page 12: "Recalling past experiences to support clinical judgement of a deteriorating child and nursing critical care background are reported as factors facilitating escalation of care."

Table 1 is helpful. I note that the mean age of all the participants is quite high. And that whilst most staff were drawn from medical wards, most parents were drawn from surgical wards. These factors may affect your findings and warrant a mention in the discussion.
REPLY AUTHORS: In the limitations section these sentences were added: Results may be affected by the elevated mean age of participating staff, probably due to the ageing healthcare providers' population in this context. Also, parents were mainly selected from specialty surgical wards as opposed to general pediatric wards, reflecting the point of view of a population of parents of children with cronic complex surgical needs as opposed to acute pediatric care.

Table 2 is quite hard to following. It might be easier for the reader if the sub-themes were shaded rather than alternate lines.
REPLY AUTHORS: Shading on table 2 has been changed.

Page 9, Line 22: Words 'Appendix 2' seem redundant.
REPLY AUTHORS: "Appendix 2" was removed from the text.

Page 12, line 31, not sure of the word transversely. Maybe it was just raised in both types of focus groups.
REPLY AUTHORS: the word "transversely" was removed from the text.

Lines 42-45: This is a really difficult sentence to follow.....
REPLY AUTHORS: This sentence was re-written as follows:
"Feelings of uncertainty and distrust were reported by physicians and nurses due to different baseline pediatric clinical competency levels of healthcare professionals."

Page 13, line 2. Still not sure what is meant by a 'locus' of control....
REPLY AUTHORS: this sentence was changed as follows:
"Despite the lack of advanced resources and skills, according to PICU physicians, ward physicians believe it is their responsibility to treat deteriorating patients, as "sometimes, the attending physicians, it's their choice to try to manage those patients on the ward." [FGphysician]."

Line 28: 'relational continuity of care' is also difficult to understand.

REPLY AUTHORS: : Relational continuity of care was changed into “a physician led care team involved in ongoing patient care management”.

Lines 31 - 35. Might be helpful to split this sentence as it hard to follow.
REPLY AUTHORS: The sentence was split as follows: “Nurses and physicians report the key role of integrated care in the process of reviewing the patient’s clinical condition, care plan and triggering escalation of care. Multidisciplinary rounding involving parents was described as a possible quality improvement strategy.”

Page 14, line 52-56 doesn't quite make sense.
REPLY AUTHORS: We thank the reviewer. This sentence was rephrased as follows: According to parents and PICU physicians, “a PICU physician should round” [FGparents] to evaluate patients at higher risk of clinical deterioration .

Page 15, lines 5 'production pressure' needs clarifying.
REPLY AUTHORS: Production pressure was clarified as “organizational demands on clinicians competing with patient care needs”

Lines 12: not sure 'organisational pressures' is exactly what you mean. Maybe competing clinical priorities??
REPLY AUTHORS: This sentence was re-written as follows:
Healthcare professionals reported clinical activities such as nursing medication preparation or blood specimen collections competing with the clinical needs of deteriorating patients.

Lines 28: Off service physicians needs a little explanation or rewording. 'Off service' could mean 'off duty' but I suspect this is more to do with cross-coverage of different specialities out of hours.
REPLY AUTHORS: This sentence was re-written as follows:
Reduced staffing at nights goes along with medical cross coverage of different specialties to wards they do not usually assist, raising issues of continuity of care.

Discussion:
Again improved
Page 16, line 2. The sentence starting our data illustrates the importance .... this sounds quite strong. Your study examined clinician thoughts and views but there is no 'hard evidence' to say these are important in terms of managing the deteriorating patient. Rather this is what healthcare professionals and parents consider important, which is a slightly different thing.
REPLY AUTHORS: This sentence was re-written as follows: Our data illustrate the relevance of clinician’s knowledge, situational awareness and ability to manage the deteriorating patient according to parents and clinicians.

Line 10-15 this is a hard sentence to follow.
REPLY AUTHORS: We agree this sentence is not clear, we deleted it

Line 14-19: Again, feels quite a strong assertion for a single qualitative study. Prefaced by 'participants in this study considered that standardised paediatric... would be more in line with the findings.
REPLY AUTHORS: This sentence was rewritten as follows:
Participants in this study considered that standardised paediatric orientation and continuing education programs supported by interactive simulation strategies are warranted.

Lines 51-56: This sentence needs a stronger link back to your data.
REPLY AUTHORS: This sentence was changed as follows:

“Improving collaborative practice and information sharing through appropriate organizational strategies, as our study participants pointed out, may have an impact on the identification of children at risk and escalation of care.”

Page 17: reduced observance of predefined triggers: Firstly you only examined participants thoughts and views so not sure you can comment on the observance of triggers. Secondly are the triggers linked to the bedside PEWS or are they something different?
REPLY AUTHORS: The triggers are linked to the BedsidePEWS. The sentence was rewritten as follows: “Despite nursing staff reporting the usefulness of the BedsidePEWS as a screening tool to spot subtle clinical changes, this study also describes experiences of reliance on personal clinical judgement as opposed to theobservance of the BedsidePEWS score matched care recommendations and, as reported in other studies.”

Line 19: Use of the word confirmed sounds very definitive. Only 1 of the studies you cite is set in paediatrics so it seems a little premature.
REPLY AUTHORS:Text was changed as follows:
“Our findings also described the belief on ward responsibility for severely deteriorating patients and the role of intra and inter-professional hierarchies as factors having an impact on PICU activation delay”

Page 18, line 8-12, Clear inclusion and exclusion criteria - I think this limitation needs a little more discussion. Your methods imply the researcher selected the participants based on ' level of experience'. There may be a bias here, which may be unconscious. There is very little on your inclusion and exclusion criteria. Some studies use sampling criteria to ensure they get a spread of demographics. The participants here were predominantly female, predominantly over 40, with healthcare professionals from mainly medical wards and parents mainly surgery. You cannot avoid bias, whether conscious or unconscious, so line 12 feels too strong.
REPLY AUTHORS: This section was added to the limitations section: “Results may be affected by the elevated mean age of participating staff, probably due to the ageing healthcare providers’ population in this context. Also, parents were mainly selected from specialty surgical wards possibly reflecting the point of view of parents of children with chronic complex diseases, with multiple admissions and longer length of stay.”

Again, lines 17-29 feels quite strong. Even if you provide a safe space participants may, consciously or unconsciously, be inhibited by what others say. You can reduce the bias, but not completely address it.
REPLY AUTHORS:This risk of information bias was reduced by providing a safe setting, avoiding hierarchies among healthcare providers within single groups and facilitating participant’s expression of opinions and emotions through appropriate interviewing techniques.

Conclusion:
Lines 32-42 feel a little repetitious.
REPLY AUTHORS: We thank the reviewer, lines 35-40 have been deleted.

Lines 42-52, again feels a strong assertion for a qualitative study exploring the views of healthcare providers and parents. These may be factors which are important to them, but it seems to early to say this has been 'confirmed'.
REPLY AUTHORS: We thank the reviewer, the word confirmed has been changed into “reported” .

It might be worth considering the issues of translation and how this may impact on the research findings. I note that the wording of some of the direct quotes has been changed in ESD 2. This raises issues of how your data was processed.

Once the data has been 'cleaned up' then the raw data (quotations) generally shouldn't change. You can clarify sentences by adding in words or explanation in parenthesis, but the actual data/quotations that you are basing your findings on are 'fixed'. Quotations should be verbatim what the participant said, not an amended version. This does have issues for how you analysed your data and whether this took place in Italian or English. Either way it needs clarifying and including in the limitations. If the 'raw data' was modified after analysis had taken place, this needs discussion.

REPLY AUTHORS: Thank you for this concern. We fully agree with the observation. However, we have only amended some of the translated English quotations or added new ones based on the comments of Reviewer 1 (Gerri Sefton) when the first review comments were returned. Thus, it was not us amending the original quotations but based on the comments of the other reviewer based on our first submission. We have not discussed this issue in the new revised version as this could be a sensitive issue i.e. revised based on the reviewer comments.

There are some issues with the use of English and some sections would benefit from close review by a native English speaker.
REPLY AUTHORS: We thank the reviewer. The manuscript has been reviewed by an official academic translator and we carefully assessed the revised text again.

Overall the authors have undertaken a huge amount of work and some sections have improved considerable, particularly the methodology. It is an interesting paper and is a useful addition to the work on deteriorating children.

Reviewer: 2

Comments to the Author:
Thanks for asking me to review. This paper is, in the main, well written and presents useful results about escalation of care in the paediatric setting.

I would like the authors to rework the first two sentences of the introduction and explain how the clinical scenarios were derived.

REPLY AUTHORS: We thank the reviewer. The first two sentences of the introduction have been re-written as follows:
Hospitalized patients with acute and complex diseases might experience a clinical deterioration that can lead to unplanned PICU admissions, cardiac arrest or death in the ward.(1-2) Undetected severe illnesses and delayed response to deteriorating patients in hospital wards is a public health issue, both for pediatric and adult patients.(3-6)

This sentence was added: “The scenarios were written through the consensus of a group of experts from the research team, based on the BedsidePEWS score matched care recommendations for escalation of care and PICU consult (CC, CP, CO, OG).”