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Title: Hospital outcomes of children admitted to intensive care in British Columbia via inter-facility transfer versus direct admission from 2015 to 2017: a descriptive analysis	
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Reviewer and comments	Author response
Dr. Matthew Bradshaw University of Saskatchewan College of Medicine, Pediatrics	
	Thank you for your comments and suggestions. We have revised the manuscript accordingly, as detailed below.
Title: Consider shortening, suggestion "Impact of transport distance on children admitted to PICU in British Columbia: a retrospective cohort study".	We have revised our study title to be: "Hospital outcomes of children admitted to intensive care in British Columbia via inter- facility transfer versus direct admission from 2015 to 2017: a descriptive analysis."
Interpretation: "transfer status" is vague, suggest "Children requiring interfacility- transport experience increased rates of mechanical ventilation, PICU LOS, and risk of mortality when compared to those admitted from the emergency department.	We have revised to: "Mortality rate and use of intensive care resources were higher in children who underwent inter-facility transfer. Further research is needed to examine the key factors driving the differences in outcomes including the severity of illness on first presentation, transport team composition, and transport distance and duration." (lines 50-53)
Table 2: Fixed wing column total is 168. Table 1, pg6 LN32, FWA is 178. They should be the same value.	Thank you for noting this discrepancy. The values have been verified and corrected.

<p>Table 3: “LOS”. Is this hospital or PICU LOS? “Use of mechanical ventilation”, on admission? during first 24 hours? Please define. “Mortality” is this Risk of Mortality based on PRISM-3? Please refine.</p>	<p>Thank you, this has been clarified to indicate PICU length of stay. Mechanical ventilation refers to the use of ventilation within the first 24 hours of admission. Mortality refers to the hospital mortality rates. These have been edited in the table for clarification.</p>
<p>Specific Questions</p>	
<p>Does the background accurately represent current knowledge in this field? Yes</p>	<p>Thank you.</p>
<p>Do the authors explain why they conducted the study? Although not explicit, the authors allude to wanting to explore the association between centralization of PICUs and the need to transport sick children large distances.</p>	<p>Thank you.</p>
<p>Is there a clear research question? Is there an association between needing transport and surrogates for illness severity (MV, LOS, PRISM-3) in children admitted to PICU.</p>	<p>Thank you.</p>
<p>Is the study design appropriate? The study design is flawed insofar that the authors relied on patient addresses as a surrogate for distance. Also, time from referral to PICU admission would have been a more useful metric when comparing transport time. Severity of illness scoring was not calculated at time of referral, nor was it compared to PICU admission. As a result, we do not know if the children got better or worse on transport. Transport team member composition or skill set was not analyzed.</p>	<p>Thank you for this comment. We acknowledge the mentioned limitations including the use of patient addresses as surrogates for transport distance, the lack of measured time from referral to PICU admission and transport team composition and skillsets, as well as the absence of PRISM3 scores on initial presentation. These factors are described in the limitations and highlight the need for further research (lines 191-203). In keeping with editor and other reviewer suggestions, we have revised the manuscript to a descriptive analysis to better reflect the importance of these stated limitations.</p>
<p>I do not understand why the authors did not use referral center address instead of patient home address. This would have avoided a potential confounder. As discussed above, time was an important exposure, except that the authors calculated time based on distance. Therefore “time” in their study was not “transport time” (time from referral to</p>	<p>Unfortunately, the referral centre was not consistently documented in the available retrospective dataset. We have removed the estimated time analysis from the study and described the limitations in more detail in the discussion (lines 198-203). We have removed the analysis of time from the study.</p>

PICU admission) but instead a surrogate of distance. Time should be removed from the analysis because it is based on distance and not actual transport time.	
Are the results reasonable? Interesting? Surprising? The results seem reasonable. They are interesting insofar that transported patients were sicker when compared to patients in ER.	Thank you.
Is the interpretation supported by data in the results? Yes	Thank you.
Do tables and figures accurately represent the data? Would some other visual be more helpful? Figures 1 & 3 are confusing. What is Figure 3 trying to illustrate? Suggest both be removed.	Thank you for this comment. We have removed Figures 1 and 3.
Are any important limitations not mentioned? Transport team composition, skills. Pre- or in-transport interventions/complications.	These have been added in the limitations section (lines 196-203).
For whom are these findings relevant? Pediatricians, Emergency Medicine, Transport medicine, PICU	Thank you.
Do the authors place their findings in the context of the literature? Yes.	Thank you.
Reviewer 2: Dr. Atsushi Kawaguchi University of Alberta, Pediatrics	Thank you for your comments and suggestions.
How (including modality, team composition), who, with what kind of time range, were transports' related decisions made? Where is the transport team dispatch site?	At BC Children's Hospital, these decisions are made by a transport physician on call and in consultation with the patient transport network and BC emergency health services to identify the optimal mode and urgency of transport. While we cannot incorporate these variables in the analysis, we have added description of the transport process to the methods (lines 84-92)
Pp5 line 25. Is distance a one-way distance or total? All the transports dispatch from the hospital and directly flew by to the hospital?	Thank you, we have edited to specify that distances were one-way, estimated by the road or air distance from BCCH to each residential address. The limitations of this distance estimation have been described in

	further detail in the setting and discussion(lines 118-121 and lines 199-203)
Pp5 line 32. Just wondering why hospital mortality was chosen as a primary outcome. How can we say “transport” affects “hospitalmortality”? In many recent relevant studies applies short-time outcomes such as mortality in the first 24 hours or 7 days as anoutcome variable.	Thank you for this comment. The majority(44/55, 80%) of the hospital mortality occurred within 7 days of PICU admission (ranging 0-17 days).
Table 2 I want to see a rationale for why distances (<100, 100-200, and 200<) were selected, considering the median distance was 67km.	The distance categories have been removed in accordance with concern that these estimated distances from the patient’s residential address may not accurately reflecttransport distance.
Table 4 Again, how can we adjust with PRISM at PICU admission AFTER “transport” were done?	Thank you for this comment. We have removed this table.
Pp9 Line10 “Transported patients also had higher median PRISM3 (0.63, IQR, 0.3-1.6vs 0.49, IQR, 0.3-0.1; p=<0.001) scores at admission to PICU.”. Including the other part of the result, it is unclear what was comparedwith what.	This was compared to patients admitted from the emergency. This sentence has beenclarified (line 147-149).
Line 18 The event occurred in each variable seemvery rare. Why exact tests were not used?	Fisher’s exact test was not used given that allevent frequencies were at least 5 or above.
Line 37. “higher odds of receiving mechanical ventilation within the first 24 hours”. Does this mean new MVs after PICUadmission or including cases admitted with MV?	This refers to the patients who required ventilatory support within 24 hours of PICU admissions, so this would include patients forwhom mechanical ventilation was initiated prior to admission (line 103-106).
Reviewer 3: Dr. Faud Alnajii Children's Hospital of Eastern Ontario, Pediatrics	Thank you for your comments and suggestions.
Can you build a better argument of why you did this study? You describe the vast distances of Canada but then conduct a studyon a smaller geographical location. Discuss that in the introduction please.	We have added text to describe the coveragearea of the BCCH PICU and identified the knowledge gap with respect to epidemiologyof disease and outcomes among critically ill children who require interfacility transport inthe province of BC and Yukon territory. This descriptive analysis identifies differences in care requirements and outcomes for these children and the need for further research to

	better define the population and potential modifiable risks.
The objective of the study is to explore the association between transport status and patient outcomes! What is transport status? Can you be clear if there primary and secondary objectives? Describe those in the methods section.	Thank you for this comment. We have clarified throughout that we are referring to patients transported from another facility versus those admitted directly from the BCCHED. We have clarified the single primary objective (lines 74-78).
In the interpretation section (page 11, line 34) you mention that there appears to be a protective factor between mortality and distance. This is an association rather than a protective factor.	Thank you for this comment. As requested by the editors, we have removed all associative terms.
In the limitation section, describe the risk of using association to make conclusions.	Thank you for this comment. As requested by the editors, we have removed all associative terms.
Who can use this study? For whom are these findings relevant?	These findings are relevant in clinicians and administrators involved in the provincial transport network. The study highlights the need for detailed prospective data collection and further research to explore differences in severity of illness at presentation and modifiable risk factors for adverse outcomes among patients who require inter-facility transfer.
Figure 1 and 2. Why do you need both?	We have removed figure 1.
Figure 3. unclear why it is there as there is no association.	We have removed figure 3 given the lack of clarity and significance.
Reword your conclusion. Cannot understand your last sentence: "The association between transport status and outcome was not adjusted for severity of illness at first hospital presentation."	This has been reworded to "In summary, compared to children directly admitted from the BCCH ED, patients requiring inter-facility transport to the PICU had higher severity of illness scores at admission and a greater proportion were mechanically ventilated at admission or within 24 hours. In addition, a greater proportion of children who underwent inter-facility transfer died in hospital, however this finding is limited by insufficient data surrounding their severity of

	<p>illness at first presentation. This study highlights the need for further research to identify factors driving differences in outcomes, including severity of illness at first presentation, transport team composition, and transport distance and duration (lines 213-220)".</p>
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