Transfer of Acutely Ill Pediatric Patients using Pediatric Transport Teams: Clinical Evidence and Guidelines
SUMMARY OF ABSTRACTS  Transfer of Acutely Ill Pediatric Patients using Pediatric Transport Teams

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Acknowledgments:

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.
Research Questions

1. What is the clinical evidence regarding the transport of acutely ill pediatric patients to tertiary care centres by pediatric transport teams?

2. What is the comparative clinical effectiveness regarding the transport of acutely ill pediatric patients to tertiary care centres by pediatric transport teams versus transport by an advanced care paramedic team?

3. What are the evidence-based guidelines regarding the transport of acutely ill pediatric patients to tertiary care centres?

Key Findings

One systematic review and five non-randomized studies were identified regarding the transport of acutely ill pediatric patients to tertiary care centres by pediatric transport teams. Additionally, one evidence-based guideline was identified.

Methods

A limited literature search was conducted on key resources including Ovid Medline, PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases and a focused Internet search. Methodological filters were applied to limit retrieval by health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies and guidelines. The search was limited to English language documents published between January 1, 2013 and January 17, 2018. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Selection Criteria</th>
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<tr>
<td><strong>Population</strong></td>
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<td><strong>Intervention</strong></td>
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</table>
| **Comparators** | Q1: Transport by other teams (e.g., generalist transport)  
Q2: Transport by an advanced care paramedic team  
Q3: No comparator; Transport by other teams (e.g., generalist transport) |
| **Outcomes** | Q1-Q2: Clinical effectiveness, harms (e.g., mortality, morbidity, adverse events), hospital length of stay  
Q3: Evidence-based guidelines |
| **Study Designs** | Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, evidence-based guidelines |
Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

One systematic review and five non-randomized studies were identified regarding the transport of acutely ill pediatric patients to tertiary care centres by pediatric transport teams. Additionally, one evidence-based guideline was identified. No relevant health technology assessments, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

One systematic review (SR) and five non-randomized studies (NRS) were identified regarding the transport of acutely ill pediatric patients to tertiary care centres by pediatric transport teams. Detailed study characteristics are provided in Table 2.

The authors of the SR were unable to make any conclusions regarding the clinical effectiveness of specialist neonatal transport teams due to a lack of reliable randomized controlled trials and quasi-randomised trials in the literature. Three of the identified NRS reported a benefit to the use of pediatric transport teams, including a lower hospital length of stay, better performance of patients as assessed using the Glasgow Coma Scale and Pediatric Trauma Scores, and fewer transport-related adverse events. The authors of three NRS noted that patients that were transported using pediatric transport teams were younger and more severely ill. One study concluded that after adjusting for several factors, the use of pediatric transport teams had no significant difference in 48-hour mortality.

One evidence-based guideline was identified regarding the transport of acutely ill pediatric patients to tertiary care centres. Produced by the Canadian Paediatric Society in 2015, this document contains guidance relating to the transport of critically ill newborns, including the equipment, supplies, tools, policies, skills, and staff involved in transportation. A total of six recommendations were formulated from the literature and based on consensus opinion.

Table 2: Summary of Included Studies on the Clinical Evidence Regarding the Transport of Acutely Ill Pediatric Patients to Tertiary Care Centres by Pediatric Transport Teams

<table>
<thead>
<tr>
<th>First Author, Year</th>
<th>Study Characteristics</th>
<th>Intervention</th>
<th>Comparators</th>
<th>Outcomes</th>
<th>Author’s Conclusions</th>
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<tbody>
<tr>
<td>Chang, 2015’</td>
<td>0 included RCTs and qRCTs</td>
<td>Specialist neonatal transport teams</td>
<td>Non-specialist transport teams</td>
<td>Death</td>
<td>One trial that fulfilled inclusion criteria was identified; however, it was considered ineligible due to serious bias</td>
</tr>
<tr>
<td></td>
<td>Neonates requiring transport to a</td>
<td></td>
<td></td>
<td>Adverse events during transport leading to respiratory</td>
<td></td>
</tr>
<tr>
<td>First Author, Year</td>
<td>Study Characteristics</td>
<td>Intervention</td>
<td>Comparators</td>
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<tr>
<td>Patil, 2017&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Retrospective review on children with traumatic neurotrauma requiring transport of neonates</td>
<td>Pediatric specialty transport team (air and ground)</td>
<td>Generalist transport team (air and ground)</td>
<td>Transport time</td>
<td>The use of specialized transport teams for critically ill children was associated with fewer transport-related adverse events (respiratory distress and airway compromise)</td>
</tr>
<tr>
<td>Prabhudesai, 2017&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Prospective observational study of critically ill children admitted to the pediatric ICU following emergency transfers by the specialist paediatric transport team</td>
<td>Specialized transport</td>
<td>Non-specialized transport</td>
<td>Demographics</td>
<td>Children admitted to the [pediatric] ICU following emergency transfers by the specialist paediatric transport team were younger, sicker,</td>
</tr>
<tr>
<td>First Author, Year</td>
<td>Study Characteristics</td>
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| Meyer, 2016*      | • Retrospective cohort study  
• Children (≤18 years) admitted to the pediatric ICU  
• N=3,795           | • Specialist pediatric team transport  
• Other forms of transport | • Pediatric ICU length of stay  
• Resource use | • 48-hour mortality | • Children transported with specialty pediatric teams were younger, more severely ill, and more likely to have a respiratory diagnosis  
• Following adjustment for propensity score, illness severity, and pediatric ICU site no significant difference in 48-hour mortality was observed |

GCS = Glasgow Coma Scale; ICU = intensive care unit; ISS = Injury Severity Score; NR = not reported; PTS = Pediatric Trauma Score; qRCT = quasi-randomized trial; RCT = randomized controlled trial.

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-Analyses


Randomized Controlled Trials

No literature identified.

Non-Randomized Studies


Guidelines and Recommendations

Appendix — Further Information

Previous CADTH Reports


Non-Randomized Studies

Alternative Intervention – Helicopter Transport


Alternative Outcomes – Patient Characteristics


Clinical Practice Guidelines – Unspecified Methodology


Review Articles


Additional References
