TITLE: Devices for the Securement of Patients for Pre-Hospital Transport: Clinical Evidence and Guidelines

DATE: 15 January 2015

RESEARCH QUESTIONS

1. What is the clinical evidence regarding the safety of devices for the securement of patients for transport in the pre-hospital setting?

2. What are the evidence-based guidelines regarding securement of patients for transport in the pre-hospital setting?

KEY FINDINGS

One evidence-based guideline was identified regarding securement of children for transport in the pre-hospital setting.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2015, Issue 1), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and January 7, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

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

Table 1: Selection Criteria	
Population	Adult or pediatric patients being transported in stretchers via ambulance
Intervention	Securement straps or securement devices
Comparator	No securement straps or securement devices compared to each other
Outcomes	Safety Clinical guidelines Recommendations
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, 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 evidence-based guideline was identified regarding securement of children for transport in the pre-hospital setting. No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, or non-randomized studies regarding the safety of devices for the securement of patients for transport in the pre-hospital setting were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

The National Highway Traffic Safety Administration of the U.S. Department of Transportation produced an evidence-based guideline in 2012 regarding the recommended best practices for the transport of children in ground ambulances.[1] The guideline provides recommendations for a variety of situations involving the transport of ill or injured children in ambulances. In all cases, except when a spineboard is required, the ideal position is for the child to be secured in an appropriately-sized child restraint system that complies with federal standards for child restraint; this restraint system would then be secured on a cot. If a child restraint system is not available, the recommendation is that the child should be secured directly to the cot, head first, with three horizontal restraints (across the chest, waist, and knees) and a vertical restraint across each shoulder. When the child requires a spineboard, the spineboard should be secured to the cot, head first, and tethered at the foot. The spineboard should then be secured to the cot with three horizontal restraints across the torso and vertical restraints across each shoulder, as detailed above. The guideline provides pictures of the ideal positions and restraint systems, and also provides alternate positions to consider when the ideal position is not practical.

No evidence-based guidelines were identified regarding the transport of adult patients in ambulances, although a guideline with unknown methodology that provides information regarding adult patients is provided in the Appendix.

REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies
No literature identified.

Guidelines and Recommendations

1. National Highway Traffic Safety Administration (NHTSA). Working Group Best-Practice Recommendations for the Safe Transportation of Children in Emergency Ground Ambulances [Internet]. Washington (DC): The Administration; 2012 Sep [cited 2015 Jan 14]. Available from: http://media.cygnus.com/files/cygnus/document/EMSR/2012/SEP/nhtsa_10782606.pdf
See: Section 7.0 The Recommendations, pages 15 -19
Appendices C,D, and E, pages 38 - 43

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APPENDIX – FURTHER INFORMATION:

Guidelines and Recommendations – Methodology Unknown

2. Department of Health [New York State]. New York State Medicaid ProgramTransportation Manual Policy Guidelines [Internet]. Albany (NY): The Department; 2014 [cited 2015 Jan 14]. Available from: https://www.emedny.org/ProviderManuals/Transportation/PDFS/Transportation_Manual_Policy_Section.pdf
See: Section on Safety Requirements for Stretcher Service, pages 24 - 28

Review Articles

3. Blau G, Chapman S, Boyer E, Flanagan R, Lam T, Monos C. Correlates of safety outcomes during patient ambulance transport: a partial test of the Haddon matrix. J Allied Health. 2012;41(3):e69-e72.
PubMed: PM22968779

Survey

4. O'Neil J, Steele GK, Weinstein E, Collins R, Talty J, Bull MJ. Ambulance transport of noncritical children: emergency medical service providers' knowledge, opinions, and practice. Clin Pediatr (Phila). 2014 Mar;53(3):250-5.
PubMed: PM24408898

Additional References

5. Ballesteros T, Arana I, Perez EA, Alfaro JR. Development and tests of a paediatric and neonatal immobilizer for ambulance transfers. J Med Eng Technol. 2014 May;38(4):202-10.
PubMed: PM24758392