Barriers to Implementation of Recommendations for Transport of Children in Ground Ambulances

Rashida H. Woods, MD[a]; Cara B. Doughty, MD, M.Ed.[b]; Anthony D. Gilchrest, MPA, EMT-P[b]; Manish I. Shah, MD[b]

[a]University Hospitals Case Western Reserve Medical Center, Department of Pediatrics, Division of Emergency Medicine, Cleveland, OH;
[b]Baylor College of Medicine, Department of Pediatrics, Section of Emergency Medicine, Houston, TX

INTRODUCTION

- The National Highway Traffic Safety Administration (NHTSA) drafted guidelines for safe transport of children in ground ambulances in 2010 and finalized them in 2012.
- The goal of these guidelines is to reduce pediatric injuries in ambulance collisions.
- Lack of awareness and other barriers may limit emergency medical service (EMS) agencies from fully implementing these recommendations.

OBJECTIVES

- To assess awareness of the draft NHTSA guidelines among EMS agencies in Texas
- To identify potential barriers to compliance that EMS agencies may encounter

METHODS

Study Design and Setting
- Cross-sectional, online survey of 911-responding ground transport EMS agencies in Texas

Inclusion Criteria
- Identified on the Texas Department of State Health Services 2009 list of EMS agencies
- Responds to and transports in response to 911 calls

Exclusion Criteria
- Military-based or an industrial agency
- Solely an air medical transport agency without ground transport units

Data Collection Method
- Four-part online survey sent to a geographically representative sample of 160 EMS agency medical directors/administrators
- Part 1 - Assessment of EMS agency demographics
- Part 2- Case-based evaluation of current pediatric transport methods
- Part 3- Summary of draft NHTSA guidelines
- Part 4 - Plans for implementation and assessment of possible barriers

Outcomes Measures
- **Primary:** Current utilization of ideal/acceptable transport methods for 5 situations defined in the NHTSA guidelines
- **Secondary:** Self- reported barriers to implementation of guidelines by EMS agencies

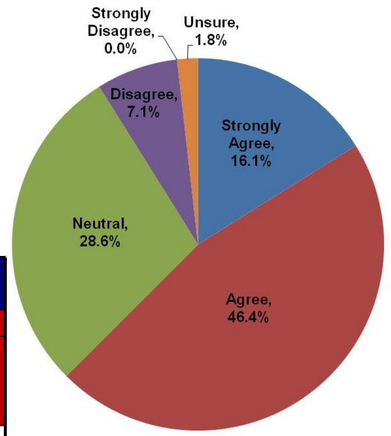
Data Analysis
- Descriptive data analysis

RESULTS

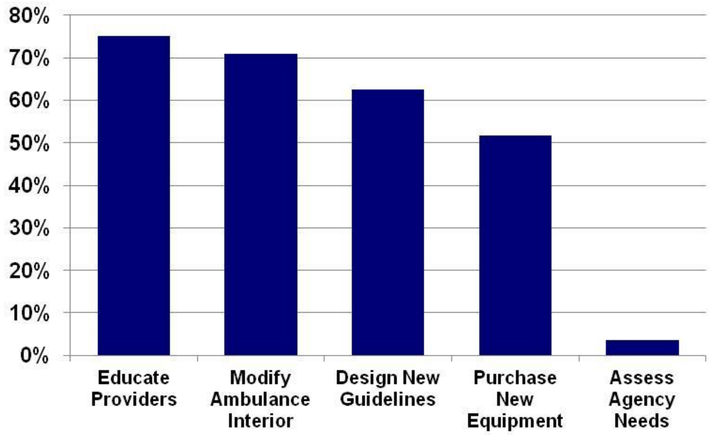
Guideline Awareness and Implementation Plans

- 70 agencies accessed the survey, of those 3 declined participation and 5 did not meet inclusion criteria. Responses from 56 agencies were analyzed.
- 35.7% were aware of the NHTSA recommendations.
- 41.1% plan to implement the NHTSA recommendations, of which 60.9% plan to fully implement them.
- 39.3% of agencies have financial resources to implement the recommendations, while 60.8% are unsure or do not have them.

Agreement on Guideline's Impact on Safety Outcomes



Factors Necessary to Implement Guidelines



Current EMS Agency Transport Methods

NHTSA Situation	Ideal	Acceptable Alternative	Not Recommended
I - Uninjured or not ill child	1.7%	5%	93.2%
II - Child who is ill and/or injured but not requiring continuous and/or intensive monitoring and/or intervention	15%	31.7%	53.3%
III - Child who requires continuous and/or intensive medical montoring and/or interventions	41.7%	33.3%	24.6%
IV - Child who requires spinal immobilization and/or lying flat	32.2%	37.3%	30.6%
V - Child(ren) who are part of a multiple patient transport (newborn with mother, multiple children, etc.)	37.3%	5.1%	57.6%

Summary of NHTSA Draft Guidelines on Transport of Children in Ground Ambulances

NHTSA Situation	Ideal	Acceptable Alternatives
I	Restraint* in another vehicle (not an ambulance)	Restraint in a passenger or EMS provider's seat of the ambulance, or delay transport
II	Restraint* secured to the stretcher	Restraint in EMS provider's seat, or patient secured to the stretcher with three horizontal restraints across the torso and one vertical restraint across each shoulder
III	Restraint* secured to the stretcher	Secured to the stretcher with three horizontal restraints across the torso and one vertical restraint across each shoulder
IV	Size-appropriate spine board, secured to the stretcher with a tether at the foot and three horizontal restraints across the torso and one vertical restraint across each shoulder	Standard spine board with padding added, secured to the stretcher with three horizontal restraints across the torso and one vertical restraint across each shoulder
V	Transport multiple patients separately. For newborn/mother: newborn in a restraint* in the rear-facing EMS provider's seat, with the mother secured to the stretcher	For newborn/mother: transport them separately (based on above ideal criteria)

*"Restraint" refers to a size-appropriate child restraint system that complies with Federal Motor Vehicle Safety Standard 213

CONCLUSIONS

- Few EMS agencies are aware of the draft NHTSA recommendations on safe transport of children in ground ambulances.
- Most agencies are currently practicing the "ideal" or "acceptable alternative" for a child who requires medical monitoring, interventions, or spinal immobilization.
- For children who are uninjured or not ill, respondents rarely use a NHTSA recommended mode of transport.
- Children are frequently transported in an unacceptable manner when multiple patients are involved.
- Knowledge, cost of education and equipment costs may inhibit implementation.

LIMITATIONS

- Limited response rate
- Did not assess how non-911 responding agencies transport children
- Did not differentiate whether the EMS medical director or administrator responded to the questions