



Safe Transport

Keeping our pediatric patients safe

Florida EMS for Children Advisory Committee, Safe Transport Working Group

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Safe Transport Course and Resources

Reviewed and approved by the Florida EMS for
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DISCLAIMER:

The information in this presentation is offered as general guidance and is not meant as a substitute for EMS medical direction, agency protocols or approved standard operating procedures. Patient care must be individualized. As new research and clinical experience becomes available, patient safety and transport standards may change. Healthcare professionals should remain current on medical literature and national standards of care and structure their protocols and treatment accordingly.



Objectives

1

Identify risks involved with transporting pediatric patients

2

Identify resources available for restraint of the pediatric patient

3

Learn about National Highway and Transportation Safety Administration's (NHTSA) efforts to improve child safety and their specific guidelines for ambulances

4

Identify developmental age distractions for separation and securement of the pediatric patient

Florida EMS for Children

Safe Transport Position Statement

The Florida EMS for Children Advisory Committee is comprised of state pediatric, emergency, trauma, and EMS professionals; in addition to family advocates with a mission to enhance pediatric readiness in EMS agencies, emergency departments, inter-facility transports, and prevention programs.



FL EMS-C and Florida PEDReady Goals for Pediatric Transportation

- All infant and pediatric patients should be transported using a commercially manufactured, appropriate sized, pediatric restraint device
- EMS and Fire personnel education regarding safe transport should be conducted through a variety of educational methods in order to understand restraint guidance and select devices
 - FL EMSC *Safe Transportation of Pediatric Patients* online training resource
 - Hands-on Training
 - Community Education
- Agencies are encouraged to implement a safe pediatric transport Standard Operating Procedure (SOP) or protocol

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Endorsed by:



Florida Association of Critical Care Transport Specialists



Florida State Council



Other Florida EMS Committees and Organizations: PIER Committee, FAREMS, etc.



EIIC
EMSC Innovation and
Improvement Center

Background



- The national EMSC mission is to optimize outcomes for children across the emergency care continuum by leveraging quality improvement science and multidisciplinary, multisystem collaboration.
- The goal of Florida EMSC and PEDReady is to enhance pediatric emergency care, “readiness” and preparation in Florida EDs and EMS agencies.
- This year a key state objective was to work with Florida EMS agencies to enhance the safe transport of children from newborns to teens by providing free access educational tools, sample protocols and resources.

Background

30 million emergency calls a year



7-10% are for pediatric transports



6.2 million transports a year



Crash Data

AMBULANCE CRASH DATA

2010-2019



5,954

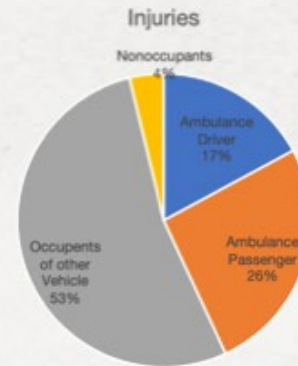
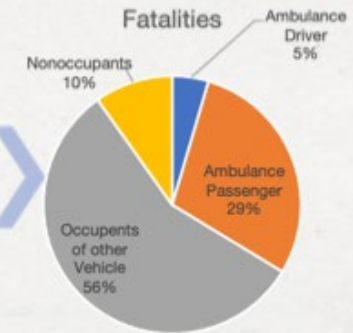
MVC involving Ambulances a year

25%

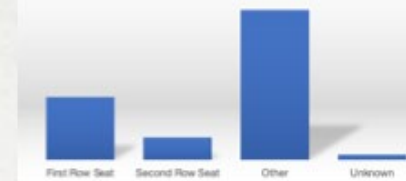
Resulted in Injury

25

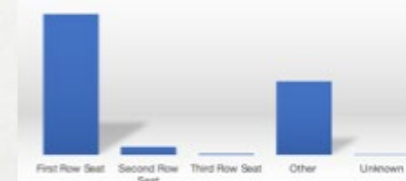
People killed a year



Fatality Seating Location



Injuries Seating Location



*Other seating position includes passengers in 5th rows, in cargo areas, or riding on vehicle exterior.

“Safe ambulance transport should be considered as a standard of care for the EMS system equivalent to maintaining an open airway, adequate ventilation and the maintenance of cardiovascular circulation...”

According to the National Association of State EMS Officials
(NASEMSO)

The number one thing to avoid is allowing a parent or other caregiver to hold a baby or child during transport.

During an unanticipated collision, our natural instinct is to extend our extremities, not hug ourselves. If a parent is holding their baby and the ambulance is hit by another vehicle then the baby is no longer secured in arms but instead becomes airborne.



THE DO'S AND DON'TS OF TRANSPORTING CHILDREN IN AN AMBULANCE



EMSC
Emergency Medical
Services for Children.

Approximately six million children are transported by emergency medical services (EMS) vehicles each year in the United States. There are risks of injury associated with transport that can be minimized. An

ambulance is NOT a standard passenger vehicle. Unlike the well-developed and publicized child passenger safety standards and guidelines, specifications for the safe transport of ill and injured children in ambulances are still under development. Standard automotive safety practices and techniques cannot be applied directly to EMS vehicle environments due to biomechanical and practical differences. Caution is encouraged in the application of passenger vehicle principles to ambulances and in the utilization of new and unproven products.

The Emergency Medical Services for Children (EMSC) Program supports efforts to improve the safety of pediatric patients being transported in EMS vehicles. Through an EMSC grant, the Division of Pediatric Emergency Medicine at Johns Hopkins Children's Center is working to fill critical knowledge gaps and developing standards for pediatric EMS transport safety. Project results should be available in the year 2000.

A national consensus committee, sponsored by the EMSC Program, is reviewing current EMS child transportation safety practices. The group, which includes representatives from EMS national organizations, Federal government agencies, and transportation safety engineers, is developing preliminary recommendations for EMS providers until scientific research is completed.

There are certain practices that can significantly decrease the likelihood of a crash, and in the event of a crash or near collision, can

significantly decrease the potential for injury. These practices are listed below. Importantly, as is mandated in several states, the NHTSA Emergency Vehicle Operating Course (EVOC), National Standard Curriculum or its equivalent is an integral part of this transport safety enhancement.

Pending research and consensus outcomes, the following guidelines for good practice should be observed when transporting children in EMS vehicles.

DO's

- ✓ **DO** drive cautiously at safe speeds observing traffic laws.
- ✓ **DO** tightly secure all monitoring devices and other equipment.
- ✓ **DO** ensure available restraint systems are used by EMTs and other occupants, including the patient.
- ✓ **DO** transport children who are not patients, properly restrained, in an alternate passenger vehicle, whenever possible.
- ✓ **DO** encourage utilization of the DOT NHTSA Emergency Vehicle Operating Course (EVOC), National Standard Curriculum.

DON'Ts

- ✗ **DO NOT** drive at unsafe high speeds with rapid acceleration, decelerations, and turns.
- ✗ **DO NOT** leave monitoring devices and other equipment unsecured in moving EMS vehicles.
- ✗ **DO NOT** allow parents, caregivers, EMTs or other passengers to be unrestrained during transport.
- ✗ **DO NOT** have the child/infant held in the parent, caregiver, or EMT's arms or lap during transport.
- ✗ **DO NOT** allow emergency vehicles to be operated by persons who have not completed the DOT EVOC or equivalent.



Patient Case



- A 7 year old female with asthma attends a poolside birthday party. She begins having some mild coughing and wheezing while swimming in a pool full of other children.
- Parent goes to their car to retrieve an albuterol inhaler and returns to the party but cannot locate her child. Patient is found under water and initially not moving. She is frantically pulled out of pool and begins coughing and breathing.
- 911 is called and the child is enroute to the closest ED. She is sitting in her mother's lap on an ambulance stretcher without restraints.
- A SUV going 60 miles per hour crashes into the side of the ambulance. The patient and her mother fly across the ambulance interior and sustain head trauma.
- Mother and child are both trauma alerted to a Level I trauma center and another ambulance is called for transport.

Product Options



Variety of Options

For all sizes

- Choose commercially approved devices for all size pediatric patients
- This will vary based on your agency needs, protocols and budget
- Florida EMSC does not endorse a particular product or company



Patients come in all shapes and sizes, and our smallest patients create unique challenges for patient transport. The **Pedi Mate®+**, **NeoMate™**, and **KangooFix™** provide quick and efficient ways to safely secure pediatric patients from 3.5-100 lb to almost any cot without having to purchase additional equipment or seats.

- **Each restraint is fully adjustable** with a five-point harness system that securely holds patients
- **Rolls compactly** for convenient storage and easy deployment
- **Vinyl construction** is nontoxic and easy-to-clean



Pedi Mate + safely secures patients ranging in size from 10-100 lb



NeoMate is designed to secured infants weighing 5-14 lb



KangooFix safely secures newborns weighing 3.5-11.1 lb to parent, maintaining close contact at all times

Ferno- Pedi Mate

Around \$350-400/each



Pedi Mate +



The Pedi Mate + Pediatric Restraint System quickly adapts an ambulance cot for the safe transport of children ranging in size from 10-100 lb (4.5-43.5 kg).

- **Fully-adjustable**, five-point harness system securely holds patients, providing safe restraint for transport
- **Rolls compactly** for convenient storage and easy deployment
- **Vinyl construction** is nontoxic and easy-to-clean
- **Three restraint straps** easily attach to any cot

Pedi Mate +



<https://www.youtube.com/watch?v=2D9jQLQrxvc>

Ferno- Neo Mate

Around \$350-
400/each



NeoMate



The NeoMate Pediatric Restraint System adapts an ambulance cot to safely transport children ranging in size from 5-14 lb (2.3-6 kg).

- **Halo Pad™** keeps infant's head stable
- **Fully-adjustable**, five-point harness system fits children firmly and provides safe restraint during transport
- **Three restraint straps** easily attach to any cot
- **Rolls up compactly** for efficient storage and deployment

Neo Mate



<https://www.youtube.com/watch?v=MlqoiZZ-fl8>

Ferno- KangooFix

Around \$650-700/each



KangooFix



The KangooFix Neonatal Restraint System was developed to safely and effectively cradle and secure a newborn during non-critical ambulance transportation, allowing the baby to travel with their parent. Transport weight capacity ranges from 3.5-11.1 lb (1.6-5 kg)

- **EN 1789 compliant** for safety
- **Skull cap included** to help maintain baby's body heat
- **Quick release system** allows fast access for EMS professionals
- **"Face-up" mode** enables EMS professionals to quickly monitor newborn

NASEMSO pediatric transport recommendations call for all devices, or combination of devices, to cover a weight range of between 5 to 99 pounds (2.3 - 45 kg). Combining the KangooFix, NeoMate, and Pedi Mate + creates a covered weight range of 3.5-100 lb, supporting the safest transport possible for a wide range of ages and sizes.

Ferno- KangooFix



- *5-point outer harness attaches to the ambulance cot harness
- *Inner harness and heat cover are sewn in to enable secure fit
- *Snug cocoon design and integrated skull cap keeps baby warm and secure
- *Close contact between parent and baby is clinically proven to improve condition of both parent and baby during transfers
- *Lightweight and easy to store • Easy to clean



Ambulance Captains Chair



- The ambulance's captain seat can be used for pediatric patients weighing between 20 to 50 lbs (9 to 23 kg)
- Who can sit upright unassisted
- Reliably maintain head control during the entire transport. **This rules out infants since they are only able to sit up unassisted for a few minutes after about 8 months old.**



Car Seat on Stretcher



Rear-facing only car seats/infant car seats CANNOT be installed on ambulance cots or in rear-facing captain's chairs

Recommendations for Using Convertible Child Safety Seat, Car Bed, and Securing Child on Cot in Emergency Ground Ambulances



Convertible Child Safety Seat (CSS)

Child Size: 5 to 40 lbs

Installation Recommendations:

- Install with rear-facing and forward-facing belt paths.
- Choose seat with 5-point internal harness.
- Position seat facing rear of ambulance.
- Elevate cot backrest to fully upright position.
- Adjust restraint recline mechanism to fit snugly against cot seat back.











Putting Safe Transport Principles Into Practice



Developmental Care



Neonate
0-28 days



- Minimal emotional trauma when separated from caregiver
- Main form of communication is crying.
- Provide comfort hold during transition to stretcher, slow movements if possible.

Developmental Care



Infant
29 days – 1 year



- Separation anxiety maybe present
- Offer age appropriate or familiar toy or blanket once on the stretcher.
- If safe, offer caregiver opportunity to standby stretcher and/or assist with buckling
- Use distraction techniques such as singing the alphabet song

Developmental Care



Toddler
One to Three Years



- Separation anxiety is likely present
- Use simple words and visual cues.
- Offer frequent physical reassurance cues like smiling
- Offer age appropriate or familiar toy or blank once on the stretcher
- If safe, offer caregiver opportunity to standby stretcher and /or assist with buckling.



Developmental Care



Parents

- Provide empathy to parents and caregivers that separation is difficult, but that their infant/child is safest secured in a device/stretcher.
- Engage the parent or caregiver, when appropriate, in assisting in securing to reduce anxiety for both the parent/caregiver and the infant/child.

- Minimal emotional trauma when separated from caregiver.
- Reduce fear of oxygen mask through verbal and visual reassurance
- Need to be kept warm - make sure hands and stethoscope are warmed before touching child.
- Will respond to caregivers voice or touch.



NEONATE



INFANT



TODDLER



CAREGIVER

- May experience significant separation anxiety from parent/caregiver
- May be sensitive to physical touch
- Does not like having clothing removed. Remove, exam, replace.
- Reduce fear of oxygen mask through verbal and visual reassurance
- May perceive they are in trouble and at fault –reassure no-fault and they're safe
- May fear needles and other medical devices
- Best practice approach is trunk to head exam to build trust and reduce risk of fear/agitation

- Offer reassurance and empathy to caregiver/parent.
- Remind them the infant/child are safest when the infant/child is secured in device/on stretcher
- Have them assist with securing infant/child or assist with distraction techniques.

Safe Pediatric Transport Protocol Example

Background

Estimates suggest that ground EMS responds to approximately 30 million emergency calls each year. Approximately 6.2 million patient transport ambulance trips occur annually, of which approximately 10 percent of those patients are children. Insurance companies report that approximately 10,000 ambulance crashes result in injury or death each year. Estimates suggest that up to 1,000 ambulance crashes involve pediatric patients each year.¹

_____ is committed to the goal of establishing an evidence-based policy for safely transporting children by ambulance. Such a policy would ensure a safer environment for the patients who rely on _____ to act on their behalf. Safe ambulance transport should be considered as a standard of care by _____ and equivalent to maintaining an open airway, adequate ventilation and the maintenance of cardiovascular circulation.²

Purpose

To ensure safe transport of ill and injured pediatric patients in the care of _____.

Policy

All pediatric patients shall be transported using a pediatric restraint device approved by the Medical Director. These include the following:

- *Insert agency specific product*

It is never appropriate to transport a pediatric patient in any of the following ways:

- Unrestrained
- On someone's lap (this includes babies born in the field);
- Only using horizontal stretcher straps if the patient does not fit in the shoulder straps;

1. Working Group Best-Practice Recommendations for the Safe Transport of Children in Emergency Ground Ambulances (NHTSA, September 2012). [nhtsa.gov/staticfiles/nti/pdf/811677.pdf](https://www.nhtsa.gov/staticfiles/nti/pdf/811677.pdf)
2. Safe Transport of Children by EMS: Interim Guidance (NAEMSO, March 2017). [naemso.org/wp-content/uploads/Safe-Transport-of-Children-by-EMS-InterimGuidance-03Mar2017.pdf](https://www.naemso.org/wp-content/uploads/Safe-Transport-of-Children-by-EMS-InterimGuidance-03Mar2017.pdf)



FAQs



If the car has been in an accident, can we still use the car seat?

Please refer to your agency's protocols first.

Use of child restraints involved in a crash:

Please note that NHTSA recommends that child restraints should be replaced following a moderate or severe crash in order to ensure a continued high level of crash protection for child passengers.

In addition, NHTSA recommends the re-use of a child safety seat that has been involved in a "minor" crash. A "minor" crash should meet ALL the following criteria:

- a. The vehicle was able to be driven away from the crash site;
- b. The vehicle door nearest the safety seat was undamaged;
- c. There were no injuries to any of the vehicle occupants;
- d. The air bags (if present) did not deploy; AND
- e. There is no visible damage to the safety seat.

Source: www.nhtsa.gov/people/injury/childps/childrestraints/reuse/restraintreuse.htm

What about the best practice of early mother/newborn bonding?

There is no data to indicate short-term separation is detrimental.

The amount of bonding time compared to the risk of injury for the newborn and/or mother is in favor for separate transporting.

Can babies be warmed while in a restraint system?

Suggest blankets, emergency space blanket to keep warm

Utilize hat and keep head warm

Keep ambient air warm, turn up the heat

Resources

Safe Transport of Children by EMS: Interim Guidance (NASEMSO, March 2017)

<https://nasemso.org/wp-content/uploads/Safe-Transport-of-Children-by-EMS-InterimGuidance-08Mar2017-FINAL.pdf>

<https://nasemso.org/committees/safe-transport-of-children/>

<https://emscimprovement.center/domains/prehospital-care/prehospital-pediatric-readiness/pprp-toolkit/patient-medication-safety/stc/>

<https://www.ems.gov/projects/safe-transportation-of-children-in-ground-ambulances.html>

Working Group Best-Practice Recommendations for the Safe Transport of Children in Emergency Ground Ambulances (NHTSA, September 2012). [nhtsa.gov/staticfiles/nti/pdf/811677.pdf](https://www.nhtsa.gov/staticfiles/nti/pdf/811677.pdf)

<https://emlrc.org/flpedready/>

<https://www.ems1.com/pediatric-care/articles/pediatric-patient-abcs-7-tips-for-emts-and-paramedics-KYLWD13oQPR9q8Qx/>

Thank you for being a PEDReady
Champion!

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