

Addressing Injury Prevention: One Car Seat at a Time

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INTRODUCTION

- Pediatric injury prevention education is an essential component of trauma nursing care.
- Often life-threatening injuries can be prevented through effective education programs.
- Proper car seat placement and restraint use is essential in reducing morbidity and mortality for infants and children in the event of an unexpected motor vehicle accident.
- Frequent exposure to the devastating impact on pediatric morbidity and mortality of improperly restrained children in MVA has driven our team to engage in injury prevention initiatives with our trauma and injury prevention program.

CHILD PASSENGER SAFETY DATA

- An estimated 46% of child restraint systems are improperly used or installed.
- Adult restraint behaviors often determines child passenger restraint.
- Disparities exist in child restraint use. 45% of Black and 46% of Hispanic children 12 and under were not restrained compared with 26% of Caucasian children.
- State child restraint laws vary by state with only 2 states having laws for 8 years and younger.
- 4 out of 5 car seats were reported to be incorrectly installed in Delaware.
- Properly installed child restraint systems have been shown to reduce fatality by 71% in infants & 54% in toddlers age 1-4.
- Serious injury is reduced by 45% of children aged 4-8 when using booster seat compared to seat belt use alone.

2016 Delaware Annual Traffic Statistical Report

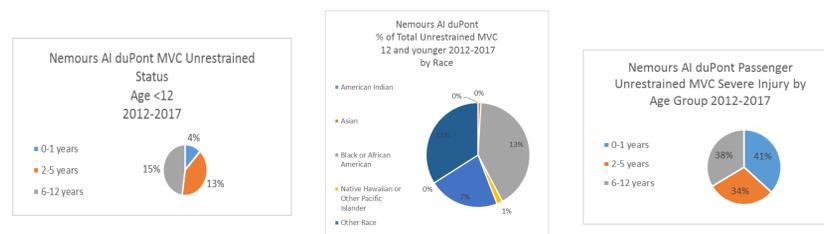
Age Group	2015				2016			
	# Injured	# Using Restraint	# Not Restrained	# Unknown Restraint	# Injured	# Using Restraint	# Not Restrained	# Unknown Restraint
0-4	145	135	8	4	157	148	5	4
5-9	230	187	18	35	223	190	13	20
10-14	220	175	7	38	233	172	22	39

CASE STUDY

- MVC with car seat installed middle back seat with vehicle lap belt restraint placed across chest of infant.
- 8 month old previously healthy female.
- EMS on scene found infant hanging and being strangled by vehicle restraint.
- Transport to local hospital for stabilization then to AI DuPont for further management.
- Extensive PICU car with ultimate demise on day 5.
- **INJURY:** Atlantooccipital dissociation injury with significant widening of the occipitocervical interval and large amount of paravertebral and epidural hemorrhage (AKA: internal decapitation)



NEMOURS AI duPONT MVC RESTRAINT STATISTICS



- 32% of trauma patients 12 years of age and under from 2012-2017 were unrestrained.
- In the age group 0-1, 32% of cases were unrestrained with 41% having significant injury.
- In the age group 2-5, 41% of cases were unrestrained with 34% having significant injury.
- 10 patients aged 2-5 were reported to not be in booster seats.
- In the age group 6-12, 27% were unrestrained with 38% having significant injury.
- 13 patients aged 6-12 were reported as wearing lap belts only.

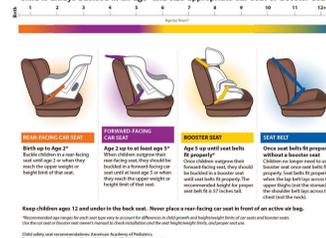
CHILD PASSENGER SAFETY PROGRAM

- The National Child Passenger Safety (CPS) Board oversees CPS child restraint technicians.
- CPS technicians must be trained and certified.
- Nemours AI duPont offers free Child Passenger Safety Seat Inspection and Installation Services provided by certified CPS technicians.
- Nemours AI duPont Passenger Safety Station Inspections found 68% rate of error in car seat installation in 2017.
- Since starting the program in 2014, 928 car seats have been inspected and 266 installed by Nemours CPS technicians.



CHILD RESTRAINT RECOMMENDATIONS

Using the correct car seat or booster seat can be a lifesaver; make sure your child is always buckled in an age- and size-appropriate car seat or booster seat.



- Parents and caregivers can keep children safe by:**
- Knowing how to use car seats, booster seats, and seat belts.
 - Using them on every trip, no matter how short.
 - Setting a good example by always using a seat belt themselves.

FUN (OR NOT SO) FACT:

Car seatbelts were designed for the average size male; most adults don't fit properly into motor vehicle restraint systems.

CONCLUSION and RECOMMENDATIONS

- We identified local barriers and trends consistent with national trends, especially in misuse and outcome data regarding the impact of child passenger restraint use.
- Nurses can effectively reinforce injury prevention in the acute care and community settings.
- Further research to evaluate the impact of nursing in injury prevention initiatives, enhanced data collection on the impact of the Child Passenger Safety Station in our state, and outcome data related to improper restraint use in our trauma program.
- We recommend local Nurse Advocacy efforts to local officials to pass comprehensive child passenger restraint laws, including increasing the age for booster.



TRAUMA/TRANSPORT TEAM INJURY PREVENTION INITIATIVES

- Nemours A.I. DuPont intra-professional Pediatric Critical Care Transport Team and Injury Prevention Program partnered to expand injury prevention education for our departments, hospital, and community at large.
- Members of our intra-professional team have or are enrolled in training to become technical experts in the National Child Passenger Safety Certification Program.
- Trauma Leadership partners with Safe Kids DE, Think First Kids, and Injury Prevention Coalition of DE injury prevention initiatives.
- Community Pediatric Emergency Preparedness and Response Activities.
 - Hosted a FEMA sponsored Pediatric Preparedness and Response Class for community hospital and EMS partners.
 - Volunteer as pediatric experts for the American Red Cross and Delaware Medical Reserve as educators and responders.
 - Teach local EMS pediatric emergency care in a variety of settings.

REFERENCES

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