EMERGENCY NURSES ASSOCIATION

Position Statement

930 E. Woodfield Road, Schaumburg, IL 60173 | 800.900.9659 | ena.org

Child Passenger Safety in the United States

Description

One of the greatest achievements in the prevention of injuries to children has been in child passenger safety. The rate of motor vehicle crash (MVC) deaths per million for children younger than 13 is less than a quarter of what it was in 1975, and the rate at which children die as passenger vehicle occupants has seen a decrease of 61 percent (IIHS, 2021, September). Nevertheless, MVCs are a leading cause of unintentional deaths for children ages 13 and younger, and still cause one of every four unintentional deaths in children in the United States (IIHS, 2021, March). The most effective way to reduce deaths and injuries in children is to use age- and size-appropriate child passenger safety restraints (child safety seats) every time children travel in motor vehicles (IIHS, 2021, September; National Child Passenger Safety Board [NCPSB] 2020).

Child passenger safety has evolved dramatically over the past decade (Durbin et al., 2018). Before 1967 child passenger safety restraints were intended to minimize driver distraction by the child and restrict movement (Kuska, 2002). In 1968, the first child seats designed for crash protection were developed by auto manufacturers (Stewart, 2009). In 1971, the National Highway Traffic Safety Administration (NHTSA) adopted Federal Motor Vehicle Safety Standard (FMVSS) 213 (Stewart, 2009). FMVSS 213 governs the performance criteria, and some of the design criteria, for child safety seats for children who weigh up to 80 pounds (NHTSA, 2022). Child safety seat manufacturers self-certify that their products meet or exceed those performance criteria. FMVSS 213 includes crashworthiness, labeling, instructions, flammability, and buckle and release pressure criteria (NCPSB 2020b, NHTSA, 2022). Critical safety information is conveyed to consumers through compliance labels attached to the child safety restraints containing manufacturer name, model name, model number, and manufacture and expiration dates (NCPSB, 2020b; NHTSA, 2022). As a result, modern child safety seats are easier to use and have more rigorous safety features such as seat belt guides, side impact protection, five-point harnesses with multiple harness and buckle slots, and easy adjustments to secure the child to the car seat. However, even with improved ease of use, child safety seats and booster seats are often used incorrectly (NCPSB, 2020b). The most common misuse observed are loose straps and loose attachment to the vehicle seat (NCPSB, 2020b NHTSA, 2018). Correct installation of child passenger safety seats continues to be a problem that impacts safety (NCPSB, 2020b; NHTSA, 2018).

All 50 states and the District of Columbia have child protection laws that require children to travel in approved child safety seats or booster seats (IIHS, 2022, May). Tennessee enacted the first child restraint law in 1979 (Stewart, 2009). It is the position of the National Safety Council and the Insurance Institute for Highway Safety that all infants and children up to age 16 should be covered by enforceable child safety seat laws or seat belt laws and that the violation of these laws be primary offenses – i.e., police officers may stop vehicles for suspected violation of a child safety seat law, as opposed to the officer needing to have another reason to make the traffic stop (GHSA, n.d.; IIHS, 2022; National Safety Council, 2021).

There are no uniform child passenger safety practices across the country; rather, there is a patchwork system of laws, regulations, and standards that may allow these vulnerable travelers to slip through the cracks (NSC, 2021). Many children are still left unprotected, especially those in the 5–15-year-old age group who are not covered by the child safety seat laws in many states (IIHS, 2022, May). For example, in three states, a 15-year-old riding in the rear seat of a vehicle does not have to wear a seat belt; another state allows children aged nine or older who are less than four feet, nine inches tall to ride unrestrained in the back seat of a vehicle (IIHS, 2022, May). In the other 47 states and the District of Columbia, all children younger than age 16 are covered by either a child safety law or seat belt law or by both laws (IIHS, 2022, May).

Emergency Nurses Association Position

It is the position of the Emergency Nurses Association (ENA) that:

1. The best way to protect children in a motor vehicle is to place the child in an age- and size-appropriate child safety seat following the manufacturer's guidelines.

2. Emergency nurses advocate for a national, standardized child passenger safety law that protects children through age 15.

3. Emergency nurses be provided with child passenger safety education training (basic awareness or certification curriculum) and maintain a fundamental level of knowledge of best practice recommendations.

4. Emergency nurses promote and participate in public awareness campaigns and educate parents and caregivers on the recommended child passenger safety standards and best practices.

5. Hospital leadership adopt and promote the consensus policy and recommendations for best practices for child safety seats set by the American Academy of Pediatrics (AAP), NHTSA, Centers for Disease Control and Prevention (CDC), NSC, and the IIHS as the standard of care for the safe transportation of children from birth through age 15.

Background

When an MVC occurs with an unrestrained child aboard, three different collisions occur in quick succession (IIHS, 2008; NCPSB, 2020b). The first collision (vehicle collision) is between the vehicle and an object outside the vehicle (IIHS, 2008). As the vehicle slows down, the front of the vehicle crumples, taking some of the energy of the crash. In the second collision (human collision), the unrestrained child travels forward at the pre-crash speed and the child comes to an abrupt stop against the decelerating vehicle interior with only the body to absorb the energy of the crash (IIHS, 2008). The third collision (internal collision) occurs between the child's internal organs and the bony structures that can cause internal injuries (IIHS, 2008; NCPSB, 2020b). Even when the body may appear uninjured, the liver, spleen, heart, or other organs may be torn, bruised, and/or caused to bleed (IIHS, 2008; NCPSB, 2020b). Impacts to the head may cause closed head injuries resulting from the soft tissue of the brain hitting the skull or being torn as the skull fractures (IIHS, 2008). Child safety seats, booster seats, and seat belts extend the time when the restrained child experiences the forces in a crash and distribute the energy load of the impact (NCPSB, 2020b; IIHS, 2008).

Using an age appropriate and correctly-sized child safety seat can help decrease injuries. Developmental considerations such as incomplete vertebral ossification, more horizontally-oriented spinal facet joints,

and excessive ligamentous laxity put young children at risk for head and spinal cord injuries (Durbin et al., 2018). The large head and the difference in the anatomy of the cervical spine in young children can lead to stretching and transection of the spinal cord if a child is involved in a frontal crash (NCPSB, 2020b). A correctly installed car seat attached firmly to the vehicle seat with a well-fitted harness and a chest clip adjusted at the armpit level of the child helps to restrain the child in the car seat (NCPSB, 2020b). In the event of an MVC, the tighter the harness is adjusted to the child (snug without slack), the lower the body's initial deceleration, which decreases potential injuries (Arbogast et al., 2009; NCPSB, 2020b). Age-appropriate child safety seats with emphasis on correct *selection* of car seat, *direction* (rear-facing or forward-facing), *location* (preferably in the rear seat of the vehicle), correct *installation* in the vehicle, and proper *harnessing* of the child in the safety seat, dramatically reduce injury in a collision (IIHS, 2008; Mitros, 2017; NCPSB, 2020b).

Researchers from the Children's Hospital of Philadelphia (CHOP) have found that the primary reason injuries are sustained by restrained children in a crash is because they are prematurely turned forward-facing from a rear-facing direction before age two or transitioned too early to booster seats from harnessed child safety seats or to seat belts (NHTSA, 2021, n.d.-a). Best practice dictates that infants and toddlers ride rear-facing as long as possible until they reach the upper weight or height limit allowed by the car seat manufacturer. When children outgrow a rear-facing only seat, they can switch to convertible car seats (bigger car seats that can be used rear-facing and forward-facing) installed rear-facing (Mitros, 2017; NCPSB, 2020b). Convertible car seats are labeled for rear-facing use for children up to 40 pounds (NCPSB, 2020b). At age two and up, the convertible seat can be turned forward-facing and used until the weight or height limit of the car seat is reached, generally at 40 or 50 pounds with newer models having weight limits of 65 pounds. The next step is for children to be in a combination car seat (NCPSB, 2020b). Combination seats are forward-facing only car seats with harnesses that turn into a belt-positioning booster seat by removing the harness once a child reaches the maximum weight or height limit for the harness system (NCPSB, 2020b). With the harness, a combination seat accommodates children's weight up to 65 pounds and can be used up to 100 to 120 pounds as a belt positioning booster (NCPSB, 2020b). Combination seats help delay transitioning to a booster seat from a convertible seat (NCPSB, 2020b).

Most children four to eight years old are not large enough to fit properly in a vehicle seat and will require a booster seat. A booster seat changes the angle at which the lap belt holds the child and prevents the lap belt from shifting upward in a crash reducing the risk of a child slipping (submarining) under the seat belt (Klinich et al., 2020). Booster seats reposition the child's body upward to enable the child to achieve a skeletal position like that of an adult for whom the vehicle seat belt system, air bags and vehicle interior safety requirements are designed (Klinich et al., 2020). To transition to a booster seat, a child needs to be able to sit upright with the seat belt properly positioned for the entire trip. Vehicle seat belts can be used to safely secure a child in the back seat when the child can be appropriately positioned in the seat belt with his back against the vehicle seat back and their knees bent naturally at the edge of the vehicle seat without slouching and feet flat on the floor (Durbin et al., 2018). The lap belt lies snugly across the upper thighs, low on hips, and the shoulder must fit across the middle of the shoulder and chest (Durbin et al., 2018; SafetyBeltSafe U.S.A., n.d.).

Every transition from rear-facing to forward-facing to booster seats to seat belts is associated with some decrease in protection. Rear-facing only child seats are engineered to distribute the forces of a crash across the entire head and body of an infant and young child (Durbin et al, 2018). NHTSA and AAP recommend that children remain in rear-facing only child safety seats as long as possible – that is until they reach the highest weight or height allowed by the car seat manufacturer (Durbin et al., 2018). The CDC and IIHS have adopted and promoted this recommendation. The complete policy statement from

the AAP's Committee on Injury, Violence and Poison Prevention provides five evidenced-based recommendations for best practices in the choice of a child passenger restraint system to optimize safety in passenger vehicles for children from birth through adolescence (Durbin et al., 2018). If the child has significant healthcare needs or has special transportation needs, the AAP offers complementary AAP policies and other resources for best practice recommendations (O'Neill et al., 2019).

Car seats do not automatically need to be replaced following a minor crash. However, NHTSA recommends that car seats be replaced following a moderate to severe crash for optimal crash protection for children, and car seat manufacturers have chosen to adopt these recommendations (NHTSA Position Statement, n.d.). NHTSA also issues child safety seat recalls (NHTSA, n.d.-b).

Child passenger safety laws are enacted to keep children safe while traveling in passenger vehicles. Ideally, state laws should be enforceable and cover all infants and children in all modes of transportation from birth to age 15 (CDC, n.d). In most U.S. jurisdictions, teen drivers younger than 18 are covered by the graduated licensing law (Durbin et al., 2018; IIHS, 2021, May). Best practice recommendations and state/federal laws provide complementary approaches to educate parents and caregivers to help them make the best decisions to ensure children are restrained on every trip (Durbin et al., 2018). Caregivers often look to laws for guidance on safe transportation of children, and these state laws have a positive impact on their use (NSC, 2021).

Many emergency nurses have reported that they have not been provided training or were inadequately trained on child passenger safety car seats, and some are unaware of child passenger safety guidelines (Kuska & Zonfrillo, 2017). It is important that emergency nurses are provided with knowledge, skills, and confidence to provide child passenger safety education.

The NCPSB offers Car Seat Basics, a new, free e-learning curriculum (2020a). It is an introductory course for anyone interested in learning more about child passenger safety. The course provides basic knowledge on child passenger safety to those who can benefit from this information including nurses. It takes about 60 minutes to complete.

A program of Safe Kids Worldwide, the National Child Passenger Safety Technician Certification Training, offers a national certification as a child passenger safety (CPS) technician (National Child Passenger Safety Certification, 2018). The curriculum is overseen by NHTSA, the agency that owns the curriculum and the NCPSB, responsible for maintaining the quality and integrity of this nationally standardized curriculum. The regularly updated course provides participants with the basic technical knowledge about car seats, booster seats, and seat belt systems and skills to use to educate parents and caregivers on how to correctly use and install car seats, booster seats, and seat belts. Through Safe Kids Worldwide, participants are certified as CPS technicians making them a valuable resource in their ED and their community. An alternative to the in-person certification training is a hybrid class offering of the National Child Passenger Safety Certification Training. It is a self-paced training that includes e-learning, virtual, and in-person components. Components are delivered sequentially and dependent on the completion of the previous component. Practice and activity time required will vary, depending on the student.

An additional specialized two-day training, Safe Travel for All Children: Transporting with Special Health Care Needs (National Center for Safe Transportation of Children with Special Health Care Needs, n.d.) is available for CPS technicians who are interested in learning how to transport children with special health care needs. In this course, CPS technicians learn to identify appropriate adaptive child restraint for a broad range of health conditions.

Each year on the fourth Saturday of September, Seat Check Saturday is celebrated across the U.S. and is preceded by the National Child Passenger Safety Week (U.S. Department of Transportation, Traffic Safety Marketing, n.d.). The campaign materials and CPS Week Activities Planner provided by NHTSA have information on how to generate awareness about child passenger safety. The campaign materials may be useful for hospitals and EDs to distribute to patients and their families.

Emergency nurses play a significant role in child passenger safety (Kuska & Zonfrillo, 2017). Emergency nurses are afforded a unique opportunity, whether routine or precipitated by traumatic events such as an MVC, to prevent future injuries by taking advantage of a teachable moment in the ED (Kuska & Zonfrillo, 2017). These teachable moments are a fitting time to educate parents and caregivers and provide recommendations on how to keep children safe while traveling in motor vehicles.

Resources

Centers for Disease Control and Prevention. (n.d.). *Child passenger safety. Get the facts*. https://www.cdc.gov/transportationsafety/child_passenger_safety/cps-factsheet.html

Durbin, D. R., Hoffman, B. D. & the American Academy of Pediatrics Council on Injury, Violence, and Poison Prevention. (2018). Child passenger safety [Technical report]. *Pediatrics, 142*(5). Article e20182461. https://doi.org/10.1542/peds.2018-2461

National Child Passenger Safety Board. (2020). *National Child Passenger Safety Certification Training – Instructor Guide.*

U.S. Department of Transportation, Traffic Safety Marketing. (n.d.). *Child passenger safety week*. https://www.trafficsafetymarketing.gov/get-materials/child-safety/child-passenger-safety-week

U.S. Department of Transportation. National Highway Traffic Safety Administration. (2015). Hospital discharge recommendations for safe transportation of children: Best practice recommendations developed by an expert working group convened by the National Highway Traffic Safety Administration. https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/812106_hospitaldischrgerecsafetranschildren.pdf

References

Arbogast, K. B., Jermakian, J. S., Kallan, M, & Durbin, D. R. (2009). Effectiveness of belt positioning booster seats: An updated assessment. *Pediatrics, 124*(5), 1281–1286. https://doi.org/10.1542/peds.2009-0908

Centers for Disease Control and Prevention. (n.d.). *Child passenger safety. Get the facts*. https://www.cdc.gov/transportationsafety/child_passenger_safety/cps-factsheet.html

Durbin, D. R., Hoffman, B. D., & Council on Injury, Violence and Prevention. (2018). Technical report: Child passenger safety. *Pediatrics, 142*(4). https://doi.org/10.1542/peds.2018-2460

Governors Highway Safety Administration. (n.d.). *Seat belts*. https://www.ghsa.org/issues/seat-belts

Insurance Institute for Highway Safety. (2020). *Understanding car crashes: It's basic physics* [Video]. https://www.youtube.com/watch?v=2XKOzibVqJg&t=0s

Insurance Institute for Highway Safety. (2021, March). *Fatality facts 2019: Children*. https://www.iihs.org/topics/fatality-statistics/detail/children

Insurance Institute for Highway Safety. (2021, May). *Teenagers*. https://www.iihs.org/topics/teenagers

Insurance Institute for Highway Safety. (2021, September). *Child safety.* https://www.iihs.org/topics/child-safety

Insurance Institute for Highway Safety. (2022). *Seat belts*. https://www.iihs.org/topics/seat-belts#laws

Klinich, K.D., Jones, M. H., Manary, M. A., Ebert, S. H., Boyle, K. J., Malik, L., Orton, N. R., & Reed, M.P. (2020). *Investigation of potential design and performance criteria for booster seats through volunteer and dynamic testing* (Report No. DOT HS 812 919). National Highway Traffic Safety Administration. https://rosap.ntl.bts.gov/view/dot/49119

Kuska, T. C. (2002). Child passenger protection: Then and now. *Journal of Emergency Nursing, 28*(1)52–56. https://doi.org/10.1067/men.2002.118725

Kuska, T.C., & Zonfrillo, M.R. (2017) Child passenger safety: an assessment of emergency nurses' knowledge and provision of information in the emergency department. *Journal of Emergency Nursing. 43*(3), 239-245. https://doi.org/10.1016/j.jen.2016.06.016

Mitros, L. (2017). *New evidence supports children under 2 are safest riding rear-facing*. https://injury.research.chop.edu/blog/posts/new-evidence-supports-children-under-2-are-safest-riding-rear-facing

National Center for Safe Transportation of Children with Special Health Care Needs. (n.d.). *Safe travel for all children: Transporting children with special health care needs.* Automotive Safety Program, Indiana University School of Medicine. https://preventinjury.pediatrics.iu.edu/adaptive-needs/safe-travel-for-all-children-and-other-trainings/special-needs-trainings/

National Child Passenger Safety Board. (2020a). *Car seat basics – E-learning.* https://www.cpsboard.org/courses/car-seat-basics/

National Child Passenger Safety Board. (2020b). *National child passenger technician certification training-Instructor Guide.2020.*

National Child Passenger Safety Certification. (2018). *CPS Certification.* Welcome! | National CPS Certification (safekids.org)

National Highway Traffic Safety Administration. (n.d.-a). *Car seat recommendations for children* [Fact sheet]. https://www.nhtsa.gov/document/car-seat-recommendations-children-age-size

National Highway Traffic Safety Administration. (n.d.-b). *Child safety seat recalls*. https://www.nhtsa.gov/recalls

National Highway Traffic Safety Administration. (2018, July). Additional analysis of national child restraint misuse (DOT HS 812 527). *Traffic Safety Facts: Research Note*. https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/13648-additional_analysis_of_ncruss_071718_v3_tag.pdf

National Highway Traffic Safety Administration, 49 eCFR Part 571 § 571.1 (2022). Federal Motor Vehicle Safety Standards. https://www.ecfr.gov/current/title-49/subtitle-B/chapter-V/part-571?toc=1

National Safety Council. (2021). *Child passenger safety restraints: Their young lives depend on you* [Position/policy statement]. https://www.nsc.org/getmedia/3b4606e4-b865-406f-8041-05428cf79bdb/cps-policy.pdf.aspx

O'Neill, J., Hoffman, B., Council on Injury, Violence, and Poison Prevention, Agrean, P. F., Denny, S. A., Hirsh, M., Johnston, B., Lee, L. K., Monroe, K., Schaechter, J., Tenebeing, M., Zonfrillo, M. R., & Quinlan, K. (2019). *Transporting children with special health care needs*. *Pediatrics*, *143*(5), Article e20190724. https://doi.org/10.1542/peds.2019-0724

SafetyBeltSafe U.S.A. (2019). "*Boosters are for big kids" kit.* https://carseat.org/boosters-are-for-big-kids-kit-2/

Stewart, D. D. (2009, February 24). *More than forty years of progress for child protection – A chronicle of child passenger safety advances in the USA, 1965-2009.* Safe Ride News. https://www.saferidenews.com/2009/02/more-than-forty-years-of-progress-for-child-passenger-protection/

U.S. Department of Transportation. Traffic Safety Marketing. (n.d.). *Child passenger safety week.* https://www.trafficsafetymarketing.gov/get-materials/child-safety/child-passenger-safety-week

Authors and Reviewers

Authored by

Thelma C. Kuska, BSN, RN, CEN, CPST-I, FAEN

Reviewed by

2022 ENA Position Statement Committee Members

Brenda Braun, MSN, RN, CEN, CPEN, FAEN
Alison Day, PhD, MSN, BS, RN, FAEN
Lisa Leiding, DNP, RN, CCHP-RN
Dawn Peta, BN, RN, ENC©
Cheryl Riwitis, DNP, RN, FNP, EMT-B, CEN, CFRN, FNP-BC, TCRN, FAEN
Elizabeth Stone, PhD, RN, CPEN, CHSE, FAEN
Joanne E. Navarroli, MSN, RN, CEN
Sharon Vanairsdale, DNP, MS, RN, APRN, NP, CNS, CEN, ACNS-BC, NP-C, FAEN, FAAN
Jean Proehl, MN, RN, CEN, CPEN, TCRN, FAEN, FAAN, Chairperson

ENA 2022 Board of Directors Liaison

Ryan Oglesby, PhD, RN, CEN

ENA Staff Liaison

Monica Escalante Kolbuk, MSN, RN, CEN
Domenique Johnson, MSN, RN

Developed: June 2018.

Approved by the ENA Board of Directors: December 2018
Revised and Approved by the ENA Board of Directors: 2022