NAON
National Association of Orthopaedic Nurses

POSITION STATEMENT

Safe Transportation of Children With Orthopaedic Conditions

ISSUE

Motor vehicle crashes are the leading cause of death for ages 5 to 14 years, and second in ages 1 to 4 years (National Center for Health Statistics, 2015). The use of safety restraints in motor vehicles is vital for reducing the incidence of injuries and fatalities in child passengers (Kuska & Zonfrillo, 2017).

POSITION

The National Association of Orthopaedic Nurses (NAON) recommends:

- All child-restraint systems must meet Federal Motor Vehicle Safety Standards (FMVSS).
- Standard child-restraint systems should be used when possible.
- All children should ride rear facing until they reach the highest weight or height allowed by the manufacturer of the car seat, as this provides support to the head and spine.
- Children in rear-facing seats should not be placed in the front seat of a vehicle with passenger seat air bags.
- Large medical safety seats, vests, and belt-positioning booster seats are options for older children.
- Older adolescents may be transported by conventional lap-and-shoulder belt system (lap belt should be low and flat at the hips, shoulder strap snug across the chest, shoulder belt never under the arms or behind the back).
- Children younger than 13 years should ride in the rear seat of the vehicle.
- Children should never be transported in a reclined seat, and restraint systems should never be modified.
- A Child Passenger Safety Technician (CPST) should be consulted when choosing a specialized car safety system.

BACKGROUND/RATIONALE

In 2015, there were a total of 35,092 motor vehicle traffic fatalities in the United States. On average, 3 children were killed, and an estimated 487 children were injured in the United States every day in traffic crashes in 2015 (National Center for Statistics and Analysis, 2017). Age- and size-appropriate child safety seats have been shown to reduce fatal injury in passenger vehicles (Kuska & Zonfrillo, 2017). In children, younger than 14 years, 39% of those killed were unrestrained (National Center for Statistics and Analysis, 2017). “Children with special needs

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should not be exempt from the requirements of each state's laws regarding child restraint and seat belt use" (O'Neil & Hoffman, 2019, p. 2).

RESTRAINT OPTIONS

Many children with orthopaedic healthcare needs may be able to use a standard child-restraint device that meets the FMVSS. Seats with higher rear- and forward-facing weight limits have increased the number of conventional restraint options available to families. Not only can these seats provide suitable positioning and protection, they are easier to obtain, less expensive, and more convenient to use than many of the specialized restraints (Automotive Safety Program, 2017). Once the child exceeds the physical limitations of a standard seat set by the manufacturer, a special child-restraint system may still be needed (Automotive Safety Program, 2017; O'Neil & Hoffman, 2019).

Large medical child safety seats come with additional lateral and trunk supports. Accessories to help with positioning, such as abductor wedges, seat depth extenders, and support pads, can accommodate for scoliosis or other postural abnormalities (Bryan, Haverstick, & Zoeler, 2015; O'Neil & Hoffman, 2019).

Medical belt-positioning booster seats raise the older child so that the vehicle's shoulder and lap belt are positioned correctly across the child's chest and pelvis. These booster seats come with positioning accessories and provide more support to the torso than traditional booster seats. Optional vests are designed for children who need more support than the lap and shoulder belt provide (Bryan et al., 2015).

Misuse of restraints includes loose vehicle seatbelts, loose harness straps, and improper positioning of the harness straps. (Bryan et al., 2015). Padding should never be placed between the child and the harness of the safety restraint. Soft padding compresses on impact during a crash and prevents harness straps from maintaining a secure, tight fit on the child's body (O'Neil & Hoffman, 2019). Only positioning accessories that come with the seat or sold by the manufacturer for a specific seat should be used (Haupt-Harrington, 2018).

OPTIONS FOR SPECIFIC CIRCUMSTANCES

Car beds are restraints that allow infants and children who are unable to be transported in an upright position to travel lying down, either supine, prone, or side-lying (Haupt-Harrington, 2018). Infants and children with lower extremity casts, or conditions such as spina bifida or osteogenesis imperfecta, may be limited in their ability to be positioned in a sitting or semi-reclined position (Bryan et al., 2015).

If the child in a hip spica cast can sit up, a standard child restraint may work. If the hip cast has a wide spread, a child safety seat with low sides may be appropriate, possibly with a wedge-positioning system to assist in achieving a snug fit in the seat. A child with a hip cast should never be transported on a reclined vehicle seat, as the seatbelts will not contact the child's body properly, and the child could slide out from under the belt system (Automotive Safety Program, 2017). For children 2 years or older who must be transported lying down, a special vest is available. In order to use the vest, a child must be able to fit lengthwise on a vehicle bench seat (O'Neil & Hoffman, 2019).

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If the child is in halo traction, a seat must be selected that provides adequate room for the halo, with a harness that can be routed through the frame of the halo instead of the outside frame (Automotive Safety Program, 2017).

Equipment, such as walkers, crutches, and oxygen tanks, should be secured so that they do not become projectiles during a crash (Automotive Safety Program, 2017; O'Neil & Hoffman, 2019).

Ambulance transportation should be used when safety restraints meeting FMVSS are not available for children with orthopaedic conditions. However, the use of ambulance transport should be weighed carefully, as it is costly and will limit the patient and family's options for outings.

When traveling by commercial airlines, the use of medical assistive devices is allowed under the Air Carrier Access Act (O'Neil & Hoffman, 2019). Each airline has its own policies regarding the use of assistive devices on the aircraft (Transportation Security Administration, 2019).

ADDITIONAL RESOURCES

Child Passenger Safety Technicians are certified technicians experienced in resolving issues associated with transporting children. A CPST can instruct families how to use and install a car seat (HauptHarrington, 2018). Child Passenger Safety Technicians with special needs training can be located at http://cert.safekids.org (Safe Kids Worldwide, 2018). It is recommended that questions about safe transportation of children with special healthcare needs be deferred to a CPST with special needs training (Highway Traffic Safety Administration, 2015).

Orthopaedic nurses should be leaders in promoting the use of safety restraints for all children, thereby reducing morbidity and mortality in motor vehicle crashes. Orthopaedic nurses caring for children with special transportation needs should be knowledgeable of age-, size-, and condition-appropriate devices available, and include this information in patient and family education. Being properly informed may reduce parents' and caregivers' use of substandard products, makeshift restraint systems, or their decision not to use a safety restraint at all.

The National Center for the Safe Transportation of Children with Special Health Care Needs serves as a resource for families, healthcare professionals, and others. The Center, funded by the National Highway Traffic Safety Administration, is based at the Automotive Safety Program located at the Indiana University School of Medicine, adjacent to Riley Hospital for Children.

There are a number of specialized safety restraints produced by several different manufacturers that provide protection to children with special healthcare needs in the event of a crash. NAON does not endorse any particular brand of special needs car safety seat and restraint.

REFERENCES

Automotive Safety Program, Indiana University School of Medicine. (2017). Special needs transportation. Retrieved from https://preventinjury.pediatrics.iu.edu/special-needs/

Bryan, M., Haverstick, S., & Zoeler, R. (2015). Child passenger safety for children with special health care needs. Technology Special Interest Section

Quarterly/American Occupational Therapy Association, 25(1), 1–4.

Haupt-Harrington, R. (2018). The post-discharge car seat challenge: An investigation of utilization and feasibility. Pediatric Nursing, 44(2), 61–67,80. Retrieved from http://nclive.org/cgibin/nclsm?url=http://search.proquest.com/docview/2028125433?accountid =3442

Kuska, T., & Zonfrillo, M. (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. doi:10.1016/j.jen.2016.06.016

National Center for Health Statistics. (2015). 10 leading causes of death, United States. Retrieved from https://webappa.cdc.gov/cgi-bin/broker.exe?_service=v8prod&_server=aspv-wisq1.cdc.gov&_port=5098&_sessionid=LYhBqdJuP52&_program=wisqars.dd_leadcaus10.sas&log=1&rept=&State=00&year1=2015&year2=2015&Race=0&Ethnicty=0&Sex=0&ranking=10&PRTFMT=FRIENDLY&lcdfmt=lcd1age&category=ALL&c_age1=0&c_age2=0&_debug=0

National Center for Statistics and Analysis. (2017). Children: 2015 data. Traffic Safety Facts. Report No.DOT HS 812 383. Washington, DC: National Highway Traffic Safety Administration. Retrieved from https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812383

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. Retrieved from https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812106_hospitaldischrgerecsafetra nschildren.pdf

O'Neil, J., & Hoffman, B. (2019). Transporting children with special health care needs. Pediatrics, 143(5), E20190724. doi:10.1542/PEDS.2019-0724

Safe Kids Worldwide. (2018). Get a car seat checked. Child Passenger Safety Certification. Retrieved from https://cert.safekids.org/get-car-seat-checked

Transportation Security Administration, U.S. Department of Homeland Security. (2019). Disabilities and medical conditions. Retrieved from https://www.tsa.gov/travel/special-procedureshttps://atvsafety.org/thegolden-rules

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