



Protecting Infants and Toddlers from Positional Asphyxia: Car Seats and Sling Carriers

February 2017

Laura Hubbs-Tait, Ph.D.
Extension Parenting Specialist

Gina Peek, Ph.D.
Extension Housing and Consumer Specialist

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: <http://osufacts.okstate.edu>

What is Positional Asphyxia?

Babies who experience positional asphyxia cannot breathe because the position of their body blocks their airway. This can occur in several ways:

- When the mouth and nose are blocked by something covering them.
- When the passage of air from mouth and nose to lungs is blocked because a baby's head is slumped over or a baby's chin is pressing into the baby's chest.

Why Do We Care About

Positional Asphyxia?

- Reduced oxygen levels can lead to later cognitive or behavioral problems.
- Babies die quickly when they cannot breathe – it takes just a few minutes.

Who is at Risk for Positional Asphyxia and Why?

Newborns and young infants are at high risk because they cannot move themselves in order to breathe when their airway is blocked. Within this group, premature and low birthweight infants appear to be at the greatest risk for many reasons. Breathing problems, being too small for the seat and an inability to sit in the semi-upright position needed to keep breathing in the car seat are factors.

Older infants and toddlers have also died from positional asphyxia. This has happened when car seats are placed on beds and other furniture and roll over and trap the infant or toddler. Infants and toddlers left to sleep in a car seat have also died when they slump and rest their chin on their chest, restricting or stopping breathing. Infants and toddlers awake but unattended in a car seat or sling have died because their movements may block their nose and mouth, preventing breathing.

Research Findings

- When car seat straps are loose, babies can slump, leading to asphyxiation or be strangled. One 2015 study showed



69 percent of families with newborns left the car seat straps too loose (Hoffman, Gallardo, & Carlson, 2016).

- From 2004 through 2008, 31 infant and toddler deaths by asphyxiation in car seats were included in data provided by U.S. Consumer Product Safety Commission (CPSC); 48 percent were due to positional asphyxia (Batra, Midgett, & Moon, 2015).
- From 2004 through 2008, five infant deaths in slings were identified from data provided by U.S. Consumer Products Safety Commission; 100 percent were due to positional asphyxia (Batra et al., 2015).

Positional Asphyxia and Sitting and Carrying Devices

Car seats and sling carriers are products of concern. One study found that out of 47 deaths, 31 (66 percent) occurred in car seats and five (11 percent) in slings. The rest occurred in swings, bouncers and strollers (Batra et al., 2015).

Car Seats

Car seats are safe as long as they are used appropriately. Car seats protect infants and children from injury and death in car accidents. But car seats are not designed for safe sleeping or for unsupervised awake time. NEVER leave a child unattended.

Car seats are a wonderful product designed to increase child safety in one situation only — riding in a vehicle. Car seats protect infants and children from serious injury and death in vehicle collisions. Car seats do not increase safety in any other circumstances and should only be used in vehicles.

Car Seats: Reduce Risk

Be sure to read and follow all other instructions provided by the manufacturer. A certified child passenger safety technician should inspect the car seat to make sure it has been properly installed. People caring for your baby, including grandparents, other relatives, babysitters and childcare providers, should know how to use the seat. All rear-facing car seats for newborns should be installed at a 45-degree angle and adjusted according to manufacturer recommendations.

Make sure that everyone using the car seat practices how to install the seat and harness the baby with a child passenger safety technician. The state or county health department can be called for assistance. Visit <http://www.safercar.gov/cpsApp/cps/index.htm> for more information.

- Loose straps or harness can trap infant's head or neck; follow manufacturer's instructions to ensure that the straps are properly adjusted.
- Car seats should only be used in a car or other vehicle.
- Infants in a car seat should be able to be observed by a responsible adult.
- Whenever possible, an adult should ride in the back seat with baby to check baby's head and neck position and breathing.
- Use only straps to position baby correctly and do not add pillows or blankets.
- Straps should always be completely buckled.
- Make sure baby's chin is up at all times.

Sling Carriers

The U.S. Consumer Product Safety Commission states that sling carriers are sewn products designed to hold a child upright or in a reclined position while supported by a caregiver's torso. There are three main types of sling carriers. Ring slings are shaped like hammocks. Adjustments are made by tightening or loosening the sling fabric through rings. Pouch slings are similar. Some use buckles to adjust size. Wrap slings are pieces of fabric with no fasteners. The caregiver wraps the fabric around their body and the child for support (U.S. Consumer Product Safety Commission, 2014). Regardless of the type of sling, be sure to read and follow all other instructions provided by the manufacturer.



Remember the acronym TICKS:

Tight

Sling should hold the baby tight against your body, upright, facing you and positioned high on your body, with the head supported.

In view at all times

The baby's face, nose and mouth should be uncovered by the sling and your body. You should be able to see the baby's face at all times simply by looking down.

Close enough to kiss

The baby's head should be so close that you can tip your own head down and kiss the top of the baby's head.

Keep chin off chest

Check the baby frequently to make sure his or her head is up — not resting on the chest. This will block the baby's breathing. If in doubt, gently tilt the baby's chin up.

Supported back

Support the baby's back in a natural position so their tummy and chest are facing you. If you need to bend over, bend from the knees while supporting the baby's back.

(Australian Competition and Consumer Commission, 2014)

Sling Carriers: Reduce Risk

The U.S. Consumer Product Safety Commission and other U.S. recommendations:

- Loose sling carriers can cause infants to slump down – restricting or cutting off their airway. The person wearing the sling should frequently check on the baby's position and breathing.
- The sling carrier can cover the infant's mouth and nose, preventing breathing. The baby's face should be "visible and kissable."
- After nursing a baby in a sling carrier, the mother should change the baby's position, so that baby's face is looking up and not blocked by the sling or the mother's body.
- The person wearing the sling should frequently check on the baby's position and breathing.

Keep your family safe! Use car seats and sling carriers safely to minimize risk of positional asphyxia.

References

- Australian Competition & Consumer Commission. (2014). What you need to know about baby slings. Retrieved from https://www.accc.gov.au/system/files/874_SafetyAlert_Baby_slings_FA.pdf
- Batra, E. K., Midgett, J. D., & Moon, R. Y. (2015). Hazards associated with sitting and carrying devices for children two years and younger. *The Journal of Pediatrics*, 167(1), 183-187.
- Bull, M. J., & Engle, W. A. (2009). Safe transportation of pre-term and low birth weight infants at hospital discharge. *Pediatrics*, 123(5), 1424-1429.
- Cerar, L. K., Scirica, C. V., Gantar, I. Š., Osredkar, D., Neubauer, D., & Kinane, T. B. (2009). A comparison of respiratory patterns in healthy term infants placed in car safety seats and beds. *Pediatrics*, 124(3), e396-e402.
- Cote, A., Bairam, A., Deschenes, M., & Hatzakis, G. (2008). Sudden infant deaths in sitting devices. *Archives of Disease in Childhood*, 93(5), 384-389.
- Hoffman, B. D., Gallardo, A. R., & Carlson, K. F. (2016). Un-safe from the start: serious misuse of car safety seats at newborn discharge. *The Journal of Pediatrics*, 171, 48-54.
- Merchant, J. R., Worwa, C., Porter, S., & Coleman, J. M. (2001). Respiratory instability of term and near-term healthy newborn infants in car safety seats. *Pediatrics*, 108(3), 647-652.
- Moon, R. Y. (2011). SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. *Pediatrics*, 128(5), e1341-e1367.
- Queensland Government. (2016). Safety advice and warnings – baby products: Baby slings. Retrieved from <http://www.qld.gov.au/law/your-rights/consumer-rights-complaints-and-scams/product-safety-for-consumers/safety-advice-and-warnings/baby-products/baby-slings/>
- Smith, R. W., Mohamed, A., Young, J., Jefferies, A., & Shah, V. (2016). Factors associated with car seat test failure in late preterm infants: A retrospective chart review. *Pediatrics & Child Health*, 21(1).
- U.S. Consumer Product Safety Commission. (2010). Infant deaths prompt CPSC warning about sling carriers for babies. Retrieved from <http://www.cpsc.gov/Newsroom/News-Releases/2010/Infant-Deaths-Prompt-CPSC-Warning-About-Sling-Carriers-for-Babies/>
- U.S. Consumer Product Safety Commission. (2014). Proposed Rule: Safety Standard for Sling Carriers. Retrieved from <http://www.cpsc.gov//Global/Newsroom/FOIA/CommissionBriefingPackages/2014/SafetyStandardforSlingCarriersProposedRuleJune112014.pdf>

Reviewers

Ali Dodd, Consumer
Regina McCurdy, Oklahoma State Department of Health
Brenda Miller, Oklahoma State University
Lesia Rauh, Oklahoma State University

The Oklahoma Cooperative Extension Service

WE ARE OKLAHOMA

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, and Title IX of the Education Amendments of 1972 (Higher Education Act), the Americans with Disabilities Act of 1990, and other federal and state laws and regulations, does not discriminate on the basis of race, color, national origin, genetic information, sex, age, sexual orientation, gender identity, religion, disability, or status as a veteran, in any of its policies, practices or procedures. This provision includes, but is not limited to admissions, employment, financial aid, and educational services. The Director of Equal Opportunity, 408 Whitehurst, OSU, Stillwater, OK 74078-1035; Phone 405-744-5371; email: eeo@okstate.edu has been designated to handle inquiries regarding non-discrimination policies; Director of Equal Opportunity. Any person (student, faculty, or staff) who believes that discriminatory practices have been engaged in based on gender may discuss his or her concerns and file informal or formal complaints of possible violations of Title IX with OSU's Title IX Coordinator 405-744-9154.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 42 cents per copy. 0217 GH.