

Best Practice Guidelines for Maryland Hospitals

On the Car Seat Tolerance Screen

These guidelines are based on the latest research, the American Academy of Pediatrics guidelines and on expert medical opinion, with review and approval by the Maryland Perinatal Advisory Committee. Note that these guidelines are subject to periodic updates; check the MIEMSS website for updates or use the contact information listed at the end of this document to check for updates.

Inclusion criteria for the Car Seat Tolerance Screen (also known as the Infant Car Seat Challenge (ICSC) or Angle Tolerance Test:

- Infants born at < 37 weeks gestation or who are at greatest risk for impaired oxygenation when placed in a semi-reclined seating position (those with respiratory issues requiring home oxygen or airway malformations).
 - Infant with hypotonia/neurologic issues (e.g., Trisomy 21, Prader Willi)
 - Infants with Cyanotic Heart Disease.
- *** Consider testing full-term infants born at < 2.5 kg, especially with other risk factors.

Guidelines for Administering the Test:

- 1) Infants needing an ICSC test should be tested in their own infant carrier or convertible car seat. The parent/caregiver should bring the car seat in several days prior to the planned discharge to leave time for the test.
- 2) Infant car seats or convertible car seats must be appropriate for the size and weight of the infant at the time of the test. For instance, a 4 pound infant cannot be tested and discharged in a car seat rated for use with infants beginning at 5 pounds. The hospital should also check the labels on the seat to assess if the seat has expired and needs to be replaced. This information should be documented in the patient's records. If the family chooses to use an inappropriate seat, document this (e.g., 'Against Medical Advice' or refusal form).
- 3) For the ICSC test, the car seat must be reclined to the car seat manufacturer's specifications (approximately 45 degrees); check this using the indicator guide on the seat.
- 4) If an infant body pad or insert is provided by the car seat manufacturer, you may use it according to the seat's instructions. Nothing may be added *beneath* the infant or beneath the harness straps unless provided or approved by the manufacturer. *If the manufacturer permits it*, a rolled diaper or small towel can be placed between newborn's legs and behind the crotch strap to prevent submarining, and a rolled receiving blanket can be placed along each side of the baby for lateral support.

- 5) Demonstrate to the parent how to properly place the baby in the car seat and tighten the harness straps so the parent will be able to do this prior to discharge. Use a training doll if needed. Have the parent return the demonstration and document this.
- 6) Start the ICSC test within 30 minutes of a feeding to better identify episodes of reflux, cardiac, or respiratory problems which might occur in post-discharge environments and conditions. If the infant is positioned poorly or fits the seat poorly, he/she may show signs of respiratory distress. Reposition the infant and continue to monitor.
- 7) Conduct the test for 90-120 minutes or the duration of the car ride home—whichever is longer.
- 8) Pass/fail criteria:
 - Apnea greater than or equal to 20 seconds
 - Heart Rate less than 80 bpm for > 10 seconds
 - Desaturation of < 90% for > 10 seconds
 - Respiratory distress did not improve with proper positioning.

Note: Frequent episodes of periodic breathing with brief/borderline desaturation is concerning and should be discussed with the attending physician. Discontinue the test if fail parameters are met.

- 9) After a failed ICSC test, retesting should be conducted 12-24 hours later to allow for the infant's recovery.
- 10) If an infant has failed two or more ICSC tests in his/her car seat, but is otherwise healthy and approved for discharge, a car bed may be considered for transport of the infant. The ICSC test must be repeated with the infant in the car bed prior to discharge.
- 11) If the infant fails the test in the car bed, recommend further evaluation and admission for medical workup.
- 12) Infants using car beds should have follow up ICSC testing in their conventional rear-facing seat when they reach full-term age (40 weeks) or 2-4 weeks after discharge, or when they outgrow the car bed. Outpatient testing may be done in pediatrician's office, a pediatric pulmonologist's office, or as inpatient with polysomnography.
- 13) Hospitals should refer parents to a certified child passenger safety technician (CPST) for installation assistance with car seats or car beds (e.g., Maryland Kids in Safety Seats).

For Your Information: some hospitals use the charging codes below for conducting follow up/ outpatient ICSC tests. Check with your billing department to see if this is appropriate.

- 94780 for car seat testing for neonate less than 28 days for 60 minute test.
- 94781- for each additional 30 minutes

References:

“Use of Car Beds for Infant Travel: a review of the literature.” NL Davis & N Shah. *J Perinatology*, 2018; 38: 1287–1294.

Committee on Injury and Poison Prevention, *Pediatrics*, 1999; 104; 986-987. MJ Bull, WA Engle. *Pediatrics*, 2009; 123; 1424-1429.

“Test-Retest Reliability of the Infant Car Seat Challenge.” NL Davis, ML Gregory and L Rhein. *J Perinatology*, 2013; 1-5.

“Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge.” MJ Bull, WA Engle, *Pediatrics*, 2009; 123:1424-1429.

“Hospital Discharge of the High-Risk Neonate.” Committee on Fetus and Newborn. *Pediatrics*, 2008; 122:1119-1126.

“Stability of the Infant Car Seat Challenge and Risk Factors for Oxygen Desaturation Events.” M DeGrazia. *J Women’s Health, Obstetric and Neonatal Nurses*, 2007; 300-304.

Webinar 3/14/14: “An Update on Newborns in Car Safety Seats and the Infant Car Seat Challenge Test.” Natalie L. Davis, MD, MMSC and M. Claire Myer, MS, CPST-I;
<http://miemss.org/home/EMSC/training>

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