Child Passenger Safety Guide for Pediatric Clinicians

Author:
Maureen Johnson, CPSTI, Safe Kids Vermont, University of Vermont Medical Center

Review committee:
Abby Beerman, MPH, CPSTI, Safe Kids Vermont, University of Vermont Medical Center
Sidney Bradley, CPSTI, Vermont Department of Health
Gay Godfrey, RN, CPST, University of Vermont Medical Center
Jennifer McFaul, RN, University of Vermont Medical Center
Katrina Thornburgh, MD, University of Vermont Medical Center
Introduction

Motor vehicle crashes are a leading cause of death and injury for children aged eighteen and under. According to a recent US National Highway Traffic Safety Administration (NHTSA) report from US data collected in 2021, there were a total of 1,184 child traffic fatalities (fourteen years old and younger). Approximately 40% of the children who died were unrestrained.

In their 2018 news article summarizing a new Child Passenger Safety Policy, the American Academy of Pediatrics (APP), states, "using the correct car safety seat or booster seat can help decrease the risk of death or serious injury by over 70%, and parents look to their pediatricians as a trusted source of guidance."

How do car seats, booster seats, and seat belts help prevent injuries or reduce their severity? They keep occupants in the vehicle – ejection is a significant predictor of mortality and severe trauma. They spread forces over a wide area of the body, protecting the head, brain, and spinal cord. They extend the time it takes for the occupant to slow down, and they reduce the crash forces to the body.

Unfortunately, child restraints can be complicated to use. A National Child Restraint Use Special Study published by NHTSA in 2015 estimated overall car seat and booster seat misuse was 46%. In that same study, however, most caregivers said they were confident that their child’s seat was installed and used correctly. More recently, 2018-2023 data from a U.S. seat check system showed overall misuse of child restraints was 65% (sample size 124,000). These data do not include a caregiver’s level of confidence.

This toolkit provides pediatric clinicians with evidence-based child passenger safety recommendations from the AAP and other sources. Additional resources, including information for parents and other caregivers, are offered at the end of the document.

Disclaimer: Unless otherwise identified, photographs are from the University of Vermont Health Network or NHTSA. Images are intended to serve as educational examples and are not an endorsement or promotion of a specific product, service, individual, or organization.
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Stages of Child Passenger Safety

There are four stages of Child Passenger Safety (CPS). Details on each stage are available in subsequent sections of this document, including the best practice recommendations for children at each stage. Although this tool kit is focused on Child Passenger Safety, buckling up is also the best thing an adult can do to protect themselves in a crash. NOTE: For pregnant caregivers, NHTSA offers suggestions for wearing a seat belt and other safety tips during pregnancy.

It’s helpful if healthcare providers avoid words like “milestones,” which may inadvertently encourage caregivers to move their child to the next stage prematurely. As the AAP states in their 2018 news article summarizing the new Child Passenger Safety Policy, “Child passenger safety is one of the few areas where the next step is not ‘positive’ and where delaying transitions is best practice. It is incumbent upon child health providers to help families and caregivers do everything they can to protect child passengers, at every age and at every stage.”

* See Rear-Facing Car Seats and Child Passenger Safety Laws.
Child Passenger Safety Laws

All fifty states have some form of Child Passenger Safety law. Clinicians should encourage caregivers to consider those laws as a bare minimum. For example, many states still allow a child to be forward-facing at one year old. This is not only misaligned with current AAP recommendations, it is out of date with the previous AAP recommendation of rear-facing to at least two years old.

These are the current Child Passenger Safety laws for Vermont and New York. If a caregiver is transporting their child in another state or country, they should investigate that entity’s laws.

Vermont:
Children under one year old and less than 20 pounds must ride rear-facing in an approved child restraint in the rear seat unless the front passenger airbag is deactivated. Children up to the age of eight must ride in an approved child restraint. Children aged 8 to 18 must ride in an approved child restraint or safety belt system.

New York:
Children under age 2 must be rear-facing. Children under age 4 must ride in a car seat. Children must ride in a child restraint system until their eighth birthday. Children under age 16 must wear seat belts. New York law does not prohibit a child to ride in the front seat of a vehicle with an airbag but acknowledges that it is dangerous.

Summary of Guidance for Clinicians

The evidence-based best practice recommendations to optimize safety in passenger vehicles for children from birth through adolescence call for the following:

- Children should ride in a rear-facing car safety seat as long as possible, up to the limits of their car safety seat. This will include virtually all children under 2 years of age and most children up to age 4. [Note: a rear-facing seat should never be placed in front of an active airbag.]
- Once they have been turned around, children should remain in a forward-facing car safety seat up to that seat’s weight and length limits. Most seats can accommodate children up to 60 pounds or more.
- When they exceed these limits, child passengers should ride in a belt-positioning booster seat until they can use a seat belt that fits correctly.
- Once they exceed the booster limits and are large enough to use the vehicle seat belt alone, they should always use a lap and shoulder belt.
- All children younger than 13 years should be restrained in the rear seats of vehicles for optimal protection

The AAP Child Passenger Safety Policy Statement includes a decision algorithm to help practitioners provide the safest guidance to families.
Stage 1: Rear-facing Car Seats

“Evidence continues to show the relative superiority of rear-facing.” AAP

Recommendation: All children should ride in a rear-facing car seat as long as possible, up to the car seat manufacturer’s stated limits. This will include virtually all children under two years of age and most children up to age four.
Rear-Facing Car Seats

Since a clinician might observe a baby in a RF-only seat during an appointment, here are a few items to consider discussing with caregivers.

- Harnessing basics:

  ![Harnessing basics diagram]

  - Harnesses at or slightly below shoulders
  - Pinch test
  - Chest clip buckled; at armpit level
  - Crotch buckle in slot closest to, but not underneath, child’s body (unless manufacturer directs otherwise)

  - Light layers of clothing only
  - Back and bottom flat against car seat
  - Harness buckled; no slack around hips

Other points:

- Placing receiving blankets along the sides of a small infant to assist with positioning is acceptable, but the blankets should not go around the child’s head.
- Limit the time the child spends in their seat to avoid causing or exacerbating certain health concerns, including flat head, respiratory issues, torticollis, and even motor delays -- babies learn by moving and exploring!
- Prevent RF-only carrier tip overs. Place the carrier on the floor to put baby in or remove them. Do not put the seat on a shopping cart (APP publication August 2006).
- Practice safe sleep (AAP Policy Statement June 2022). When you reach your destination, if you want baby to sleep, move them from their car seat to a crib, pack and play, bassinet, or other safe sleep space.
- No puffy jackets, snowsuits, or bulky clothes. See Winter Coats and Car Seat Safety.
Rear-Facing Car Seats

There are three types of rear-facing (RF) car seats. Many families select a RF-only seat for their newborn. These seats typically have a base and a removable seat with a carry handle. Many are rated F for children at or above 4 lbs. with a few as low as 3 lbs. There are also height minimums for some RF-only seats. Most have a maximum weight of between 22 and 35 lbs. and a maximum height of between 29 and 32 inches, with at least an inch needed above the child’s head to the top of the car seat. They usually fit newborns very well, and they are convenient and portable.

The other two types of rear-facing seat are convertibles (such as the one pictured on the previous page) and all-in-one seats. These seats are not meant to be portable. They can be rear-facing (generally to 40 or 50 lbs.) and forward-facing (generally to 65 lbs.). All-in-one seats also have a booster mode. While many can be used from birth, some convertibles and all-in-one seats may not fit newborns well.

For most rear-facing seats, the child must have at least an inch above their head to the top of the seat. A rear-facing car seat must never be placed in front of an active air bag.

Why rear-facing? Young children have a large, heavy head in proportion to the rest of their body. Their neck muscles are also less developed than those of an older child. When riding in a rear-facing car seat, the head, neck, and spine move together and are cradled by the shell of the seat.

This screen capture from a video produced by The Ohio State University “Buckle Up with Brutus” program shows the difference in the forces to the spinal column in a rear vs. forward-facing car seat.
Rear-Facing Car Seats

Here are some high-level points on installation in case a caregiver asks:

• Read your vehicle owner’s manual and car seat instructions.
• Use the seat belt OR lower anchors, not both.
  ♦ If using lower anchors, make sure to use the correct anchorages in your vehicle.
  ♦ If using the seat belt, make sure it is locked using the vehicle’s seat belt locking mechanism or the car seat’s lock-off.
• The car seat should not move more than 1 inch side to side or front to back at the belt path.
• Make sure your child’s car seat is at the correct recline angle. This is especially important for newborns (or older children who do not have good head and neck control due to a medical condition.
• You can get the car seat checked by a Child Passenger Safety Technician to make sure it’s the right seat for your child, properly installed, and you are using it correctly.
Stage 2: Forward-facing Car Seats

All forward-facing harnessed car seats currently sold allow use until at least 40 lbs.

Recommendation: Once they have been turned around, children should remain in a forward-facing car seat up to that seat’s weight and length limits.
Forward-facing Car Seats

There are several types of forward-facing seats. The most common are a convertible or all-in-one seat turned forward-facing, or a combination car seat. Combination seats, which only forward face, may be referred to as "harnessed boosters" because they can be used in either harnessed or booster mode. Most convertible, all-in-one, and combination seats have a maximum forward-facing weight limit of 65 lbs. and height limit of 49 inches.

Caregivers may choose a combination car seat for an older child so they can pass a convertible or all-in-one seat on to a younger child. Combination seats are often less expensive than convertibles or all-in-ones, and sometimes make better boosters due to their shape. There is no safety difference between using a convertible or all-in-one seat forward-facing with the harness and using a combination seat with the harness, provided the child meets the weight and height requirements of the seat.

Some vehicles have integrated harnessed car seats. Many of these are older models that may not be on the road anymore. If a caregiver has a vehicle with built-in car seats, they should check the vehicle owner’s manual for instructions, weight, and height limits.

A Ride Safer Travel Vest (RSTV) is a forward-facing child restraint that has met the same federally mandated crash testing requirements as a forward-facing harnessed car seat. An RSTV is useful for travel and is helpful when a smaller vehicle back seat needs to fit three occupants or for children whose weight has exceeded that allowed by harnessed forward-facing seats. While it is marketed for children as young as two, it allows more freedom of movement than a harnessed car seat does. Caregivers should be judicious in selecting it for a younger child.
Forward-facing Car Seats

Forward-facing car seats are equipped with a tether, (sometimes called a “top tether”) to be attached to a tether anchor point in the vehicle. Tethers can mitigate neck injuries by reducing head acceleration and neck loading. The tether allows the vehicle and car seat to absorb more crash forces. Decreasing forward head excursion also lessens the chances that the occupant’s head will strike a vehicle surface. Tethering for forward facing car seats is mandatory in Canada.

Source: Cited by the Automotive Safety Program, Indiana University School of Medicine. Original from the University of Michigan, as noted in the illustration.

A vehicle’s lower anchors are rated for a maximum of 65 pounds (total weight of the car seat and child). Car seat manufacturers have identified the maximum weight of a child for using lower anchors for convertible car seats, all-in-one seats, and combination seats. This information is in the instruction manual and labels on the seat. The child can continue to use the car seat up to the weight (or height) limit of the seat, but the installation method must switch. Some seats have weight limits for rear-facing lower anchor use, but it’s more common for forward-facing seats.

Tether use and lower anchor weight limits are important to the safety of a forward-facing child. Please consider putting flyers on these in your waiting areas and exam rooms.
Forward-facing Car Seats

Here are some additional high-level points on installation and harnessing in case a caregiver asks:

- Read your vehicle owner’s manual and car seat instructions.
- Use the seat belt OR lower anchors, not both.
  - If using lower anchors, make sure to use the correct anchorages in your vehicle.
  - If using the seat belt, make sure it is locked using the vehicle’s seat belt locking mechanism or the car seat’s lock-off.
- The car seat should not move more than 1 inch side to side or front to back at the belt path.
- The harness should be snug enough that you cannot pinch the harness webbing when sliding your fingers vertically against the harness at the child’s shoulders.
- Harness straps should be flat and not twisted.
- The chest clip should be at armpit level.
- The harness must be at or above the child’s shoulders and the crotch buckle should be in the slot closest to, but not underneath the child’s body unless otherwise specified in the car seat manual.
- You can get the car seat checked by a Child Passenger Safety Technician to make sure it’s the right seat for your child, properly installed, and you are using it correctly.
Stage 3: Belt-positioning Booster Seats

Boosters reduce the risk of nonfatal injury among 4 to 8 year-olds by 45% compared with seat belts.

Recommendation: Children whose weight or height is above the forward-facing limit for their car seat should use a belt-positioning booster seat until the vehicle lap and shoulder seat belt fits properly. This is typically around 57 inches in height and eight to twelve years of age.
Belt-positioning Booster Seats

Belt-positioning booster seats function by positioning the child, or the seat belt, so that the belt fits properly: the lap portion of the belt should fit low across the hips and pelvis, and the shoulder portion should fit across the middle of the shoulder and chest.

Boosters help prevent “seat belt syndrome,” an injury pattern that occurs when sudden deceleration forces and compression of the lap belt around the abdomen causes abdominal wall bruising, intra-abdominal injuries, and spinal fractures. When the seat belt is positioned properly, it’s less likely that the child will be uncomfortable (e.g., if the shoulder belt is rubbing against their neck) and will move the belt or shift their body out of position.

![Incorrect Belt Position](image1)
![Correct Belt Position](image2)

Boosters fall into two general types: high-back and backless. A combination or all-in-one seat can become a high-back and sometimes a backless booster. Or a high back or backless booster can be purchased. A few vehicles have integrated booster seats.

A high-back booster is good for a new booster rider. The back and sides remind them to sit properly and offer a place to lean their heads. High-back boosters are needed in vehicles without headrests or with low seat backs. Some high back boosters require vehicle headrest.

Backless boosters are convenient, inexpensive, and portable. They are a good option for experienced booster riders provided the vehicle seat back or head rest supports the child at least up to the top of their ears.

Boosters require the use of a lap and shoulder belt; never lap belt only. All boosters currently sold have a weight minimum of 40 lbs. per the manufacturer’s instructions. Height minimums vary.

While most booster manufacturers (and U.S. states) allow use by a child over four, maturity plays a large role in “booster readiness.” In a recent study, 50 mother-child (aged four to eight) dyads were observed with harnessed car seats or boosters in a driving simulator. Children in harnessed seats had no observed errors during simulated trips. Within children sitting in booster seats there were differences in time inappropriately restrained across age, with four year-olds spending on average 67% (Median = 76%) of the drive inappropriately restrained, compared to the rest of the age categories spending less than 28% inappropriately restrained.
Stage 4: Seat belts

“Most children will not fit in most vehicle seat belts without a booster until 10 to 12 years of age.” AAP “Car Seats: Information for Families”

Recommendation: When children are old enough and large enough to use the vehicle seat belt alone, they should always use lap and shoulder seat belts for optimal protection.
Seat Belts

Most people understand the lifesaving value of the seat belt. According to NHTSA, the national seat belt use rate was at 91.6% in 2022. New York state’s rate was 93.2%. Vermont is below the national rate, with the most recent use rate of 89.2%. Still, the use rate has steadily increased over recent years in Vermont.

There are **five steps** to determine if a child is large enough to ride safely without a booster seat:

1. Sitting all the way back against vehicle seat
2. Knees bent comfortably at edge of vehicle seat with feet flat on the floor
3. Lap belt across thighs not up on belly
4. Shoulder belt laying snugly across shoulder between neck and arm
5. Seated like this for the whole trip

Since vehicle seat geometry varies, this five-step test should be performed in any vehicle and seating positions in which the child rides.

Reminder: All children younger than thirteen years should be restrained in the back seats of vehicles for the best protection.

**Seat Belts Save Lives!** Clinicians can also encourage parents and other caregivers to set the example. Everyone must be buckled up for every ride. They’re teaching their child, and future driver, about good safety habits.
What is a Child Passenger Safety Technician?

A Child Passenger Safety Technician (CPST) has been trained, through a multi-day certification class, in child safety seat installation and use, motor vehicle safety principles, child passenger safety best practices, and effective communication skills. CPST's provide education on the selection and use of child safety seats and the stages of child passenger safety through one-on-one appointments, car seat events, group presentations, and informal interactions with caregivers.

Many CPSTs work in health care, law enforcement, or other emergency response fields. It’s important to note, however, that many hospitals, police agencies, fire departments, or rescue squads do not have a CPST on staff.

How to find a CPST at a car seat inspection (fitting) station or event:

- Vermont Health Department Be Seat Smart
- New York’s Governor’s Traffic Safety Committee Child Passenger Safety
- Safe Kids Worldwide U.S. National Child Passenger Safety Certification Training Program (For more results, use fewer fields. Some of the techs listed also do virtual appointments. Select this in the Virtual Education field.)

The AAP suggests that clinicians find out if any CPST’s “are employed by your medical facility. If so, are they available to talk to families or provide consultations?” Having a CPST on staff or organizing seat check events for your practice are great ways to support parents and other caregivers in their efforts to keep children safe in vehicles. The National Child Passenger Safety Certification Training Program also has information how to become a tech, including classes by state. Classes are generally 3-4 days long and include a car seat check event. There is usually a nominal fee.

An experienced CPST can become an instructor (CPSTI), which allows them to teach the CPST certification class. CPS technicians and instructors maintain their certification through a variety of continuing education opportunities and hands-on skills reviews.

Benjamin Hoffman, MD, FAAP, the 2024 president of the American Academy of Pediatrics, is also a CPSTI.
Crashes

Most child restraint manufacturers require their seats to be replaced after any crash. A few companies, however, allow their seats to be reused after a minor crash. NHTSA defines a minor crash as one in which ALL the following apply:

- The vehicle was able to be driven away from the crash site.
- The vehicle door nearest the car seat was not damaged.
- None of the occupants in the vehicle sustained any injuries in the crash.
- If the vehicle has air bags, the air bags did not deploy during the crash; and
- There is no visible damage to the car seat.

Caregivers should read the seat’s manual for more information and contact the manufacturer if they have any questions. The replacement requirements include booster seats.

Used Seats

It's important that if a caregiver is considering a second-hand car seat or booster, they know its history – if it was ever in a crash and how it was cared for and cleaned. A used seat from a close friend or family member is very different from a used seat purchased at a garage sale or from an on-line seller – the history of the seat is available, and the seat is from a trusted source.

Recalls

Caregivers should register their seat with the manufacturer, using the car seat registration card or on the manufacturer’s website. Manufacturers are not permitted to use consumers’ contact information for purposes other than safety notifications.

Aftermarket Products

Aftermarket (non-regulated) products that are sold separately from a car seat are usually not approved by the seat’s manufacturer. These products may affect the installation or harness fit or present another risk (for example, cameras or mirrors can be a distraction and, in a crash, become projectiles). Since there are no standards to crash test these products, they are non-regulated.
Non-compliant Child Restraints

There has been a disturbing increase in the sale of non-compliant child restraints to U.S. consumers in recent years. Some of these seats are comply with the regulations of another country or region, but it is not legal for caregivers to use them in the U.S. Some devices are counterfeit, made of materials that lack the strength and integrity of the real thing and do not meet any safety standards. These are a safety risk in addition to not being legal. Caregivers should be alert to these indicators that a seat may not be compliant:

- No mention of the U.S. Vehicle Safety Hotline or NHTSA.gov
- Brand not found on the AAP Car Safety Seat Product Listing
- Labels with pictograms rather than text
- No manufacturer’s address/contact information
- No manual or registration card
- Spelling/grammatical errors in product literature
- Straps narrower than what you are used to seeing
- Photos that show children that appear much too young to be out of a harnessed car seat
- No chest clip (while US federal motor vehicle safety standards do not require a chest clip, almost every harnessed car seat on the market includes a chest clip)
- A deal “too good to be true”
Winter Coats and Car Seat Safety

Recommendation: Puffy coats should not be worn in car seats.

In a car crash, a heavy winter coat or snowsuit can flatten out or compress, causing the car seat harness to be too loose to protect a child properly.

Even older children and adults should avoid wearing a puffy coat in the car, to allow the seat belt to perform optimally without space created by a winter jacket.

Here’s how a parent can test to see if their child can wear their coat safely in the car seat:

- Place the child in the car seat with their coat on. Snug up the harness and perform the pinch test. Using your thumb and forefinger, you should not be able to pinch any of the harness webbing at the child’s shoulders.
- Remove the child from the seat without loosening the harness.
- Take the child’s coat off and put the child back in the car seat without adjusting the tightness, then buckle up the harness straps.
- Can you pinch any harness webbing? If yes, then the coat is not safe to wear in the car seat because a collision could cause the coat to compress and leave a similarly loose harness fit.

Other ways to keep a child warm include dressing them in thin layers and adding hats, mittens, and socks or booties. Place a blanket over the harness straps or seat belt or put the child’s winter coat on backwards after they are buckled up.
Pediatric Vehicular Heatstroke

Pediatric Vehicular Heatstroke (PVH) deaths are the leading cause of non-crash-related auto fatalities for children ages 14 and younger, according to national data. Because their bodies heat up quickly, children left in cars can die of heatstroke in minutes (AAP News). Heat illness or death can occur if a child gains access to a vehicle or is knowingly left or is unintentionally left behind by a caregiver. While relatively rare compared with other mechanisms of injury and illness, PVH remains a worldwide public health matter.

PVH Fatalities in the U.S.—1998 through 2023

Average number of fatalities per year: 37
- 54% - children < 2 y/o
- 39% - children 2-4 y/o
- Average age: 27 months

Almost half of unintentionally left deaths related to not being dropped off at childcare

Total = 969
- Gained Access
- Knowingly Left
- Unintentionally Left
- Unknown

Source: Jan Null, CCM, Department of Meteorology & Climate Science, San Jose State University

The good news is that these tragedies are largely preventable. Clinicians can provide caregivers with these messages about prevention:

- There’s no safe amount of time to leave a child alone in a vehicle. A car can heat up to dangerous levels in a short time, even with the windows open or when parked in the shade. For example, on an 80-degree day, the temperature in a vehicle can be over 100 degrees after just 15 minutes.
- Lock your vehicle when it’s parked and keep key fobs out of reach of children. Teach children that vehicles are not play areas. If a child is missing, check the pool first, then the car, including the trunk.
- Loving and capable parents and other caregivers can make a mistake, especially when tired, distracted, or out of their routine. Create habits and reminders, such as putting your cell phone in the back seat or your child’s diaper bag in the front seat. Look before you lock. Ask your childcare provider to call you if your child doesn’t arrive as expected. Check in with another caregiver to confirm daycare drop off.
- If you see a child alone in a car, call 911. Fast action can save a life.

These messages are outlined in a short Heatstroke video from the AAP. A free e-Learning course, “Children in Hot Cars,” is available from the National Safety Council.
Escaping Behaviors

It is not uncommon for young children to try to unbuckle or get out of their car seat. They are becoming more independent and like to try new things. Caregivers often want to make the harness even snugger, but this usually increases the child’s desire to “escape.” Here are ideas to suggest to parents who are concerned about their little escape artist.

- Check the harness fit. For rear-facing, harnesses should be at or below the shoulders, for forward-facing at or above, passing the pinch test but not tighter.
- Experiment with recline angles if the seat allows more than one recline setting.
- If a forward-facing child is uncomfortable because their feet are dangling, provide something light, like a Styrofoam cooler, rolled up sleeping bag, or inflatable footrest, for them to rest their feet on. They should not prop their feet on the vehicle seat in front of them.
- Provide positive reinforcement for staying buckled, such as a sticker or a special treat.
- A toy for busy hands can provide a distraction.
- A social story with simple pictures and sentences emphasizing safety may be a great tool.
- Give your child the role of “car monitor.” They get to make sure everyone stays buckled up.
- If you are going on a fun outing, turn around and go home if the child unbuckles.
- Make an appointment with a CPST for a seat check and advice.
- There is one conventional car seat manufacturer that allows a chest clip guard for some of their harnessed seats. Discuss this with a CPST. Do not try to modify the car seat yourself.

If a booster rider is trying to get out of the seat belt, they should return to a harnessed seat. If they have outgrown all conventional harnessed car seat and behavior change strategies are not working, it is likely that an adaptive car seat is needed.
Transportation of Children with Special Healthcare Needs

Standard child restraints may be used for many children with health-related transportation needs. Conventional restraints are preferable when possible. They are easier to find and use, and less expensive than specialized restraints. Newer features have added options for using standard restraints for children with medical conditions. For example, many car seats have adjustments to assist in positioning and can harness to higher weights.

If a conventional restraint cannot be used, adaptive seats, boosters, and vests are available. These devices are ordered from Durable Medical Equipment providers or directly from a manufacturer. The process to obtain an adaptive car seat or booster can be complicated lengthy, and expensive, and should involve the child’s family and clinical team.

For preterm and low birth weight infants who cannot maintain cardiorespiratory stability when semi-reclined in a conventional car seat, a car bed should be used. Car beds accommodate an infant in a fully reclined position and are oriented in the vehicle seat perpendicular to the direction of travel. More details can be found in AAP’s publication “Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge.”

Other conditions that may require an adaptive restraint include:
- Casts or braces
- Hypotonia
- Omphalocele
- Scoliosis
- Positioning needs
- Behaviors such as impulsiveness, distractibility, and short attention span
- Autism Spectrum Disorder
- Obesity, if the child’s age or developmental level precludes moving to another stage of Child Passenger Safety

Some CPST’s have received additional training in “Safe Travel for All Children.” This course introduces participants to medical conditions that can impact how to safely transport a child in a motor vehicle. It includes classroom and hands-on learning.

Many of these CPST’s are not medical professionals and will need support from clinicians when helping a family and the child’s healthcare team with restraint selection and use. Important information to share includes whether there are any airway concerns, the child’s ability to sit upright unassisted, any medical equipment that is used in the vehicle, the type of child restraint currently in use, and the future medical needs pertaining to safe transport.

CPST’s who have expertise in transporting children with special healthcare needs are identified on the National Child Passenger Safety Certification Training Program website (select Special Needs under Extra Training). In addition to working with a CPST, the Indiana University School of Medicine’s Adaptive Transportation is a comprehensive resource for clinicians and caregivers.

The AAP Policy Statement on Transporitng Children With Special Health Care Needs includes general guidance and information on certain specific medical conditions.
AIR TRAVEL

Certain considerations contained in the AAP Child Passenger Safety policy are relevant to commercial airline travel as well.

Airlines currently allow children under the age of two to fly free of charge as lap children. The Federal Aviation Administration (FAA) recommends, but does not require, the use of a child restraint on an airplane. Nevertheless, the same risks of having an unrestrained child in a car exist on a plane, only at higher speed. A caregiver would be unlikely to be able to hold onto a child during violent turbulence, rapid deceleration, or runway incidents. The AAP recommendation is that children less than 40 pounds be securely fastened in child restraints when flying.

Airlines operating in the US must allow a child to use an FAA-approved car seat when the parent or guardian purchases a seat for the child, a parent or guardian accompanies the child, and the child is within the limits for the car seat. There must be a label on the car seat stating, “This restraint is certified for use in motor vehicles and aircraft.” Most harnessed car seats are FAA-approved.

Before planning to use a car seat on an international flight on a non-US carrier, caregivers should check that airline’s policies. Unfortunately, some non-US carriers do not allow the use of car seats or require car seats to face forward.

A child weighing less than 20 lbs. should be rear-facing in their car seat. Children who weigh between 20 and 40 lbs. can be forward-facing. Note that whether the car seat itself is rear-facing or forward-facing, it must be installed on a forward-facing airplane seat. Sometimes, caregivers or airline staff misinterpret this and think that a car seat cannot face the rear of the aircraft.

The FAA has also approved one harness-type device for children weighing between 22 to 44 lbs. This device is not approved for use in motor vehicles and there is only a small window where it fits children well. An airplane seat belt begins to fit at about 40 lbs.

If a car seat is needed at the destination, even if the child is over 40 lbs., it’s best to use on the flight to avoid loss or damage. Even gate-checking a car seat is no guarantee that it will arrive on the same flight as the child who needs it, or that it will be undamaged.

Boosters can be brought on board and stowed during the flight. Boosters are not FAA-approved. The Ride Safer Travel Vest, mentioned in Forward-Facing Car Seats, is also not FAA-approved.

The FAA offers more safety tips for Flying With Children.
RECREATIONAL VEHICLES
Many people are surprised to learn that the cabins of motorized Recreational Vehicles (RVs) are exempt from federal seat belt requirements for rear occupants and are not required to be crash tested. Also, an RV is full of equipment and storage materials that can become projectiles during a collision.

The best option for families wanting to share the joys of camping or long road trips is to rent or purchase a non-motorized, tow-able RV so children can be properly restrained in the truck, van, or car that is pulling the RV. Another choice is to follow the RV with a separate vehicle.

The Car Seat Lady is a reputable resource run by a pediatrician and CPST. Their website has an article covering risks to children and other rear passengers in RV’s.

LOW SPEED VEHICLES, GOLF CARTS, SIDE-BY-SIDES, ATVS, AND SNOWMOBILES
Car seats are designed for vehicles meeting the federal motor vehicle safety standard definitions of passenger car and multipurpose passenger vehicle. While some other modes of transportation, such as low speed vehicles, golf carts, side-by-sides, ATVs, and snowmobiles, may meet some federal motor vehicle safety standards, they are not the same standards as passenger cars or multipurpose passenger vehicles, and therefore, car seats may not perform as designed when used in those vehicle types. Most car seat manufacturers prohibit use of car seats in these types of vehicles.

The AAP Recommendations for the Prevention of Pediatric ATV-Related Deaths and Injuries is that no child younger than sixteen years of age should ride as a passenger on an ATV. The AAP’s Tips to Keep Children Warm and Safe Outdoors in Winter includes the recommendation that that children under age 16 not operate snowmobiles and that children under age 6 never ride on snowmobiles.

SCHOOL BUSES
School buses are designed to be highly visible and protect occupants by closely-spaced seats with energy-absorbing seat backs (called compartmentalization). While NHTSA does not require seat belts on large buses, some states, including New York, do. If a child rides on a large bus that is equipped with seat belts, best practice is to use them.

Small school buses are closer in size and weight to passenger cars and trucks. They must be equipped with seat belts to provide protection for all occupants.

The AAP policy statement on School Transportation Safety provides pediatricians with information, studies, regulations, and recommendations related to the safe transportation of children to and from school and school-related activities. “Pediatricians can play an important role at the patient/family, community, state, and national levels as child advocates and consultants to schools and early education programs about transportation safety.” (From the policy statement)
No/Low-Cost Child Safety Seat Options

The Vermont Be Seat Smart WIC voucher program allows for distribution of free car seats to WIC recipients after completing a child passenger safety seat inspection appointment. Families receiving Reach Up assistance or Dr. Dynasaur, and foster children may be eligible if in need. Receiving a new seat is not automatic. The CPST will determine if a child needs a seat and provide caregivers with education and instruction on installation and harnessing.

New York does not have a statewide program, but caregivers can check with the car seat inspection/fitting stations in their area to see if they have free or reduced-cost seats available.

Car seats are also available at many price points. A caregiver should not feel that if they purchase a lower cost seat, they are compromising their child’s safety. All child restraints that are legally allowed to be sold in the United States pass rigorous safety standards and are safe when used properly. The AAP Car Safety Seat Product Listing includes price information.

A reminder that acquiring a used car seat might seem cost-effective for a caregiver, but may not be a safe solution, depending on the source of the seat.

Addressing Caregiver Questions and Concerns

The AAP recommends that clinicians provide child passenger safety advice to families at every health maintenance visit. Parents may ask their child’s healthcare provider about car seat safety. A practitioner might observe a child in a RF-only seat at an appointment or treat a child after a motor vehicle crash.

The next pages contain some common caregiver questions and possible responses in line with best practices. Also refer caregivers to the manual and labels for their seat, and their vehicle owner’s manual.

Summary of Child Passenger Safety messages that clinicians can provide to caregivers:

- Make your vehicle smoke free.
- Read the manual for your car seat and vehicle – changes are needed as your child grows.
- Get a seat check by a Child Passenger Safety Technician at a car seat station or event.
- Avoid aftermarket (non-regulated) products.
- No puffy coats.
- Prevent vehicular heatstroke – “Look before you lock.”
- Consider your child’s safety in any mode of transportation.
- Set the example – your child is a future driver!
HARNESSSED CAR SEATS

Q: My child’s legs seem cramped when rear-facing. Is this uncomfortable or a safety concern?
A: Children are very flexible and can easily find a comfortable position in a rear-facing seat. Injuries to the legs are very rare for children facing the rear. Leg room is not a reason to turn your child forward-facing if they are within the manufacturer’s instructions for their seat.

Q: Is my child getting too big for their rear-facing seat? [This may be another way of asking about leg room but also may be driven by another concern about the child’s fit.]
A: If your child has reached any of the limits set by the seat’s manufacturer, they have outgrown the seat (or that mode of the seat, if it’s a convertible or all-in-one). Once infants outgrow their RF-only seat, move them to a convertible or all-in-one seat and keep them rear-facing to the maximum weight or height of that seat.

Q: Is it okay for me to leave my child in their car seat for naps?
A: Children should not be left to sleep in a car seat. Place your child in a crib or other safe sleep space for naps and nighttime.

Q: I’m concerned about head support. Should I buy a head cushion or wrap a blanket around my child’s head? [This should also be addressed if a clinician observes aftermarket products or something around the child’s head at an appointment.]
A: Aftermarket (non-regulated) products such as head cushions are not recommended and are usually prohibited by car seat manufacturers. These products may affect the harness fit or cause your child to be positioned incorrectly. Since there are no standards to crash test these products, they are non-regulated. Here are the best ways to protect your child:

- Check that your car seat is at the correct recline angle. For newborns (or older children with a medical condition affecting head and neck control), riding as reclined as allowed helps protect your child’s airway by avoiding a “chin to chest” posture. Turning their head to the side, or “ear to shoulder” is also protective.

- Make the harness snug so that you cannot pinch any harness fabric (webbing) at your child’s shoulders. This helps their position in the seat and provides the best protection in a crash.

- Typically, for rear-facing, the harness should be at or below your child’s shoulders. For forward-facing, the harness should be at or above the shoulders. The harness buckle should be in the slot closest to, but not underneath, your child’s body. The chest clip should be at armpit level. Always check your car seat manual for seat-specific instructions.

- A child with good head and neck control will move if they are uncomfortable.
Q: My rear-facing child gets car sick. Should I turn them forward-facing?
A: Forward-facing often doesn’t help and might even exacerbate motion sickness. What other steps have you taken to combat this situation?

Note: The Car Seat Lady is a resource run by Alisa Baer, MD, and other child passenger safety experts. Their Motion Sickness webpage is geared toward non-medical persons but contains good refresher information for health care professionals and may help you guide parents dealing with a child who is experiencing motion sickness.

Q: Since I shouldn’t dress my child in a winter coat, how should I keep them warm?
A: Dress your child in thin layers: Start with tights or leggings and a long-sleeved bodysuit or “onesie.” Long underwear is also an option, but you don’t want your child to get too hot once the car warms up. Then, add pants and a warmer top, like a sweater or thermal-knit shirt. Your child can wear a thin, well-fitting fleece jacket (that stops at the waist) over the other layers. Don’t forget hats and mittens. Once you have snugly harnessed your child, cover them with a blanket or put their coat on backwards – with their arms in the sleeves and the coat itself covering them.

Q: My child is unbuckling their harness. How do I address this?
A: It is not uncommon for young children to try to get out of their car seat. They are becoming more independent and like to try new things. Sometimes children try to get out of their car seat because it’s uncomfortable. A Child Passenger Safety Technician (CPST) can look at your child in the seat and suggest any adjustments that may help your child be more comfortable and less likely to unbuckle the harness. [Clinicians can review ideas listed in Escaping Behaviors that are appropriate for this child and their family].

Q: Does my child’s car seat need to be replaced after a motor vehicle crash?
A: Check your car seat manual to see what the manufacturer of the seat requires. If you have any questions about what the manual says about replacement after a crash, contact the manufacturer.

Q: I’m not sure my car seat is installed correctly. What should I do?
A: You can set up an appointment with a Child Passenger Safety Technician (CPST) at a car seat inspection (or fitting) station, or attend an event where CPST’s are doing seat checks. The Vermont Be Seat Smart webpage and New York’s Child Passenger Safety webpage have lists of car seat inspection/fitting stations and events in each state. There is also a U.S. National Child Passenger Safety Certification Training Program (click on “Find a Tech). Some of the techs listed on this page also do virtual appointments.

Q: I need a car seat for my child and cannot afford one. What should I do?
A: Vermont’s Be Seat Smart program offers income-eligible Vermonters free car seats if a child needs one. New York does not have a statewide program, but you can check with the car seat inspection/fitting stations in your area to see if they have free or reduced-cost seats available.
BOOSTER SEATS AND SEAT BELTS

Q: When can my child move to a booster seat?
A: Keep your child harnessed until they reach the maximum weight or height allowed by their seat and meet the minimum weight and height requirements for a booster. It’s best to wait until they are at least 5 years old and ready for the responsibility to wear the seat belt properly all the time in a booster.

Q: Does the “no puffy coats” message apply to children when they’re not in car seats?
A: Yes. Everyone should avoid wearing a puffy or bulky coat in the car, even adults. A heavy coat adds space between the body and the seat belt.

Q: Does my child’s booster seat need to be replaced after a motor vehicle crash?
A: Check your booster seat manual to see what the manufacturer of the seat requires. If you have any questions about what the manual says, contact the manufacturer.

Q: My child in a booster seat is unbuckling their seat belt or not staying in the correct position. How do I address this?
A: If your child still fits in a harnessed car seat (most have a maximum of 65 lbs. and 49 inches), consider putting them back into a harness. [If going back to a harnessed seat is not an option, Clinicians can review ideas listed in Escaping Behaviors appropriate for this child and their family].

Q: I’ve tried all the methods to prevent my child from unbuckling. What is the next step?
A: The next step is an adaptive transportation seat or vest. Some CPST’s have extra training in working with children with special healthcare needs. Let’s locate one of those CPST’s and get recommendations for the best options. Your child’s healthcare team can help navigate the process to try to get an adaptive restraint covered by insurance. You may also want to look at this this short “Special Needs” video, a collaboration of Cincinnati Children’s Hospital and Toyota.

Q: When can my child move out of their booster seat?
A: New York and Vermont law require the use a child restraint until a child is at least 8 years old. After they are 8, they should continue to use a booster until you can answer “yes” to these 5 steps:

1. Does the child sit all the way back against the vehicle seat?
2. When seated with their back against the vehicle seat, are their knees bent comfortably at the edge of the vehicle seat with their feet flat on the floor?
3. Is the lap portion of the seat belt as low as possible, touching their thighs?
4. Does the shoulder belt lay snugly on their shoulder between their neck and arm?
5. Can they remain seated like this for the whole trip?

Q: Can my child ride in the front seat?
A: The back seat is the safest place for all children less than thirteen. If you have a circumstance where the child must ride in a vehicle without a back seat, or if your back seat is full with other children, consult a Child Passenger Safety Technician to see what the best set-up will be.
Flyers and Handouts for Waiting Areas and Exam Rooms

The following links contain printable PDF documents:

Safe Kids Worldwide car seat safety tips
Safe Kids Worldwide tether infographic
Seat belts while pregnant
Recreational vehicles and child passengers

There are several UVM Children’s Hospital branded flyers on the following pages, including an “all seats” checklist, a winter coats message, and a heatstroke prevention message.

Or contact the UVM Medical Center Child Passenger Safety program at 802-847-1215 or injuryprevention@uvmhealth.org for our trifold brochure. We’d also be happy to work with your office to develop customized flyers or other materials for your practice.
Car Seat Safety

Can you answer YES to these key questions?

☒ Is it the right seat?

- Labels on the seat tell you if it is right for your child’s weight and height, and the expiration date of the seat. Seats typically expire 6 to 8 years from the date of manufacture.

- Children should be in a rear-facing seat until they have reached the top weight or height allowed by their car seat manufacturer.

- Children should be in a seat with a harness until they are at least 4 years old and 40 pounds. It’s best to wait until age 5 or 6 before moving to a booster seat.

- Children should be in a booster seat until they are at least 8 years old.

☒ Is the seat correct in my vehicle?

- Use the seat belt OR lower anchors, not both. But note that lower anchors have a weight limit. Read the label and manual to see when you should stop using them and switch to the seat belt.

- The car seat should not move more than 1 inch side to side or front to back at the belt path.

- The tether should be used with any forward-facing car seat.

- The back seat is the safest place for children under the age of 13. Never place a rear-facing seat in front of an active airbag. Booster must be used with both lap and shoulder belt.

☒ Does the seat fit my child?

- For a rear-facing child, the harness straps should be in the slot at or below the child’s shoulders. For forward-facing, the straps should be in the slot at or above the shoulders.

- The harness should be snug so you cannot pinch the webbing at your child’s collarbone level.

- No puffy coats or snow suits. Cover child with blankets or a coat on backwards after harnessing.

- For a booster seat, the seat belt should be across the shoulder and chest with minimal, if any, slack and the lap belt snug and low across the hips after fastening.

☒ Am I sure?

- Read the manuals for your car seat and your vehicle.

- Register your car seat with the manufacturer and check for recalls.

- Get your seat checked in your vehicle by a Child Passenger Safety Technician (CPST). Call 802-847-1215 for an appointment with a UVM Medical Center CPST or, for a list of all Vermont car seat inspection stations, see www.beseatsmart.com.

University of Vermont Children’s Hospital

04/29/2024
Winter Coats and Car Seat Safety

While snowsuits and heavy jackets are a must to keep children warm in chilly weather, the one place they should never be worn is in a car seat.

WINTER COAT + CAR SEAT = DANGER

Wearing a puffy coat adds space between the child’s body and the harness, up to as much as four inches. That is plenty of room for a child to slip through the straps and be thrown from the seat.

Having your child wear a well-fitting fleece in the car is a better option. It’s thin enough to work well with car seat harnesses, yet warm enough to keep the child comfortable. Thin down jackets (such as those labeled as ultra-light or packable) are also a good choice for car seat wear. Always be sure the jacket is the correct size for the child and stops at his/her waist. Coats that are too big or too long can add dangerous bulk behind the harness. They can also bunch up around the hip straps and crotch buckle and create potentially dangerous slack.

CHECK IF YOUR CHILD’S JACKET IS CAR SEAT SAFE

1. Place your child in the car seat with their jacket on. Tighten the harness until you are unable to pinch any of the harness between your thumb and forefinger
2. Remove your child from the seat without loosening the harness.
3. Take off the child’s coat and put them back in the car seat without adjusting the tightness, then buckle up the harness straps.
4. Can you pinch any material between your thumb and forefinger? If yes, then the coat is too bulky to be worn under the harness.

HOW TO KEEP YOUR CHILD WARM & SAFE

Here are some ideas from the American Academy of Pediatrics (AAP):

Dress the child in thin layers

Start with tights or leggings and a long-sleeved shirt or “onesie.” In very cold weather, long underwear is also a warm and safe layering option. Then add pants and a warmer top, such as a sweater or thermal-knit shirt. A thin fleece jacket is a good choice to wear over top.

Don’t forget hats, mittens, and socks or booties

These help keep kids warm without interfering with car seat straps.

Use a coat or blanket over the straps

You can add a blanket over the top of the harness straps. Or, put your child’s winter coat on backwards (over the buckled harness straps) after he or she is buckled up.

Never use a sleeping bag, blanket, or add anything underneath a child in the car seat

These items will compress during a crash and cause slack in the car seat’s harness straps.
Look Before You Lock

You have read your car seat manual and installed your child’s car seat. You may have had it checked by a certified car seat safety technician. What else should you know about your child’s safety in the car?

THE DANGER OF HEATSTROKE
Vehicle heatstroke occurs when a child is left in a hot vehicle, allowing for the child’s body temperature to rise quickly and dangerously. Babies and young children at particularly risk because their bodies heat up three to five times faster than adults.

IT WON’T HAPPEN TO ME
Loving parents and caregivers who are overwhelmed, tired, or distracted have unintentionally left a child behind in a vehicle. It’s happened to people like teachers, social workers, police officers, healthcare professionals, soldiers, scientists, and engineers. It can happen to anyone.

PREVENTION TIPS:
- **Look Before You Lock.** Get into the habit of always checking the back seat of your vehicle before your lock it and walk away.
- **Create a Reminder.** Place your phone, briefcase, purse, ID badge, or whatever you will need at your destination in the back seat when driving with your child. Or, keep a stuffed animal or other memento in your child’s car seat when it’s empty, and move it to the front seat as a reminder when your child is in the back seat.
- **Develop a Plan.** Ask your babysitter or childcare provider to call you if the child doesn’t show up for care as expected.
- **Do a Routine Check.** If someone else is driving your child, or the family’s daily routine has been altered, always check to make sure your child has arrived safely.
- **Never leave a child alone in a car, not even for a minute.** Even on a cooler day, in the shade, or with the windows open, your vehicle can heat up to dangerous temperatures rapidly.

IF YOU SEE A CHILD ALONE IN A CAR:
- **Act Fast to Save a Life.** If you see a child alone in a vehicle, call 911.
FOR MORE INFORMATION
Please visit
UVMHealth.org/carseats
Email: injuryprevention@uvmhealth.org
Phone: 802-847-1215

INJURY PREVENTION
Smith 240
111 Colchester Avenue
Burlington, VT 05401

HOURS
Monday – Friday
8 am–4 pm