

COMPREHENSIVE CHILDREN'S  
INJURY CENTER (CCIC)

# *Car Seat Safety*

A GUIDE TO SAFE ROAD TRAVEL





## Get a Car Seat and Use It!

Perhaps the most important investment you can make in your young child's future is a car seat. Car crashes are the number one killer of children 1 to 12 years old in the United States. The best way to protect them in the car is to put them in the right seat and use it the right way.

A car seat prevents your child from being thrown around or out of the vehicle. In a crash, a car seat spreads out the force of the crash evenly over your child's fragile body and protects the head and spinal cord. Used properly, a car seat also improves behavior, lessening the chance that your child will distract the driver and actually cause a crash.

- Choose the correct car seat for the age and size of your child, and choose a car seat that fits in your vehicle and use it every time.
- Always refer to your specific car seat manufacturer's instructions; read the vehicle owner's manual on how to install the car seat using the seat belt or LATCH system; and check height and weight limits.
- Keep your children in their car seats as long as they fit within the manufacturer's height and weight requirements.
- The safest place for children 12 and under is always in the back seat.



## Safe Road Travel for Your Child

Following are guidelines to help you select the correct child restraint (car seat) for your child. Before you use any seat, it is important that you read and follow the manufacturer's instructions for your car seat and vehicle.

Some children still may have trouble fitting into a car seat even when they appear to meet the requirements as designated by the manufacturer's instructions. For example, a child may be too tall for a particular car seat, even though he meets the weight and age requirements. If you are unclear as to the appropriate seat for your child, please call the Comprehensive Children's Injury Center at Cincinnati Children's Hospital, at 513-636-7865.

### Recommendations

#### Ages 0–2

According to the American Academy of Pediatrics, a child between the ages of zero and two should ride in a rear-facing car seat. There are different types of rear-facing car seats: Infant-only seats can only be used rear-facing. Convertible and 3-in-1 car seats typically have higher height and weight limits for the rear-facing position, allowing you to keep your child rear-facing for a longer period of time.

#### Ages 2–4

After the age of two, your child can ride in a forward facing car seat with a five-point harness. Your child

should remain in such a seat until he or she is four years old and weighs at least 40 pounds.

#### Ages 4–8

Keep your child in a forward-facing car seat with a harness until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the forward-facing car seat with a harness, transition to a booster seat, but the child should still remain in the back seat.

#### Ages 8–12

Keep your child in a booster seat until he or she is big enough to fit in a seat belt properly, the recommended size is until they are 4'9". For a seat belt to fit properly the lap belt must lie snugly across the upper thighs, not the stomach. The shoulder belt should lie snug across the shoulder and chest and not cross the neck or face.

**Remember:** your child should still ride in the back seat because it's safer there.







## Types of Car Seats

### Infant Seats

Many parents find that car seats made for infants are easier to use and fit their newborns better than convertible seats. Some infant seats also can be used as carriers. Many are designed with a base that stays buckled in the vehicle and have a seat that can be snapped in and out.

The infant seat must always be used facing the rear of the vehicle. Your baby's head must fit beneath the top rim of the seat, with an inch to spare. A child less than 2 years old that has outgrown the infant seat should be moved to a convertible seat in the rear-facing position.

Read the manufacturer's instructions to learn what handle position can be used when the seat is in the vehicle.

### Convertible Seats

Convertible car seats can be used for both the rear-facing and then the forward-facing position as your child grows. Read the manual carefully, and remember that children should continue to ride rear-facing until they reach the top height or weight limit before you move them to the forward-facing position.

However, when your child's ears hit the top of the seat, or their shoulders are above the top slots of the seat, it's time to move to a combination or booster seat. Use a convertible seat until your child outgrows it. Convertible seats protect better, help keep your child from moving





INFANT



CONVERTIBLE



HIGH-BACK BOOSTER

around and provide more support for sleeping than a booster seat.

### 3 in 1 Seats

These seats can be used as a rear-facing, forward-facing with a harness and then as a booster seat. Use these seats forward-facing with a harness and tether after your child reaches the top rear-facing size limit allowed by the manufacturer.

### Combination Seats

These seats are designed to be used strictly in a forward facing position as a car seat with a harness and then as a belt-positioned booster

seat. Children should be at least two years of age before they are moved to a combination seat. Check manufacturer's height and weight requirements before using with your children.

### Booster seats

Once your child has outgrown a seat with an internal harness, it's time to move to a belt-positioning booster seat. (Booster seat use is extremely important because most children do not fit properly into an adult seat belt until they are about 4 feet, 9 inches tall.) And, during a car crash, an improperly positioned seat belt places a child at increased risk for certain injuries, which can be severe.

When younger children sit on the seat of a car, their legs are frequently too short for their knees to reach the edge of the seat and bend comfortably, so they tend to slouch or move forward, causing the lap belt to rise over the belly. Booster seats allow children to sit more comfortably, and ensure that the shoulder belt lays flat across the center of the chest and away from the face, and that the lap belt fits snugly over the top of the thighs.

The most commonly available booster seats are designed for children who weigh between 40 and 120 pounds. Do not use a booster seat before your child outgrows a forward-facing seat with a harness. Often a parent will move a child of 2 or 3 years to a booster seat for convenience or because a younger child needs the convertible seat. This is unsafe!

### High-back Boosters

High-back booster seats are a good choice for vans, mini-vans and station wagons with low back seats. They offer protection against whip-lash for taller children whose heads reach higher than the back of the vehicle seat. A high-back booster would be a good option for a child that falls asleep in the car. Some high back boosters have the option to remove the back. Your vehicle must have lap/shoulder belts to use a high-back booster.

### No-back Boosters

No-back booster seats can be used by children that are at least 40 pounds. Older children may



NO-BACK BOOSTER

prefer a no-back booster seat. The child sits on the booster seat and is belted in with both the vehicle lap and shoulder belts.

## Additional Information

### Shield Booster Seat

Shield boosters are no longer manufactured. Cincinnati Children's does not recommend shield boosters.

### Car with Lap Belts Only

If your vehicle has lap belts only, and your child weighs more than 40 pounds, there are seats on the market that can be used with an internal harness to a higher weight.

### Built-in Seats

Some cars and vans have car seats built right into them. Some of these seats convert to a belt-positioning booster and others become a five-point

harness. Both are easy to use, but neither can be used for children younger than 2 years. These seats can only be used forward-facing.

For more information about these types of seats or help with any additional questions, please call the Comprehensive Children's Injury Center at Cincinnati Children's Hospital, at 513-636-7865.

#### Children with Special Needs

Some children have particular transportation needs that typical car seats cannot meet. Special types of restraints have been developed to keep these children safe. Car beds are available for premature or low-birth weight children who may need to lie flat. Children in full-body or other extensive casts, children who have difficulty controlling their bodies or heads, and those with behavioral problems also may need special restraints to meet their needs. For more information about special restraints, call Cincinnati Children's at 513-636-7865.

#### Air Bag Safety

The back seat is safest for any passenger. People seated in the back are farthest from deadly head-on crashes and protected by the padded front seat. Rear-facing car seats should never be placed in front of an air bag, unless the air bag has a cut-off switch or a special car seat sensor. However, if it is absolutely necessary for your child over the age of 2 to ride forward facing in the front seat equipped with a passenger air bag, take the following precautions:

- Belt your child into the correct seat for your child's size.
- Move the front seat as far back from the dashboard as possible. To protect your child from the danger of air bags, it's important first to know if a vehicle has air bags. Look for the following indications:
  - A warning in the vehicle owner's manual.
  - The words "air bag" or the letters "SRS", "SIR", "SIPS", "SIAB", or "IC" on the steering wheel, dashboard panel and side of the vehicle's seats.
  - A warning label on the sun visors or on the sides of the open door frame.
  - Side impact airbags may include seat or door mounted, curtain, or tubular types.

For more information regarding children and air bags, visit [www.nhtsa.gov](http://www.nhtsa.gov) and search for air bags under vehicle safety.

## Tips for Choosing a Car Seat

### It is best to use a new seat.

If you choose to use a secondhand seat, make sure:

- the seat has not been involved in a crash
- you can read the manufacturer's model number and date
- the seat is not past the expiration date.
- the seat has all of its parts and an instruction booklet
- the seat has not been recalled
- the seat does not show signs of wear and tear on the harness, padding, shell or frame.
- Because all brands and models of car seats must meet or exceed the standard, the least expensive model will usually work as well as the most expensive model. Higher-priced models may have added convenience features.

### Before you buy a car seat, consider these additional questions.

- Is the seat's harness easy to use?  
Buckle and unbuckle the harness a number of times.
- Can you easily get a child in and out? Practice with a child, if possible.
- Does the seat fit tightly in your vehicle?





## Installing the Car Seat Correctly in the Vehicle

To be effective, car seats must be fastened tightly in the vehicle and must stay tightly against the back of the vehicle seat. Read your vehicle owner's manual and the car seat instructions before installing the seat.

For additional help with installing your car seat, Cincinnati Children's and area fire departments offer free child car seat checks. For information on locations, call 513-636-7865 or visit our web site at [www.cincinnatichildrens.org/ccic](http://www.cincinnatichildrens.org/ccic)

### LATCH System

Car seat and vehicle manufacturers have worked together to make it easier for parents to install car seats. Since September 2002, all new vehicles and safety seats have a universal anchorage system called LATCH-Lower Anchors and Tethers for CHildren. This system may make it easier to install seats.

This new system allows seats to attach to bars located where the vehicle seat cushion and seat back come together. At least two rear seating positions in the vehicle must have this system accompanied by a top tether anchor. The tether holds the top of the car seat tightly so the child's head won't move too far forward during a crash and is located in at least one additional seating location. Most top tethers can only be used with a forward-facing seat.





- Both your vehicle and car seat must have the LATCH system. (Some car seats and vehicles can have LATCH added, contact your manufacturer.) If you do not have LATCH on both the car seat and the vehicle, use the vehicle seat belts.
- Many vehicles will not have LATCH anchors in the middle seating position. You will need to either use the center seat belt or move the seat to another seating location that has LATCH if you choose to use the LATCH system to install your seat. (Check your car seat and vehicle owner's manual for correct use.)
- Never attach two car seats to one LATCH anchor.
- If you cannot secure your seat tightly using the LATCH system you can use the seat belts as an alternative way to install your seat.
- Use the seat belts or LATCH. Do not use both systems to install your seat.

- The top tether should be used, when possible, on forward-facing seats with an internal harness.
- Some booster seats allow either the lower anchors or top tethers.

#### Tethers

Tethers provide added stability to restraints when used with the vehicle seat belts. All cars and restraints manufactured after September 1, 2000 have tether capability. Many cars prior to 2000 can have tether anchors added free of charge. Pick-up trucks could have a different way to attach the top tethers, read vehicle instructions carefully. Your tether anchor could be a bar, bracket or webbing.

#### Installation With Seat Belt Systems

- Use the proper seat belt slots on the car seat. Each seat has at least one correct way for the belt to go. Follow the car seat manufacturer's instructions.
- Rear-facing car seats may route the vehicle seat belt over or under the child's feet or lap, while others route it through a detachable base.
- Most child car seats used in the forward-facing position route the vehicle seat belt through slots at the back of the seat.
- Fasten the child car seat tightly. Push the child car seat down firmly into the vehicle seat while tightening the vehicle seat belt around the child car seat. For a small person, it may help to push down on the seat with your knee.
- Test how tightly the vehicle seat belt is holding the

child car seat. A seat should not move more than an inch from side to side (or from the back of the vehicle seat) when rear or forward-facing.

- Place an infant seat or rear-facing convertible seat following car seat manufacturer's instructions to keep your baby and seat at the proper angle (no more than 45 degree angle). This helps to support an infant's heavy head and weak neck and maintain an open airway. For passenger comfort, the seats of many vehicles slope down toward the back of the seat. This causes a rear-facing seat to tilt too far upright. Many seats have a way to adjust the recline position of the seat and an indicator to show if the recline angle is correct. If your seat does not have a recline adjuster, a tightly rolled bath towel or a pool noodle cut to size and placed under the front of the safety seat, where the vehicle seat and seat-back meet, will help keep the baby in the proper position.
- In some small cars, a convertible seat in the rear-facing position may rest against the back of the front seat. As long as the car seat is at the proper angle, this is a safe position.
- Place a convertible seat in the forward-facing position so that it sits upright. (per manufacturer's instructions)
- Some vehicle seat belts cause the seat to become loose unless special precautions are taken. Certain vehicles, because of the shape of the seats or how the vehicle seat belts are placed, make fastening a car seat tightly nearly impossible. Read your vehicle owner's manual to

find out if you will need any of the following:

- A regular locking clip that comes with all safety seats
- A heavy-duty or belt-shortening clip that can be purchased at some car dealers
- An additional buckle or belt
- A change in the way the vehicle seat belt works. It might work one way for a passenger but differently for a child safety seat.

#### Installation Tip

If possible, place your child's car seat in the center of the back seat. This puts your child farthest from a front-end crash – the most common crash – and from side crashes – the most dangerous crash. However, this is not always possible. Some vehicles do not have enough space between safety belt attachments in the center back seat to keep the car seat tightly fastened. In other vehicles a center hump or armrest may interfere. Choose the back seat position that secures your child car seat the best.





## Restraining Your Child in the Car Seat

Car seats provide the best protection only when your child is properly placed and secured in the seat. Please read and follow the car seat manufacturer's instructions. Here are some best practices for buckling up your children in their car seats:

### Infant seats or rear-facing car seats

- Place your baby with hips and back against the back of the seat.

- Position the shoulder straps so they are at or below shoulder level.
- Make sure the shoulder straps are snug with no slack. You should not be able to pinch excess harness webbing together lengthwise at the top of the shoulders.
- Place the harness clip so it is in the middle of your baby's chest, at armpit or nipple level.
- If needed for extra support, put rolled up towels on either side of your baby. If your baby slides down, put a rolled-up wash cloth between his or her legs and the crotch strap.
- Dress your baby in clothes with legs. Avoid having

thick layers of clothing under the harness.

- Do not place any padding or cushions behind your baby unless it comes with the car seat.
- Do not place blankets beneath or wrap blankets around your baby. You may place a blanket over your baby once the harnesses are fastened.

### Forward-facing seats w/harness

- Place your child with hips and back against the back of the seat.
- Position the shoulder straps at or above the level of your child's shoulders (follow manufacturer's instructions).
- Make sure the shoulder straps are snug with no slack. You should not be able to pinch excess harness webbing together lengthwise at the top of the shoulders.
- Place the harness clip so it is in the middle of your child's chest, at armpit or nipple level.
- If the crotch strap is adjustable, keep it short. This will help hold the harness strap down in the proper position.

### Belt-positioning booster seats

- Make sure the lap belt is snug and positioned low enough to fit over the top of your child's thighs.
- Check to be sure the shoulder belt stays on your child's shoulder and lies flat across the chest.
- If the shoulder belt rubs against your child's neck, it may be uncomfortable but it's not harmful. Try folding a soft cloth over the belt. Teach your child

to tug at the shoulder belt if it loosens to retighten the belt.

- Never put a shoulder belt under your child's arm so it crosses over the lower chest or behind the back. This could cause serious injury.

### Vehicle Seat Belts

Vehicle seat belts alone should not be used for young children. The belt slips up from the child's hips to the stomach and can cause injury. Seat belts are designed to fit adults; small children can be injured during a crash by being thrown out of the belt or slipping under it.

Once a child outgrows a booster seat (at approximately 4 feet 9 inches) and can sit without slouching, vehicle seat belts can be used safely, if they are worn properly. Child should sit with back against the back of the vehicle seat with lap belts placed low over the top of the child's thighs, not across the stomach. Shoulder belts should lie flat across the center of your child's chest. Never place a shoulder belt under the arm or behind the back. The child's knees should bend at the edge of the seat. Your child should sit this way the entire ride.

Some vehicles that do not have shoulder belts in the rear seat can be retrofitted with them. Contact your automobile dealership for more information.





## Car Seat Recalls

Occasionally a manufacturer recalls a car seat because of a defect that could harm your child. Before you buy a new or used seat, check the federal recall list by going to [www.safercar.gov](http://www.safercar.gov)

When you purchase a new car seat, be sure to send the manufacturer's owner information card provided with the seat. This makes it possible for the manufacturer to notify you if your model is recalled.

Manufacturers are required to fix the problem free of charge. Usually the seat does not have to be sent back to the manufacturer. You can fix most problems by replacing an old part with a new part the manufacturer sends you.

If you think your car seat has a problem that could be a safety defect, go to [www.safercar.gov](http://www.safercar.gov) to report it.

## Car Seats and the Law

All 50 states, the District of Columbia, Guam, the Northern Mariana Islands and the Virgin Islands require car seats for infants and children.

48 states and the District of Columbia and Puerto Rico require booster seats or other appropriate devices for children who have outgrown their car seats but are still too small to use an adult seat belt safely.

First offense fines for not complying with a state's child passenger safety laws vary from \$10 to \$500. Some states also use driver's license points as an additional penalty for noncompliance.

For more information please go to [www.nhtsa.gov](http://www.nhtsa.gov) and search for Child Passenger Safety under Laws and Regulations.





## Tips for Parents

- Treat buckling up as an automatic part of life so your child does too.
- Use a car seat every time your child travels in a vehicle.
- More than eight out of 10 crashes occur at speeds lower than 40 mph.
- Deaths have occurred at 12 mph, about the speed you drive through a parking lot.
- Nearly 75 percent of all crashes happen within a few miles from home.

- Protect your child against hot vinyl padding, metal and plastic on the car seat. Feel the seat and buckles before putting your child in it. In hot weather, lay a towel or cloth over the seat when not in use.
- Never let a child out of the seat while the vehicle is in motion. If your child needs a break, stop the vehicle as soon as it is safe to do so.
- Never leave a child unattended in a vehicle.
- Never leave infants or children in a parked vehicle, even if the windows are partially open.
- Do not let your children play in an unattended vehicle. Teach them that a vehicle is not a play area.
- Even cool temperatures in the 60s can cause the temperature to rise well above 110° Fahrenheit inside your car. The inside temperature can rise almost 20 degrees within the first 10 minutes

## Tips for Expecting Mothers

If at all possible drive less often if you are pregnant, let others do the driving. Car pool to work, ride a bus, shop online, plan your errands so you can make less trips and go by air instead of driving if you must take a long trip (check with your doctor first).

Make sure you wear your seat belt correctly. Place the lap belt portion under your belly as far as possible and make sure the shoulder belt is across the center of your chest. Never place the shoulder belt behind the back, under your arm, or off the

shoulder as this could be very dangerous if you are in a crash.

If driving, move as far away from the steering wheel (where the airbag is stored) as possible and tilt the steering wheel toward your chest and not toward your face as this will be safer.

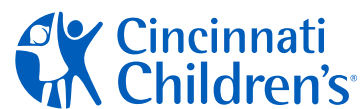
If you can sit in the back center seat, as long as you have a lap and shoulder belt, this is the safest place for you to be.

## Tips for Grandparents

All grandparents want their grandchildren to be safe when riding in a vehicle but things have really changed since grandparents were parents.

- All children under 13 should be buckled or in a car seat in the back seat
- Lead by example, always use your seatbelt and make sure everyone in your vehicle is buckled in the seatbelt or in a car seat
- If you have your own car seat or switch car seats to your vehicle when you take care of your grandkids, make sure you schedule an appointment to learn how to properly install it. Go to [www.cincinnatichildrens/ccic](http://www.cincinnatichildrens/ccic) to find a location and phone number.





Comprehensive  
Children's Injury Center



#### Comprehensive Children's Injury Center (CCIC)

<http://cincinnatichildrens.org/ccic>

If you have questions about the proper use of car seats, or would like to make an appointment for a free car seat check, please call the Comprehensive Children's Injury Center at Cincinnati Children's Hospital, at 513-636-7865 or visit us online at [www.cincinnatichildrens.org/ccic](http://www.cincinnatichildrens.org/ccic) for a list of fitting stations in the area.



#### KOHL'S CARES

<http://www.kohlscorporation.com/>

Kohl's Injury Prevention and Education Programs at Cincinnati Children's

Through a unique partnership with committed community organizations and churches, the Kohl's Injury Prevention and Education Programs at Cincinnati Children's in partnership with Children's Comprehensive Injury Center (CCIC) offers a comprehensive approach to injury prevention and education focused on eliminating injury as the leading cause of death for children. These programs provide community members across the Tristate the opportunity to learn about injury prevention and practice safe behaviors.

Since 2006, Kohl's stores in Greater Cincinnati raised money for Cincinnati Children's through the sale of seasonal items. The proceeds from these items support the Kohl's Injury Prevention and Education Programs through the Comprehensive Children's Injury Center at Cincinnati Children's.

Our sincere thanks to Kohl's and their loyal customers for their ongoing support.

#### SAFEEKIDS

<http://www.safekids.org/>

Cincinnati Children's is a member of the Safe Kids USA campaign and the lead organization of the Cincinnati Safe Kids Coalition. Their goal is to prevent your child from being injured in a motor vehicle crash, fire, scalding, pedestrian activity, poisoning, choking, bike crash, fall, water activity or shooting.

#### Center for Disease Control (CDC)

<http://www.cdc.gov/safekids/>

Protect the Ones You Love: Child Injuries are Preventable.

In an effort to raise parents' awareness about the leading causes of child injury in the United States and how they can be prevented, the Centers for Disease Control and Prevention (CDC) has launched the Protect the Ones You Love initiative.

#### National Highway Traffic Safety Administration

<http://www.safercar.gov/>

The best way to protect them in the car is to put them in the right seat, at the right time, and use it the right way. NHTSA helps give additional information on choosing and using car seats as well as a Child Seat Inspection Station Locator to help with installation of your seats.

#### American Academy of Pediatrics (AAP)

<http://www.healthychildren.org/>

Healthy Children is a parenting Web site backed by 60,000 pediatricians committed to the attainment of optimal physical, mental, and social health and well-being for all infants, children, adolescents, and young adults. Whether you're looking for general information related to child health or for more specific guidance on parenting issues, go to the Healthy Children website.

#### Injury Free Coalition for Kids

[www.injuryfree.org](http://www.injuryfree.org)

The Injury Free Coalition for Kids is among the country's fastest growing and most effective injury prevention programs. They are comprised of hospital-based, community-oriented programs, whose efforts are anchored in research, education, and advocacy.

#### Greater Cincinnati Automobile Dealers Association (GCADA)

<http://www.gcada.net/>

The GCADA has partnered with Cincinnati Children's since 2000 to promote Child Passenger Safety programs in the tri-state area; to make sure everyone's car seats are installed and used correctly to prevent injuries and save lives.





[www.cincinnatichildrens.org](http://www.cincinnatichildrens.org)