Child restraint systems in automobiles
Dorothy Martin

Quick Facts

Effective January 1, 1984, Colorado law requires children under 40 pounds and under four years of age to be restrained in an approved child restraint when riding in a car.

The most dangerous place for a child in a car is on the lap or in the arms of another person; the safest place is in a restraint fastened to the center of the rear seat.

Children are 95 percent less disruptive in a car when they are in a restraint system.

The major factor affecting correct use of seat belts by children is use of seat belts by the parent(s).

Do you worry about Sudden Infant Death Syndrome, cancer, fires and burns, pneumonia, drowning? You've missed the one thing that kills more children than all these together—the automobile. Once a baby is beyond the "critical" early weeks, automobile accidents are the leading cause of death in childhood, claiming more lives than any disease or other accidental cause. Thousands of children are killed every year as passengers in automobiles. Many more are injured or permanently disabled.

Dr. James Holroyd, chairman of the Accident and Poison Prevention Committee of the American Academy of Pediatrics said, "We see to it that all children are immunized against preventable diseases. The 'vaccination' to combat infant and child car deaths is the proper use of car safety seats and belts."

The Law

On June 3rd, 1983, the Colorado General Assembly added a new section to the Colorado Revised Statutes. Section 42-4-235 mandates the use of approved child restraint systems for every child under four years of age and weighing less than 40 pounds while riding in privately owned noncommercial passenger vehicles driven by a resident of the state of Colorado. This law became effective on January 1, 1984. Most states have now passed child safety restraint laws for infants and children riding in cars.

The Risk

It has been estimated that as few as 2 percent of children under age 10 are properly restrained by safe car seats or lap belts when riding in automobiles. Even when parents are concerned enough to wear their own safety belts, only about 25 percent of the children in their automobiles are protected. Multi-year accident studies in Michigan and Washington have shown that not a single child properly restrained in a safe car seat has been fatally injured. The American Academy of Pediatrics estimates that 91 percent of fatalities and 78 percent of injuries could be avoided if children were secured in approved seat restraints. In a 30-mile-per-hour crash, a 7-pound infant becomes a 210-pound weight. The unrestrained infant will hit the dashboard with the force of a fall from a three-story building.

"Dorothy Martin, Colorado State University Cooperative Extension assistant director, home economics programs (6/90)"

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Myths Adults Must Give Up

While many adults believe that seat belts and child restraints are only important for long highway trips, statistics from the state of Washington indicate the need for restraint use at all times. In a three-year study, it was found that fatal accidents involving young children usually occurred under ordinary conditions on dry roads at low speeds during daylight hours and were not related to alcohol usage.

Second, many adults believe they can safely hold a child on their lap while traveling in an automobile. In a series of tests at the Highway Safety Research Institute in Michigan, male and female adult volunteers were safely fastened to a seat with lap and shoulder belts. Each was then subjected to simulated 15- and 30-mile-per-hour impacts. Not one of the volunteers was able to hold onto a lifesize simulated “baby” doll. Even knowing the precise moment of impact and using all their strength, the doll was ripped from their arms and slammed into the dashboard. A second study was sponsored by the Insurance Institute for Highway Safety in Washington, D.C. It shows what happens to infants held in the arms of adults who were not using proper restraining devices. In this test, a 1979 four-door Chevy Malibu was driven into a solid barrier at just 24 miles per hour. The second major cause of death and injury to children in cars is being crushed by unrestrained adults. The most dangerous place in a car for a child is on the lap or in the arms of another person.

A third myth of automobile safety is that people will be killed by fire or drowning if they are belted in the automobile. It is much safer to stay inside an automobile rather than be thrown from it. Even when there is fire or submersion in water, a seat restraint will reduce the risk of incapacitating injury and increase the chance of remaining conscious and escaping the vehicle.

Proper Use of Restraints

An important principle of survival is routinely included in instructions to airline passengers. Adult passengers are instructed to put on their oxygen masks before assisting their children with a mask. The principle underlying this instruction is that adults are only helpful to a child if the adults retain the ability to function. That principle is also applicable to the use of seat restraints in automobiles. An adult not wearing a seat belt may be injured seriously and become unable to provide critical assistance to a child who may be injured. Adults who wear seat belts set a good example, protect their ability to help an injured child, and prevent possible injury to others by the impact of their unrestrained body. The first rule of child restraint is: Adults who drive with children must use their own seat belt.

Children of different sizes need different types of seat restraints. Children weighing 40 pounds or more can more safely use a lap belt if it is secured across the hips and adjusted for a snug fit. However, a small child’s head is heavier and larger, in proportion to its body than an older child or adult. The small child’s head is controlled by weaker head muscles and their bone structure is softer and still forming. A small child can “tunnel under” or slip through a standard lap belt in a crash or sudden stop, and the diagonal shoulder harness could position itself dangerously across the child’s neck or face. Adult seat belts can cause injury to a small child in case of a sudden crash. In the rare instance when no child restraint is available, a lap belt is better than nothing.

Small children need restraints that distribute crash forces over a larger portion of their body. The restraint should provide good support for the head and neck to guard against whiplash injuries.

Never put a lap seat belt around both an adult and a child held on their lap. The adult’s weight when forced forward by a sudden impact would press the belt into the child and could cause serious injury.

Selection and Installation

Children between 20 and 40 pounds in weight are safest when riding in restraint systems that use a five-point harness or a large shield to protect the child. Infants up to 20 pounds in weight should travel in rear-facing, semi-reclined restraints anchored with lap belts. Some authorities believe there is no other way to safely transport children of this size.

When shopping for restraints, the following guidelines are important: 1) Purchase only those restraints manufactured after January 1, 1981. These restraints have been dynamically tested in a simulated crash. 2) Purchase the restraint that fits your child’s present height and weight. 3) Read all instructions for installation and use. Ask for a demonstration of proper use if you are unsure. Be sure the restraint you choose will fit your automobile. If the seat you choose requires a top anchor strap, it is absolutely essential that the top anchor strap be installed properly. Installing the bracket and anchor strap necessary for proper function of the seat is often the only thing that makes the seat safe. Some child restraints are secured by a standard lap belt through or around the child restraint. Follow the manufacturer’s instructions exactly for the restraint you purchase. 4) Choose a seat that is comfortable, durable and easily cleaned. 5) Restraints are expensive. If you cannot purchase the correct seat for your child, call your local hospital or medical society for information about child restraint loan programs. In some locations Colorado Extension Homemakers facilitate a child restraint loan program. Restraints purchased at garage sales often are in poor unsafe condition and rarely come with installation or use instructions. Surveys have shown that three out of four safety seats are not used correctly.

To find out whether a child’s safety seat has been recalled call the U.S. Department of Transportation at 1-800-424-9393. Be prepared to give: 1) the name of the seat manufacturer, 2) the name of the seat, and 3) the model number or the year the seat was purchased.
Children's Use of Restraints

Research at the University of Kansas Medical Center showed that children restrained by safety seats or belts were 95 percent less disruptive than unrestrained children. If a child is not restrained they will move freely around in the car, distracting the driver and other drivers. When the child is not supported in a restraint, the child can roll or fall off the seat when the vehicle makes sudden stops or sharp turns. If the child is not able to see out the window, they may become bored and disruptive.

Suggestions for Adults with Child Passengers

1. Get started off right by using a child restraint when you bring your newborn home from the hospital. Infants enjoy warmth, motion and security. The first ride can provide all of those if you use a rear-facing car seat for your newborn. Some physicians write a formal prescription for a seat restraint for a newborn.

2. Tell children what you want them to do rather than what they should not do. For example, say, “I want you to sit quietly while I fasten your belt. If you watch carefully you will soon be big enough to buckle up yourself.”

3. If a child is making the first trip in a car seat, make it a happy time. Explain the rules for riding in the car—everyone in this car wears a seat belt. Be positive by saying, “We are going for a ride and we will have a good time.” Point out exciting things the child can now see because of the height of the safety seat. Keep the first ride a short one.

4. Children who are not used to riding in a seat restraint will probably resist efforts to secure them. If the child struggles, begs or yells, ignore their negative behavior. Maintain a firm, calm attitude and don’t argue. Be persistent and keep the child in the seat. If you must, stop the automobile in a safe place and give all your attention to calming the child. Distract the child with a soft toy, book or doll. Tell the child, “This car does not move until all belts are fastened.” If the child attempts to climb out of the seat or release the buckle, say “No” in a firm, calm voice. If the child persists, a firm slap on the back of the hand may be necessary. Never slap the child’s face or slap hard enough to injure the small, soft bones of a child. Frequent slapping will not be effective. Use only as a last resort.

5. Remember, praise works better than punishment. Be aware of every positive move the child makes toward using the seat restraint. Praise them liberally and immediately. For example, say, “You are sitting so quietly today. Daddy is happy that you can do that. I’ll bet you’re proud that you can do it.” Brag about their good behavior to other significant people in the child’s life—and be sure the child hears you do it.

6. When riding for long periods of time, make frequent stops to give children the chance to move about and let off steam. Even infants like to stretch and kick. Stop only in safe rest areas off the roadway.

7. A study of fifth grade children found that the child’s identification with the parent and the parent’s instruction to the child to “buckle up” are significant factors in the child’s use or nonuse of seat belts. Other studies support the conclusion that the major factor affecting correct use of seat belts by children, is use by the parent. Set a good example and see that all riders, adults and children, wear seat belts. You may need to explain to other adults riding in your automobile that your children need to see good examples of seat belt use.

For More Information

The following groups have been active in promoting the use of child seat restraints:

- Physicians for Automotive Safety
  50 Union Avenue
  Irvington, NJ 07111

- National Safety Council
  444 North Michigan Avenue
  Chicago, IL 60611

- American Academy of Pediatrics
  Office of Public Education
  1801 Hinman Avenue
  Evanston, IL 60204

- "Family Shopping Guide to Carseats"
  Send a business-size stamped and self-addressed envelope to:
  American Academy of Pediatrics
  Car seat Guide
  P.O. Box 927
  Elkgrove Village, IL 60009-0927

- Colorado Division of Highway Safety
  4201 E. Arkansas Avenue
  Denver, CO 80222

- American Hospital Association
  840 North Lake Shore Drive
  Chicago, IL 60611
  (312) 280-6000

- Colorado Hospital Association
  2140 South Holly
  Denver, CO 80222
  (303) 758-1630

- Michigan Office of Highway Safety Planning
  Lansing, MI 48913

- National Extension Homemakers, Safety Chair
  Colorado Extension Homemakers, Safety Chair
  (Contact your county Colorado State University Cooperative Extension office)

- AAA Foundation For Traffic Safety
  8111 Gatehouse Road
  Falls Church, VA 22042

- National Highway Traffic Safety Administration (NHTSA)
  U.S. Department of Transportation
  400 7th Street, S.W.
  Washington, DC 20590
  (202) 462-0837
A Family Shopping Guide To: Infant/Child Automobile Restraints*

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This Shopping Guide will help you in finding a good automobile restraint system (car seat) for your child. Follow these steps:

• Consider only a car seat listed here. Seats now in production must meet a tough new federal motor vehicle safety standard (21S). It requires that seats made after January 1, 1981 must show good performance in a simulated crash test.

• Since some crash tested car seats have been taken off the market and model numbers may have changed over the years, questions could arise regarding those seats if you wish to write to us.

• The "best" car seat is the one which your child will be most comfortable, that you can anchor correctly in your car(s), and that you are willing to use every time you travel. Try the seat in your car and with your child if possible, before you buy.

• If a car seat has a lap anchor strap, it must be fastened to a special anchor plate installed to the rear or to a set of rear lap belts. It must be pulled tight. If you cannot or are not willing to do this, buy a car seat which is anchored only by a lap belt. Correctly used, a top anchor strap gives important extra protection for your child.

• The same car seat may sell at a wide range of prices in area stores. Shop carefully for the best deal. Ask about rental or wholesale programs being run by service groups or health organizations.

Infants and Toddlers

Seats designed for use in backward-facing position for infants and in forward-facing position for older children.

Bobby-Mac Deluxe II
Bobby-Mac (Collier Kayworth) 3-point harness for infants and toddlers; attached safety shield pivots into place for toddlers; lap belt goes over shield.

Infant Love Seat
Century Products
Can carry infants up to 20 lbs and 26 inches.

Bobby-Mac Champion, Champion 3-in-1
Bobby-Mac (Collier Kayworth) 3-point harness for infants and toddlers; separate shield must be snapped into place for toddlers; lap belt goes over shield; safety harness must be used.

Pros
• The best" car seat is the one which is anchored only by a lap belt. Correctly used, a top anchor strap must be used.

Cons
• Car seat which is anchored only by a strap, before you buy.
• Travel. Try the seat in your car

Century 100
Century Products
5-point harness, belt goes through frame behind child (same for all Century seats).

Century 200
Century Products
Infants and toddlers are protected by a large pad to which the shoulder straps are attached, behind or to the side of the seat between the child's legs.

Century 300
Century Products
5-point harness, spring-loaded armrests pop up when not anchored.

Safe-T-Seat 78-A
Cosco Peterson
5-point harness, belt goes through frame behind child.

Safe 'N Easy Recliner 313-D
Cosco Peterson
5-point harness, belt goes through slots in plastic shell behind child.

Safe 'N Shield 81-A
Cosco Peterson
3-point harness for infants; toddlers are protected by a large, heavy shield which drops down into position (parents must take care to keep toddlers hands away from side locking mechanism when lowering shield); belt goes through frame behind child.

Safe 'N Snug 323-A
Cosco Peterson
5-point harness for infants and toddlers, spring-loaded shield protects toddlers; belt goes through slots in plastic shell behind child.

Astroseat 9100
International Manufacturing
5-point harness, belt goes through frame behind child.

Hi-Rider
Kadi-Rider/Baby Dr.
5-point harness, optional separate top anchor strap may be used.

Wee Care #597-A
Cosco Peterson
5-point harness, belt goes through frame behind child; top anchor strap must be used.

Wee Care #599
Cosco Peterson
3-point harness; spring-loaded armrests pop up when not attached to strap between child's legs; shield or thru shell behind child.

Travel Tot #367-9 Series
Wee Care #987-9 Series
5-point harness, belt goes through frame behind child.

Wonda-Chair Car Seat #810
Bobbyhood Industries
5-point harness, belt goes thru frame behind child. It must not be confused with the Wonda-Chair, multipurpose system (high chair, bassinet, stroller, etc) also produced by Bobbyhood.

Sweetheart II #70, 71
International Manufacturing
5-point harness, belt goes through frame behind child.