

Child Passenger Safety TECH REPORT



Risk of Premature Safety Belt Use To Young Children

Children aged 2 to 5 who are restrained only by safety belts are 3.5 times more likely to have significant injury than those in child restraints (CRs) and booster seats, according to an ongoing study by the Partners for Child Passenger Safety. The risk of significant head injury to belt users was 4 times greater. Serious abdominal injuries were few but were found only among children using lap or lap/shoulder belts, not boosters.

These conclusions from the above study were published in the June issue of *PEDIATRICS*. The findings support the growing effort to promote extended booster seat use. They also indicate that efforts need to focus on educating the parents of 2- and 3-year-olds.

“Young Children in Seat Belts” analyzes data on children age 2 to 5 regarding restraint use and types and severity of injury. In the first year of the study (December 1998–November 1999), 13,853 children were studied. Restraint use was 98 percent, with 38.5 percent using safety belts. Belts were used by 5.5 percent of 2-year-olds, while 54.8 percent of 4-year-olds were restrained by belts. Booster seat use peaked at age 3 (29 percent); half the boosters were those with shields.

The Partners for Child Passenger Safety project is a collaboration between a major injury research group, TraumaLink at the Children’s Hospital of Philadelphia (CHOP), and a major auto insurer, State Farm Insurance Companies.

Past crash studies have been too small to provide detailed answers to questions regarding the risk of injury with specific types of restraints or misuse. This has been due to the difficulty of finding and studying enough specific crash cases to make generalizations. The Partners project is an unusual opportunity to learn more about children in crashes. In the first full year of data collection, claims covering over 38,500 children under age 16 were provided to the project. The

continued, p. 3

Drinking Drivers Play Role In Child Fatalities

A new study from the Centers for Disease Control and Prevention (CDC) shows that, during a recent 12-year period, almost two-thirds of the children under 15 killed in crashes involving alcohol were in the vehicle operated by the drinking driver. In most cases, the driver was old enough to be the parent or caregiver of the child.

Another finding is that children’s restraint use declined with higher levels of drivers’ blood alcohol concentration (BAC). Restraint use among children of all ages riding with a drinking driver was only 18 percent. In 13 percent of the fatal crashes for which restraint use of both driver and child was known, the driver was restrained while the child passenger was not. Fatality rates declined from 1985–90 for children in the vehicle of a drinking driver, but remained level from 1990 to 1996. The study was published in the May 3 issue of the *Journal of the American Medical Association (JAMA)*.

Of the 19,768 children killed in crashes during 1985–96, 28.1 percent (5,555) were in crashes involving a drinking driver. Of those, 64 percent (3,556) were passengers of a drinking driver, and 58.6 percent of them were killed in single-vehicle crashes. Only 12.5 percent were aged 10 to 14 and were riding with older teenage drivers.

The authors recommended looking for strategies to deter people from drinking and driving with children in the vehicle, such as lowering the legal BAC when children are present. Child endangerment laws, in place in some states, should be evaluated and, if found effective, replicated. The authors also suggested that families adopt their own policy of zero-alcohol use when children are in the vehicle. They encouraged health care providers to counsel adult patients regarding the risks of impaired driving to passengers as well as themselves and occupants of other vehicles.

Reference

Quinlan KP, Brewer RD, Sleet DA, Dellinger AM. Characteristics of child passenger deaths and injuries involving drinking drivers. *Journal of the American Medical Assn.* 2000; (283) 17:2249-52, May 3, 2000. Text available at <http://jama.ama-assn.org/issues>.

New Website for CPS Technicians and Public

The National Child Passenger Safety Board has created a website: www.usaaedfoundation.org/ncpsb/. Produced under the auspices of the USAA Educational Foundation, it contains information on training, certification, recertification, and checkup clinics. It also includes the *Child Passenger Safety TECH REPORT*. This publication is funded by NHTSA and was part of *Safe Ride News (SRN)* during 1999. Now it is separate from *SRN* but based on material in that newsletter. *SRN* continues to provide the most complete, up-to-date coverage of the field of child passenger safety.

The National CPS Board is the committee governing the CPS training and certification process. It is composed of volunteers and is chaired by Steve Anderson of the USAA.

INSIDE

Parked Car Dangers	2
LATCH Child Restraints	2
Q&A re LATCH	
in Center Rear	2, 3
Risk of Premature Belt Use, cont.	3
Recalls: Evenflo, Cosco,	
Basic Comfort, Britax	3
CDC Study on Child Deaths	3
Parked Car Dangers, cont.	4
NTSB ‘Most Wanted’ List	4
Which CRs Fit Tall Children Best	4
Children’s Shoulder Height Measurements	4
Chart of CR Upper Slot Heights	4



Dangers Of Parked Cars

Groups Warn of Risk To Children Alone in Vehicles

At least 27 children died during the summer of 1999 after being left unattended in an automobile parked in the searing heat. As of June 6, 2000, there had already been at least six known heat-related child fatalities this year. Educational efforts are underway, and a new study analyzed the differences between cases of children playing in vehicles and those where an adult left the child in the vehicle.

Two organizations are working to alert parents to the risk to children of playing in or being left alone in parked cars. KIDS 'N CARS has a broad campaign covering all the risks to children in and around vehicles. The National SAFE KIDS Campaign focused its effort this summer on heat-related injuries and deaths.

KIDS 'N CARS has teamed up with General Mills for a nationwide media blitz (featuring radio PSAs in English and Spanish) on the hazards of leaving children unattended in vehicles. The nonprofit organization was formed by two mothers who had experienced the dangers of parked cars to children firsthand. Its slogan is "A car is not a toy." Being overcome by heat isn't the only danger to children. In addition, they may start vehicles moving, become locked in the trunk, lock the doors and be unable to unlock them, or be inadvertently kidnapped by car thieves. A toddler playing near a parked car can be run over when the car is backed up.

General Mills became involved as a result of a recent incident in Washington state in which a young boy (age 7) at-

tempted to drive his sister's car several miles to the store to get Cherrios for breakfast. No one was injured in that case.

Examples of fatal incidents include:

A 3-year-old died after his babysitter left him in the car and then fell asleep in the house. He was caught in the window while trying to climb out.

A 16-month old baby died after being left in a day-care van for six hours.

A 3-year-old climbed into a hot empty car, buckled himself into his car seat and died in the extreme heat. Each of his parents mistakenly thought the other was watching him.

The National SAFE KIDS Campaign had a summer safety campaign this year in partnership with the American Meteorological Society. They warned parents and caregivers to keep children out of parked vehicles during warm weather.

Studies show scope of problem

A June 2000 review of heat stroke deaths of children in vehicles shows that one-quarter of the cases involved children who had climbed into the vehicle by themselves. Most were toddlers and often they were playing in pairs. Most were in the vehicle for less than two hours. Factors included unlocked vehicles and distracted or sleeping parents. In those cases where the parent or caregiver left the child in the vehicle, about half did so intentionally and then became distracted. Many of the children were left for at least eight hours. About one-quarter of adults who left the child or children in a vehicle were child care providers, van drivers, or babysitters.

According to an August, 1999, survey by the National SAFE KIDS Campaign, 10 percent of parents said they think it's acceptable to leave young children in a car unattended. Among parents aged 18 to 24, twice as many agreed.

The SAFE KIDS survey also found that only 50 percent of parents always lock their cars at home and 20 percent of parents rarely or never do so. Once children crawl in, they don't have the developmental capability to get out.

When the outside temperature is 93 degrees Fahrenheit, the temperature inside a car can reach 125 degrees in just

continued, p.4

LATCH Seats Begin to Appear

The appearance of the first of the next generation of CRs is giving families an opportunity to make use of the universal anchors (called LATCH) in the few vehicles that currently have them. (Ford, which has two 2000 models with LATCH fittings [Windstar and Focus] is offering Windstar buyers a discount coupon for any LATCH seat at Kmart.) The LATCH CRs are the first wave but not the ultimate LATCH designs. They do offer the advantage of using the LATCH anchor points located optimally behind the seat belt.

Triad by Cosco

The Triad convertible from Cosco, the first seat on the market to use the LATCH system, uses low-tech, low-cost technology. It has one adjustable strap with a hook on each end pre-threaded through the belt path for rear-facing installation and another in the forward-facing belt path. The Triad is sold at Kmart for about \$80.

To install, clip the hook on each end of the strap into one of the built-in lower LATCH anchors in the vehicle and tighten. The appropriate strap must be used for each orientation. (The ends of the strap not in use should be clipped together.)

The Triad's tether strap is complicated. NOT attached at the factory, it requires a difficult installation behind the pad on the back of the seat. Its adjuster has two strap slides, so it cannot be tightened with one pull. Straps with one-pull adjusters can be purchased from Cosco customer service.

Fisher-Price Safe Embrace II

The Fisher-Price LATCH seat (Safe Embrace II) is expected on the market later in 2000. It employs two straps, one on each side, attached to the frame of the CR. Each strap has a hook on the end, and the straps are used for both rear- and forward-facing installations. The tether is easy to use.

Q. If two sets of lower LATCH anchors are located in the side seating positions, can the inboard bar of each be used to secure a CR in the center position?

A. One LATCH bar should NOT be used to fasten two child restraints. If you have three children in CRs in back, fasten the

continued, next page

Child Passenger Safety TECH REPORT is published quarterly by the National Highway Traffic Safety Administration.

Articles are compiled with permission from copyrighted material originally published by Safe Ride News Publications, in the March/April and May/June, 2000 issues of *Safe Ride News*.



LATCH Seats, from p. 2

Check the vehicle owner's manual regarding specific use of the center position with the ISOFIX anchors. While Ford allows use of the center position with the inboard LATCH anchors in some vehicles, VW does not recommend it. Some vehicles come with three sets of LATCH anchors. For example, DaimlerChrysler's new PT Cruiser has a set for use in the center, but advises not using all three sets at one time. Its 2001 Minivan will have three anchor sets on the movable bench seat, plus two on the shorter center seat.

Using the two inboard bars to fasten one CR in the center can work well, if the manufacturer allows it. It depends largely on how far apart the two inboard bars are situated. In some vehicles, the inboard LATCH bars may be about as wide apart as the width of the CR. This would allow the LATCH straps on the CR to go fairly straight back to the anchors. They should not be splayed at a wide angle to the side unless the CR manufacturer specifically allows that. If, in contrast, the inboard LATCH bars are much closer together than the width of the CR base, they should not be used.

Risk of Premature Belt Use, from p. 1

magnitude of the project means it has the potential to study effects of particular types of restraints or particular kinds of misuse. Data are based on large numbers of detailed telephone interviews and in-depth investigations of a portion of the crashes. Limitations are that the data only cover children in post-1989 vehicles of drivers insured by State Farm who live in 15 states selected for the study. States were selected for their broad representation of vehicle types and driving conditions as well as types of insurance (tort vs. no-fault).

Other findings from the project have just been published in the interim report of the Partners project. The project will continue for at least two more years.

Reference

Winston FK, Durbin DR, Kallan MJ, Moll EK, Young Children in Seat Belts, *PEDIATRICS*, Vol. 105, No. 6, June 2000, or www.pediatrics.org.

Contact

Partners for Child Passenger Safety, 215/590-3118 or www.chop.edu.

U.S. Recalls:

Evenflo

"Position Right" Base for On MyWay Infant Restraint

Models: 200 and 211 (On My Way with Base), 447 and 499 (On My Way with Stroller and Base), and 639 (Position Right base sold separately)

Manufacture dates: all made before February 10, 2000

Problem: Over time, two alignment posts in the Position Right base of the two-part CR can become splayed.

This causes the On My Way restraint to sit askew on the base. There have been no injuries reported.

Consumers should check the two posts in the base. If they are not straight, the On My Way infant restraint should be used without the base until the repair is made. Call Evenflo, 800/316-4779, for a free reinforcement kit.

This is also a Canadian recall.

Cosco

Touriva Convertible T-Shield

Models: 02-084, 02-094, 02-096, 02-404, 02-821

Manufacture dates: May 1, 1996-Nov. 26, 1997

Problem: Buckles on seats tested by NHTSA did not release properly afterward.

Over 200,000 seats are involved in this recall. No injuries have been reported associated with the problem. Consumers should continue using the restraint until they obtain the repair kit, which includes a replacement buckle and instructions. Call Cosco at 800/221-6736 for the kit.

Basic Comfort Galaxy 2000

Models: 960 and

961 belt-positioning

booster seat with or without back
Manufacture dates: Nov. 1998-Jan. 1999 (2061 seats affected)

Problem: Polystyrene in this run was not completely treated, so it would be more brittle and weaker in a crash. The company will replace the seat or seat plus back. Call Basic Comfort at 800/640-8469.

Britax

Roundabout

Manufacture dates: Jan. 13, 1999-March 14, 1999 (9922 seats affected)

Problem: A defect in some shells could allow the harness adjuster to loosen in a crash. The fix is a free kit with shoulder strap pads to reduce the force on the adjuster. Call Britax at 800/683-02045.

Cosco

Arriva infant child restraints

Models: 02-729-TED

Manufacture dates: March 31-April 7, 1999

Problem: No air bag warning label on the pad.

Only 815 seats were produced without the warning on the pad. A new pad will be provided free to consumers.

Consumers should continue using the restraint until they obtain the new pad but NOT place the baby in the front seat. Call Cosco at 800/221-6736 for a new pad.

CDC Study Shows No Progress in Reducing Deaths of 4- to 8-Year-Olds

A study of Fatality Analysis Reporting System (FARS) data for children age 4-8 involved in fatal crashes in 1994-8 has found that the number of children who died ranged from 498 to 527 per year. The percentage restrained in some manner varied from 33.7 to 38.1 percent and just about half were riding in the back seat. The death rate per 100,000 changed little over the five-year period.

The FARS data do not include the type of restraint in use. Other surveys

have shown booster seat use at 6 to 8 percent nationally. In addition, police reports, on which the data are based, usually over-report restraint use.

Reference

Centers for Disease Control and Prevention, Motor vehicle occupant fatalities and restraint use among children 4-8 years - United States, 1994-1998. *Morbidity and Mortality Weekly Report* 2000;49(7): 135-137. Find it on the CDC website, www.cdc.gov/epo/mmwr/



Parked Car Dangers, from p. 2

20 minutes and just 140 degrees in 40 minutes, even with a window cracked. In these conditions, children can die or suffer permanent disability in a matter of minutes.

“Extreme heat affects infants and small children disproportionately,” said Martin Eichelberger, MD, director of trauma surgery at Children’s National Medical Center and president of the National SAFE KIDS Campaign. “Heat rapidly overwhelms the body’s ability to regulate temperature. In a closed environment, the body can go into shock and circulation to vital organs will begin to fail.”

Resources

“Parked Cars: Dangerous for Kids,” new reproducible fact sheet for *SRN* subscribers. Contact *Safe Ride News*, 800/422-4121, www.saferidenews.com

KIDS ‘N CARS. Contact 415/789-1000, www.kidsncars.org, kydsncars@aol.com

National SAFE KIDS Campaign. Contact 202/662-0600, www.safekids.org

TRUNC (Trunk Releases Urgently Needed Coalition). Contact 415/789-1000. TRUNC123@aol.com, www.netkitchen.com/trunc

Guard A. “Heat Stroke Deaths to Children in Motor Vehicles,” International CPS Technical Conference, June 2000. Contact Anara Guard at Safetytips.com, 781-478-2126, aguardwilliams@rnc.com

NTSB ‘Most Wanted’ List for 2000

In May, the National Transportation Safety Board (NTSB) issued its latest list of Most Wanted Transportation Safety Improvements. The list included the following items addressing children’s safety:

- Enact graduated driver licensing legislation
- Educate the public about transporting children in the back seat
- Make the back seat more friendly for children
- Require restraints for infants and children in airplanes

Contact

NTSB, www.nts.gov or 800/877-6799

Which CRs Fit Tall Children Best?

There is a wide selection of seats with harnesses for forward-facing toddlers and preschoolers. Choosing a restraint with a harness that will fit for several years is important. For the toddler who is taller than average, the selection of a CR with relatively high upper harness slots is important, so the child will be able to remain in the restraint for the longest possible time.

While CR instructions may include overall height maximums, the height from the child’s buttocks to the shoulders is a much better indicator of how large a child will fit within the harness system. This is important because a forward-facing CR is intended for use only until the child’s shoulders reach the height of the upper harness slots.

Parents rarely are aware of the importance of their child’s seated height to shoulder when selecting a CR. Children vary widely in their measurements (see chart at right).

Below is a listing of current child restraints *SRN* measured for top harness slot height. (Measurements were made to the middle of the slot while applying moderate pressure to the seat padding.) Most convertibles have slot heights under 14-1/2 inches and are not included.

Measurements of Children’s Height

A 1985 report on dimensions of children* included seated shoulder height (see excerpted table below). The measurements were taken from studies published during 1975-85. Thus they do not take into consideration any increase in height of today’s children.

Children’s Seated Shoulder Height (in Inches)

Age	Mean	Min.	Max.
1	12.1	10.8	14.5
4	14.0	11.0	17.6
6	15.4	12.5	18.7
8	17.0	14.6	19.8

A recent study of the changes in the height of children from 5 to 17 in one Louisiana county from 1973-92 indicates that the mean height had increased over 20 years by 1.4 cm (one-half inch), finding the biggest increases among black boys. There also was an increase in the number of relatively tall children in each age group and a decrease in those at the short end of the spectrum.**

Reference

* Weber K, Lehman RJ, Schneider LW, *Child Anthropometry for Restraint System Design*, Publication No. UMTRI-85-23, June 1985

** Freedman DS, Khan, LK, et al, Secular Trends in Height Among Children During 2 Decades, *Archives of Pediatric Medicine*, Vol. 154, No. 2, February 2000

Upper Strap Slot Height of Current CRs

(Includes ONLY those measuring 14 1/2 inches or more • Measurements approximate within 1/4 inch)

Manufacturer/Model	Type*	Highest Slot	* Types
Britax	Roundabout (FF)	Conv. 15”	FF/40: Forward-facing CR up to 40 lb. FF/60: Forward-facing CR up to 60 lb. Conv.: Convertible CR CR/B: Combination CR/BPB BPB: Belt-Positioning Booster (no harness)
	Freeway Plus	FF/40 15”	
Century	Breverra Classic/Metro/Quest	CR/B 17”	
	Breverra Contour/Ascend	CR/B 17”	
	NextStep	CR/B 16.75”	
	Cherished Cargo (Graco)	CR/B 17”	
Cosco	Touriva, Olympian	Conv. 15”	
	Alpha Omega	CR/B 16.25”	
	High Back Booster	CR/B 14.75”	
	Adventurer II	CR/B 14.75”	
Evenflo	Horizon/Conquest	Conv. 14.75”	
	Secure Choice	Conv. 14.75”	
Fisher-Price Futura	FF/60 16.5”		

(Collaboration with Cheryl Kim, SBS USA)