

Child Passenger Safety TECH REPORT



Child Fatalities Down

NHTSA and the Air Bag & Seat Belt Safety Campaign announced in September that the goal of reducing child fatalities by 15 percent has been met one year earlier than expected. When the goal for 2000 was set in 1997, 652 children under age 5 had died in the prior year. In 1999, only 550 children died, down 15 percent.

Seat belt use has increased across the country to 71 percent, 9 points higher than in May 1998. Restraint use by infants is at 97 percent; 91 percent of toddlers use them. However, restraint use by children from 5 to 15 has risen only to 69 percent.

The Air Bag & Seat Belt Safety Campaign (ABC) says that research shows that the best way to increase child restraint use is to increase adult belt use. Passage of primary belt use laws is one of the most effective ways to increase child restraint as well as adult belt use. In Louisiana, for example, when the adult belt law was strengthened (making it primary), child restraint use jumped from 45 to 82 percent in two years.

ABC, formed after the first rash of child and adult deaths from air bags, conducts the Operation ABC Mobilization twice annually. The Mobilization is a law enforcement crackdown on drivers with unbuckled children. ABC also encourages the upgrading of state restraint laws. Its research finds that the air bag death rate has dropped by nearly 80 percent since the Mobilizations began in 1996. This has occurred despite that the vast increase in the number of vehicles with passenger air bags since that time.

While counting these successes, the Air Bag & Seat Belt Safety Campaign announced that it will continue for another two years, through 2002. The campaign is a public/private partnership of auto and child restraint manufacturers, insurance companies, government agencies, and health and safety groups.

Contact:

Air Bag & Seat Belt Safety Campaign, 202/293-2270, www.nsc.org

Research Reports

Ambulance Passenger Risks

Under a grant from the Emergency Medical Services for Children Program, Dr. Nadine Levick and other researchers at Johns Hopkins Children's Center observed ambulances arriving with children at an urban pediatric emergency department to see how children were being transported. The study was reported at a joint meeting of the American Academy of Pediatrics and the Pediatric Academic Societies in May. Levick also summarized the findings at the ICPSTC in June.

In 200 ambulances observed carrying 206 child patients:

- More than half of the children were transported lying on the gurney; 11 percent of those were unrestrained while the rest were secured using chest belts with or without thigh belts.
- 27 percent were unrestrained on the bench seat or captain's chair.
- 10 percent were on the lap of a parent or EMT.
- 13 different kinds of EMS equipment (such as oxygen tanks and medical supply boxes) were minimally secured or not secured at all.

The researchers concluded that, should a crash occur, unrestrained occupants and equipment are at high risk of injury in the "box" of the ambulance.

They also did an initial crash test of an ambulance with dummies in the box. Video footage demonstrated graphically how unrestrained occupants and equipment would be injured or cause injury. Their next step is to actually crash ambulances to determine the "crash pulse" (characteristics) of that type of vehicle in a collision.

Contact:

Dr. Nadine Levick, 410/955-6143 or nlevick@welchlink.welch.jhu.edu

Study Shows Young Teens At Risk With Teen Drivers

A study by Ford Motor Company and the University of Michigan found that children age 14–15 spend about one-quarter of their time as passengers with drivers age 21 and under. Over 70 percent of the children

their time as passengers with drivers age 21 and under. Over 70 percent of the children 14–15 who were killed as passengers in 1995–98 were driven by drivers in the high-risk, older-teen age group.

The value of safety belt use was underscored by data showing that in vehicles where both driver and child were restrained, the child had only a 2.3 percent risk of a serious or fatal injury in tow-away crashes. When both driver and child were unrestrained, the risk was almost six times higher, 12.6 percent.

Reference:

Child Injuries and Fatalities, Who is Behind the Wheel?, Society of Automotive Engineers No. 2000-01-2218, June, 2000, www.sae.org, listed under Papers/Safety

Misuse of Automatic Shoulder Belts

More than 10 million vehicles made during 1987–94 have automatic shoulder belts and separate lap belts in the front seat. Between 50 and 75 percent of occupants fail to buckle the lap belt. A review of crash injury data showed that, while the shoulder belts used alone did decrease the risk of death, shoulder belt users had at least seven times the risk of chest and abdominal injuries compared to unrestrained occupants.

continued, page 4

INSIDE

Special Needs Test Results	2
Q&A re LATCH	
with Boosters	2
Product News	3
NHTSA Closes Evenflo	
Investigation	3
Calendar	3
Research Reports, cont.	4
Recall	4
CPS Board Report &	
Certification Information	4
Technical Paper	4



Special Needs Test Results Shared

Dr. Marilyn Bull of Riley Hospital for Children, Indianapolis, Ind., spoke at the ICPSTC conference about dynamic tests of equipment used for children with certain medical conditions. The tests were conducted by the Automotive Safety for Children Program at Riley Hospital with the University of Michigan Child Passenger Protection Program.

Poor head control

Neck collars are widely used for children with poor neck control. Some are stiff while others are made of fairly soft foam. Dynamic tests were run at 30 mph on six of these products. The 18-month dummy was tested in a forward-facing convertible CR. Based on the results, Bull recommends that a soft collar be used during transport rather than a stiff one.

Retainer clips and tiny newborns

Tests for the function of the retainer clip on very small infants were run with a new 3.3-pound dummy. Four rear-facing CRs (three infant-only and one convertible) were tested without their retainer clips. One showed partial ejection on rebound. The conclusion was that the clip should not be taken off. If a particular seat does not allow enough space between the clip and the infant's throat, try another seat.

Dwarfism

Bull addressed achondroplasia, the most common form of dwarfism, which has not been discussed before in terms of restraint recommendations. She explained that people with this condition have a

spine injury than others. They also have disproportionately large heads. She suggested that these children remain rear-facing as long as possible and then continue to use conventional child restraints or boosters while they fit in them. There was discussion about how to make continued CR use acceptable to children with dwarfism who want to be like their larger peers.

Ambulances

Tests were done in 1999 of child restraints on ambulance cots using the 30-mph FMVSS 213 crash "pulse" (characteristics). Bull reported that, on the basis of these tests, it is recommended that any child who can fit in a convertible restraint, either their own or one provided by the ambulance service, should be buckled into one. The restraint should be in the reclined position, with the back against the fully raised head-end of the cot, and secured through both the rear and forward-facing belt paths. If an acutely ill or injured child must lie flat, direct restraint to the cot is the only option. The Ferno "Stat Track System" (method of securing the cot) provided a stable platform for these tests.

Training Course In Pilot Phase

Dr. Marilyn Bull announced the development of an enrichment course in special needs transportation. The first pilot class was conducted in July in Indianapolis, Ind. Thirteen child passenger safety technicians from around the country attended. A class of eighteen in Alaska followed, as did another in Chicago, Illinois. Indianapolis, Ind. is scheduled to offer another on April 10-11, 2001. Discussions are under way to expand classes to Connecticut, Ohio, and New York.

The two-day course is for CPS technicians and instructors. It familiarizes them with medical conditions that may require particular applications of standard child restraints, or specialized restraints and the use of those restraints. The course includes demonstrations of usage and installation skills.

Contact:

Automotive Safety for Children Program, Indiana Univ. School of Medicine, 317/274-2977.

LATCH Questions

Q. Will booster seats come with lower LATCH attachments?

A. While booster seats could be fitted with LATCH in the future, it is not required under FMVSS 213. This is because a booster is a positioning device and not a restraint, since the vehicle lap/shoulder belt actually restrains the child. LATCH takes the place of the vehicle belt system in devices where the child is buckled in with a harness or harness-shield system. (LATCH attachments on a booster would be convenient for securing it so it stays in place when vacant.)

Q. Should high-back boosters be tethered?

A. Combination child seat/boosters come with tethers and eventually will come with lower LATCH attachments. These are for use specifically when the combination seats are serving as child seats with harnesses. When a combination seat is used with its harness, the tether is useful in limiting a child's head excursion.

When the seat is used as a belt-positioning booster, restraint is provided by the adult lap/shoulder belt and is not improved by anchoring. Since no combination CR/BPBs with LATCH are on the market, the issue of lower anchor use is still open. More research is needed.

Remember to follow manufacturers' instructions. If they do not explicitly allow the use of the tether on the BPB, avoid using it.

There is speculation and some unpublished evidence that tethering or using upper and lower LATCH anchors for a BPB *could* be detrimental to the occupant. That is because they don't allow the booster to move forward as the child weights the lap/shoulder belt. More research is needed.

EDITOR'S NOTE: It is possible to design a BPB that can be firmly anchored without potentially causing injury. When LATCH versions of combination CR/BPBs are being designed, it would be helpful if manufacturers would keep this issue in mind. If the LATCH product cannot be LATCHed when used as a BPB, there will be considerable consumer confusion and resultant misuse. We will follow this issue and print more information as it becomes available.

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Product News

Volvo Brings Out Rear-Facing LATCH Seats

Volvo's two rear-facing seats designed to fit into a rigid frame attached to LATCH (ISOFIX) anchors are expected to be available soon. The frame holds both a small infant seat and a larger seat that will hold a child up to about 40 pounds. This will be the first rigid attachment system to link with the vehicle LATCH anchors. Volvo V70 wagons for 2001 (available since last April) have LATCH attachments as standard equipment. LATCH will also be a factory option on 2001 models S40, V40, S80 and S60.

Volvo Integrated Booster Cushion

Several model year 2000 Volvo station wagons have an optional built-in booster in both rear seat outboard positions. It folds up from the front of the lower seat so the cushion of the seat back remains in place for comfort. This is unlike most other integrated child restraints or boosters that fold out of the seat back. It is available in the V70, S40, and V40 for 2000. The prior booster design, which folds down from the center of the rear seat back, is still found in some Volvo sedans. The weight range has been expanded to 33–80 pounds for both designs.

Rear-Facing Tethers

There have been some reports of parents tethering seats rear-facing that are not intended for this type of installation. There also is no clear demonstrable benefit of a rear-facing tether.

There are only three seats at this time that are intended to be tethered in the rear-facing position: the Britax Roundabout convertible, Britax Handle with Care (infant-only), and Safeline's Sit 'n Stroll convertible.

Other rear-facing seats are not designed or tested with the tether used that way. Their instructions do not mention tethering in the rear-facing mode.

New CR Company on the Scene

Car Seat Specialty Inc. is a new company with European products. It currently markets a forward-facing seat (Manager, 20–40 pounds) and a booster (Uno) through specialty stores under the brand name "Nania." It also markets a backless

booster (Polo, 40–80 pounds) through Int'l Ctr. for Injury Prevention (800/344-7580).

Contact: Car Seat Specialty Inc. at PO Box 3194, Rock Hill, SC 29732; 803/980-1555, fax 803/980-1559.

Century Raises Rear-Facing Weight Limits

Century Encore and Ovation convertible restraints made beginning May 1, 2000, have an upper weight limit in the rear-facing position of 30 pounds.

Now the Century Accel, Bravo, SmartMove, and Ovation/Encore all are rated to 30 pounds.

Fisher-Price Explanation of Alternative Belt Path Tests of Futura

Ron Asbach, an engineer with Fisher-Price, reports that the Futura has been tested with the vehicle belt routed in the conventional manner and the recommended (inverse) path. The inverse path involves threading the belt from front to back to front before buckling it (photo on p. 5, *SRN* Jan/Feb 2000). He reported on the CPS e-mail listserve that the Futura performs well with both routing methods, passing FMVSS 213 criteria with no trouble **without a tether**. It also achieves good test results using either belt path with a dummy weighted up to 60 pounds, the maximum weight for the seat used with its harness.

Asbach stated that the Futura was engineered with highly structural sides to allow inverse routing. This path provides the best compatibility for belts anchored forward of the bight, belts with long buckle stems, and those that are hard to lock tight when using the conventional belt path.

EDITOR'S NOTE: Other products should NOT be anchored with an inverse belt route! They do not have reinforced sides. Always follow manufacturer instructions.

Five-Point Version of Futura Now Available

A five-point harness version of the Fisher-Price Futura 20/60 is now available only from the International Center for Injury Prevention (ICIP). Contact ICIP, 800/344-7580 or www.cipsafe.org.

NHTSA Closes Investigation of Evenflo On My Way

NHTSA has closed an investigation of the Evenflo On My Way with Position Right Base. (NOTE: The recent recall of the base* is a separate issue.) The agency had received reports that the infant restraint would come off the base if given a vigorous tug. It conducted five dynamic tests, including simulated rear impacts, in which no separations occurred.

NHTSA staff explained that, when the base is held rigidly in place and the shell is pulled manually, the dynamics are very different than when the carrier is anchored in a vehicle during a crash. In the crash, the two parts move together toward the impact point and rebound together also.

The potential problem was reported in late fall of 1999. NHTSA conducted this investigation very promptly. Due to this decision, SafetyBeltSafet U.S.A. has removed a warning against the use of Position Right Bases that it had included in its recall list since May 2000.

* The Position Right Base recall was due to alignment posts becoming splayed during use. That made the shell sit askew on the base. (See *SRN* March/April 2000).

EDITOR'S NOTE: This case indicates how important it is to pull on the base *rather than the shell* of a two-part CR to get an indication of the tightness of its installation.

CALENDAR

National Child Passenger Safety Week, February 11-17. Contact your state highway safety office for events in your area. For a planning guide, see www.nhtsa.dot.gov

Lifesavers 2001, March 25-27, Denver, Colo. Contact: 703/922-7944 or www.lifesaversconference.org

International Child Passenger Safety Technical Conference, June 3-6, Indianapolis, Ind. Contact: 800-344-7580 or www.childsafety.org



Research Reports, cont'd from page 1

Misuse of Automatic Seat Belts, continued

Reference:

Rivara FJ et al, Effectiveness of Automatic Shoulder Belt Systems in Motor Vehicle Crashes, *Journal of the American Medical Assn.*, Vol. 283, p. 2826, June 7, 2000

EDITOR'S NOTE: During checkup events, it is important to notice this type of belt system in the front seat and to mention the need for lap belt use to parents. As vehicles are entering or leaving the event, look for other aspects of belt misuse, such as wearing it under the arm or behind the back. Parents and other adults need to wear their belts properly, too.

Research Report on Safety in Pregnancy

An extensive report on the mechanisms of injury to the fetus in a vehicle crash was published by *UMTRI Research Review*. It gives insight into how a dummy is developed as well as the specifics of protecting pregnant women.

Reference:

Schneider LW, Klinich KD et al, Improving Automotive Safety During Pregnancy, *UMTRI Research Review*, 1-3/00, Vol. 31, No. 1. Back issues cost \$10 each. To order, call 734/764-2171

Century Recall: October 2000

Century: Infant Restraint Handles

All Century infant CRs made from Jan. 1, 1991, through July 31, 1997, with one-piece, one-color (white, gray, or tan) plastic handles. Handles have been found to crack, break, or not lock when used to carry babies. Over 4 million seats are involved, with over 200 reports of injury.

Contact Century at 800/865-1419 for a replacement handle. The seat can be used as a car restraint, but the handle should not be used. The website (www.centuryproducts.com) lists all model numbers.

Program Growth

As of August 15, 2000, there are 10,200 Certified Technicians and 700 Certified Instructors. Bill Wen of AAA reported that many states have conducted one-day update classes for technicians.

Qualifications for Potential Instructor-Candidates

The applicant must be a Certified Technician, have experience in teaching any topic to adults, and provide two letters of endorsement for each skill (technical and instructional).

The people endorsing the technical skills must be certified in the CPS standardized training. The minimum number of letters would be two IF the two people were able to endorse both skills. The maximum number of letters would be four—two people addressing technical skills and two people addressing instructor skills.

Please be sure that the person signing the letter clearly states that they have personally seen the applicant teach and/or install seats. Following is a sample of the type of 'language' recommended:

"I have observed her instructional skills on several different occasions. She is able to manage the classroom effectively, uses a variety of instructional techniques, and is capable of answering difficult questions related to the topic."

LATCH Recall: November 2000

Ford LATCH Anchors

About 7,800 Taurus and Sable vehicles made from May to August 2000 have child seat LATCH anchors that have faulty installation. Road vibration may cause the anchors to loosen, which could cause the anchor to fail. Dealerships will remove and reinstall the anchors using a special Torque retention material. Owners were notified by Ford in September. Owners who do not receive the free reinstallation within a reasonable time should call Ford at 800/392-3673.

CPS Board Report

New Standard for Monitoring Instructor-Candidates

To ensure the integrity of the evaluation process, the board has determined the following standard should be followed when monitoring instructor-candidates:

"An instructor-candidate should not be evaluated by anyone with a familial relationship. This includes siblings, offspring, spouses, etc. Professional affiliations that would be inappropriate include a monitor evaluating his or her supervisor or anyone who could unfairly influence an evaluation.

"Where these situations exist, the monitor must excuse him or herself from the evaluation process and another monitor with no potential bias should be identified and used."

The standard became effective on July 15, 2000.

Certification Contact

For questions about instructor qualifications and certification/recertification criteria:

- NCPS website can be found temporarily at: <http://www.theiacp.org/>. Go to "Divisions, Sections, & Committees", then to "Division of State and Provincial Police."
- Carol Guzzetta, National Safety Council (for general questions) 202/296-6263 or guzette@nsc.org
- AAA Certification information: Automated line: 407/444-7958 Fax line for CPS: 407/444-7380 for submitting documents

Updated Technical Paper A "Must Read"

A revision of Kathleen Weber's paper, "Crash Protection for Child Passengers," a definitive explanation of how and why child restraints work, is being published this fall by *UMTRI Research Review*. It will be available by the end of October in the July-Sept. edition (vol. 31, no. 3). Find it on the website of University of Michigan Transportation Research Institute (UMTRI) at <http://www.umtri.umich.edu>.