TECH UPDATE

www.cpsboard.org Spring 2013

NATIONAL CHILD PASSENGER SAFETY BOARD

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Regulatory Review: How Congressional Acts Fit into the Child Restraint Regulatory Process

The National Highway Traffic Safety Administration (NHTSA) is a part of the US Department of Transportation (DOT). The Secretary of Transportation, a member of the President's cabinet, heads the DOT. As part of the government's executive branch, the NHTSA uses the results of current research, as well as feedback and petitions from the public, to develop and improve Federal Regulations like Federal Motor Vehicle Safety Standards 213 and 225. They also use the research and feedback for consumer information programs like Child Restraint Usability Ratings and the New Car Assessment Program. The public can learn about and provide input to these processes through the Federal Register Docket system. Depending on the priorities and resources of the current administration, these processes can sometimes move quickly or more slowly.

Changes to Federal rules can also happen in other ways. Sometimes Congress passes laws that require NHTSA action, such as the Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act and Anton's Law. In these cases, Congress specifies the general text of the law, while NHTSA works out details (such as test procedures) needed to implement the law.

Recent Research: NHTSA Report on Children Injured in Motor Vehicle Crashes

The NHTSA published "Children Injured in Motor Vehicle Traffic Crashes" in 2010. You can find the full report here: http://www-nrd.nhtsa.dot.gov/Pubs/811325.PDF

The report describes two research efforts. The first looked at children in crashes and used the National Automotive Sampling System – General Estimates System (NASS-GES) data collected from 1999-2008. This database uses police accident reports to estimate how many crashes occur in the USA. Injuries to occupants are coded as either killed, incapacitating injury, non-incapacitating injury, possible injury, or no injury. The analysis grouped kids by age: <1 year, 1 to 4 years, and 4 to 7 years. The database lists child restraint use (yes or no), but not type or misuse. Over 90% of children 0-4 sat in the back seat, as did 84% of children aged 4-7. 86% of children < 1, 86% of children 1-4, and 83% of children 4-7 were not injured. About 1% of children aged 0-4 had a serious injury, as did about 2% of children aged 4-7. Children in rollover crashes had the highest rates of serious injury. Unrestrained children had a serious injury rate of about 8%. This is significantly higher than about 1.5% for those using vehicle seat belts and about 1% for those in child restraints.

Part two focused only on children who received a serious injury in a motor vehicle crash. It uses the National Trauma Data Bank-National Sample Program (NTDB-NSP) for years 2003-2007. Every child in this database was in a crash and treated at a trauma center. However, the database does not include the type of restraint. So the children studied could be unrestrained, improperly restrained, or properly restrained. For all age groups, the head was the most commonly injured body region, followed by the thorax. Within a specific body region, each age group often had different injury patterns. For example, children under age 1 had more rib fractures, while those over age 1 had more lung contusions.

The report does not make connections between the two analyses. It also does not compare results to other studies of child injury. This has created some confusing messages in the field (see page 3).

Take Home Message: Crash data support proper restraint use.

New Product Update: Cosco Apt 40RF

Cosco Apt 40RF

The Cosco Apt 40RF is an inexpensive, lightweight car seat that can be found at several popular retail outlets. The product can be used rear-facing by kids from 5-40 pounds and from 19-40" tall, then used forward-facing for kids from 22-40 pounds and from 34-40" tall.

Features include a center front harness adjuster and a rethread harness with four positions. Special adjustment is needed when using the lowest harness slots. There are also three crotch belt positions. The Cosco Apt 40RF has been tested in side impact. The product has a label with two different recline levels for rear facing: one for smaller infants and one for larger toddlers. There is no recline foot or part that needs to be moved to convert the seat between the rear and forward-facing modes. Rolled towels or pool noodles can be used to help achieve the correct recline angle when rear facing. The product weighs 9 lbs, so LATCH can be used for installation until the child outgrows the product at 40 pounds. The instruction manual and labels include color-coding: green for rear-facing and blue for forward-facing.

Seat Check Smarts:
Evaluating Sources of Child Passenger Safety Research

Many CPSTs take calls from parents or questions from the media after new research in child passenger safety makes headlines. Or someone says "I read on the internet that you should do this…" As a tech, how can you make sure you are providing the correct, up-to-date information?

When possible, go to the source of new research. Often, full original articles are posted online. News reports or Internet blogs may distort findings, either accidentally or to make things more dramatic. Some examples:

The Insurance Institute for Highway Safety (IIHS) sponsored research on what makes vehicle LATCH hardware easier to use. The headline of their press release was **"**Vehicle seat designs make child restraint installation difficult; Less than a quarter of models surveyed have easy-to-use LATCH." One newspaper reported the results as follows: "Just 21 of 98 vehicles pass child safety seats test, seven flunk entirely warns new report. The news is not good for parents who have counted on child safety seats to keep the kids out of harm's way in the event of an accident. Despite toughened federal standards and industry efforts, only 21 of 98 vehicles met the requirements for ease of use, and seven of the latest vehicles failed entirely in a new series of tests." The research described what made LATCH easier to use in some vehicles compared to others. But the lead paragraph of the news article incorrectly suggests that child seats aren't safe and that vehicles are failing standards.

On the website SafetyResearch.net, the authors misreported information from a NHTSA report on "Children Injured in Motor Vehicles" (see Recent Research on page 2). The NHTSA report states that 1% of children in crashes less than age 1 have incapacitating injuries. Part two of the report says that 70% of children under 1 year old who were seriously injured in crashes had a head injury. (The database includes only injured children and doesn't specify restraint type). This means that about 0.7% (1% x 70%) of children under age 1 who are in crashes (not all children) have a serious head injury. And includes both restrained and unrestrained infants. The website incorrectly stated that "70 percent of children under 1 year old sustained AIS+2 head injuries." There's a big difference between 0.7% of infants in crashes and 70% of all children under 1 year old!!

If you can't find the whole article, visit pubmed.com. Run by the National Institute of Health, the website contains abstracts of published journal articles. Your employer may subscribe to the journal, which would let you download the full article. Journal articles should be more reliable than reports published by organizations, since they must go through a review process.

Finally, go to the websites CPSTs can trust like NHTSA.gov, AAP.org, CPSBoard.org.

Take Home Message:

- Go to the source of new research when possible.

Another Teachable Moment

In this picture, the 5-point harness has been rethreaded without going through the proper path on either side of the bottom of the seat. The harness goes directly through the buckle halves, turning a 5-point harness into a 3-point harness.

Submitted by
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Help with Our Next Issue

Do you have ideas for our next issue? Email us at CPSTechUpdate@umich.edu with suggestions for columns. These could include:

- Pictures of unusual child seat installations for the 'Another Teachable Moment' article
- Pictures of adorable properly restrained kids (will need photo release to use)
- Name and email of a CPS technician who you would like to see interviewed
- Research you heard about on the news
- New product features
- Issues that have come up at seat checks

Recent Research: Faith-Based Injury Prevention Outreach

A faith-based community youth injury prevention program was developed and tested in this research study by an injury prevention group at the Cincinnati Children's Hospital Medical Center. Focus groups were conducted at four local churches led by African-American ministers. The groups identified what people know and feel about passenger safety. The groups obtained input from parents, grandparents and children 4 to 17 years old. The focus group responses led to a targeted education curriculum for each age group.

Fourteen churches were selected to participate in the program study. Seven churches received the injury prevention program, and seven churches received a program about nutrition education to serve as the control group.

The injury prevention program curriculum included a series of scripture-based lessons in Sunday school for the children. Lessons included information on child passenger safety, fire, pedestrian, bicycle, firearm and home safety issues. Activities included hands-on use of car seats using African-American dolls, and teaching songs about riding in the car seat. The program also had a teen empowerment component to teach teens about safety and about how to be role models for younger children about safety issues. The parent and grandparent topics raised awareness of safety issues, such as the importance for all family members to be restrained in the car. Doctors and parents whose children had been injured, including some fatally, spoke to the parents and grandparents. Ministers at the churches addressed the importance of taking responsibility for preventing injuries in their sermons. Other parts of the program included a family safety fair, car seat checks, a theatrical performance on safety, and safety device distribution.

Children 8 years old and under who were exposed to the injury prevention program were significantly more likely to be in a rear vehicle seat and to use a restraint. More than 25% who were in the front seat before the program were in the rear seat after. 72% of children who were riding totally unrestrained before the program were restrained after. The post-program restraint use by drivers was also significantly higher.

Take home message: Engaging faith-based communities can help reach targeted groups with injury prevention information.

Reference: Falcone R, Brentley A, Ricketts C, Allen S, Garcia V (2006). Development, implementation and evaluation of a unique African-American faith-based approach to increase automobile restraint use. Journal Natl Med Assoc, 98(8):1335-41.

Seat Check Smarts: Tips for Integrated Child Seats

Integrated child safety seats are a rare but helpful feature found on some vehicles. They are often forward-facing harness restraints or booster seats, and are part of the original vehicle hardware. To use these child safety seats, you usually need to reconfigure the vehicle seat. Typically, you either flip down a panel to reveal a harness, or pull up a cushion to create a booster seat. The vehicle owner's manual has exact instructions.

An integrated seat makes some forms of misuse, like loose installation, go away. Another advantage is that since they are built into the vehicle, you can't forget them or leave them behind. A disadvantage is that there are very few rear-facing integrated seats. They also can't be moved to handle different groups of passengers.

Example of an Integrated Harness Restraint

Integrated child safety seats usually do not expire and are designed to be used for the life of the vehicle. If an integrated child seat is occupied during a crash, you may need to replace it. Contact the vehicle manufacturer for details. Like any safety product, integrated child restraints can be recalled. Check the recall list under the vehicle manufacturer's listing.

Focus on Testing: Non-Crash Tests in FMVSS 213

Most CPSTs know about the frontal crash testing of child restraints (CRs) specified in FMVSS 213. But the regulation includes several other requirements. Restraints go through materials tests, inspection of physical features, and an aircraft inversion test.

All nonmetal materials used in the CR must be tested for flammability. A sample of each material is held over a gas flame. The burnt distance and the burning time is measured and must fall within a certain limit.

Each type of webbing used in the CR goes through extra tests. A pull test checks breaking strength. Test labs check abrasion resistance by rubbing the webbing a certain way and repeating the pull test. Resistance to buckle abrasion is checked by passing webbing through a buckle at a certain angle, rubbing against the buckle repeatedly, and then repeating the pull test. Webbing material is also tested for light exposure and resistance to micro-organisms. Belt buckle and adjustment hardware tests make sure they are easy to use and cannot be partially engaged. To test corrosion resistance, test labs spray the metal components with salt solution for an extended time and check for rust afterward. Belt hardware is also tested to make sure that it does not warp or deteriorate at high temperatures.

The CRs must also meet labeling and installation instruction requirements. The CR must have a minimum seatback height and width to support the child's head and torso based on the maximum weight of the CR. CRs must not have sharp edges within the shell that could contact or pinch the child. There must be enough harness belt length to achieve a snug fit on the largest dummy appropriate for the seat.

CRs are also tested for use in an aircraft. The CR is installed in an airplane seat using a Federal Aviation Administration (FAA) approved seat belt. No other belts or tether straps are used. A test dummy is installed in the CR. The harness and seat belts are tightened. The airplane seat with CR and dummy is then rotated forward until it is completely upside down. The seat is held in this position for 3 seconds. After this test, the airplane seat with CR and dummy are rotated sideways until it is completely upside down and held for 3 seconds. To pass, the CR and dummy must remain attached to the airplane seat for both types of inversion tests.

Technician Spotlight

This issue's spotlight is on Katrina Altenhofen, the Iowa State director for EMS for children. She was named CPS Instructor of the year for 2012.

1) How long have you been a CPS Tech? I took the "pilot" class back in February of 1997 in Orlando Florida. Because this was a pilot, I had to re-take the actual sanctioned four-day curricula-based class later in the fall of 1997. Then, approximately nine months later, I did my instructor training class, which became the first class held in the State of Iowa.

2) Where do you do most of your car seat checks? As the State's program director for Emergency Medical Services for Children (EMSC), I have done child safety seat check up events in conjunction with our CPS trainings and then to assist the various technicians I have trained around the state. Anywhere from car dealerships, health fairs, hospital parking lots, store parking lots, fire stations, cell phone dealerships, kid carnivals, to day care provider agencies, I have done a checkup event. Because we had a need for funding, as many places do, along with getting the program started in 1998, my colleague and I came up with a vanity license plate that would serve as a means by which communities could obtain funding for injury prevention initiatives, such as child safety seat check up events. Within my home community, I do several one-on-one's with folks that call for an appointment, as well as our yearly community health fair where we provide free occupant protection checkups.

3) What prompted you to take the training? I was "voluntold." I "had" to take this as part of my job. At that time, I had duties with the EMSC program and also as the State Safe Kids Coalition lead. My boss knew there were various funding opportunities that were going to become available for occupant protection, so he sent me to Florida to learn how to do child passenger safety. However, once that child passenger safety bug took hold, I was hooked and wanted to spread it throughout the State.

4) What is your favorite CPS resource? Children's Safety Network.

5) What is your favorite installation hint? Don't over think the situation-keep it simple!

6) What is the worst weather you've ever experienced at a car seat check? Thirty degrees and snowing - the event was outside. Then, at the other end of the spectrum, I experienced an event with heat index of 110. The snow was the worst though, as we were not prepared for "freak" end of October blizzard-like conditions. We had to do some fast switching of things to secure an indoor location, as we knew that type of weather was not "safe" for us or the families.

7) What do you think is the best new feature among recent new child restraint products? The ability to tighten the harness straps in the front with ease and not feel as if you are choking the child.

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2. On Facebook: National Child Passenger Safety Board *www.facebook.com/NCPSB2011*

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Tech Update is developed quarterly by the University of Michigan Transportation Research Institute (UMTRI), and funded by the National Highway Traffic Safety Administration and the National Safety Council. Technical assistance and review is provided by the National Child Passenger Safety Board. The views expressed herein are those of the authors and not necessarily of NHTSA.