

Child Restraint Systems: Addressing Misuse through Research and Action

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Penn State Hershey Children's Hospital

Safe Kids Dauphin County





**THANKS to my Lead Agency,
Trauma Team and Coalition Members**



DEFINING THE ISSUE

- Who is being injured?
- Where are the injuries occurring?
- How many injuries have occurred?
- Who is responsible to take action ?
- Are there any trends ?
- Who will use the data ?



**Is your
child SAFE
in the car?**

SOURCES OF DATA

- **National data** : CDC, NHTSA, Safe Kids car seat check data
- **State data**: Child Death review, trauma centers, Dept of Transportation, Health, Education, DPW
- **Local data**: Hospital discharge, trauma centers, police and EMS reports
- **Media**

Mechanism of Injury:

E codes an Injury Description

- How the event occurred
- Motor vehicle traffic accidents (E810-819)
 - Driver or passenger – car, motorcycle, animal drawn, streetcar
 - Into a fixed object or another vehicle
 - Highway or not
 - Pedestrian



10 Leading Causes of Injury Deaths by Age Group Highlighting Unintentional Injury Deaths, United States – 2010

Rank	Age Groups										Total
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
1	Unintentional Suffocation 905	Unintentional Drowning 436	Unintentional MV Traffic 354	Unintentional MV Traffic 452	Unintentional MV Traffic 7,024	Unintentional Poisoning 6,767	Unintentional Poisoning 7,476	Unintentional Poisoning 9,662	Unintentional Poisoning 4,451	Unintentional Fall 21,649	Unintentional MV Traffic 33,687
2	Homicide Unspecified 154	Unintentional MV Traffic 343	Unintentional Drowning 134	Suicide Suffocation 168	Homicide Firearm 3,889	Unintentional MV Traffic 5,558	Unintentional MV Traffic 4,552	Unintentional MV Traffic 5,154	Unintentional MV Traffic 4,134	Unintentional MV Traffic 6,037	Unintentional Poisoning 33,041
3	Homicide Other Spec., classifiable 82	Homicide Unspecified 163	Unintentional Fire/Burn 89	Unintentional Drowning 117	Unintentional Poisoning 3,183	Homicide Firearm 3,331	Suicide Firearm 2,914	Suicide Firearm 4,092	Suicide Firearm 3,387	Unintentional Unspecified 4,596	Unintentional Fall 26,009
4	Unintentional MV Traffic 76	Unintentional Fire/Burn 151	Homicide Firearm 58	Homicide Firearm 107	Suicide Firearm 2,046	Suicide Firearm 2,594	Suicide Suffocation 1,839	Suicide Poisoning 2,061	Unintentional Fall 2,011	Suicide Firearm 4,276	Suicide Firearm 19,392
5	Undetermined Suffocation 39	Unintentional Suffocation 134	Unintentional Suffocation 31	Suicide Firearm 80	Suicide Suffocation 1,824	Suicide Suffocation 1,910	Homicide Firearm 1,673	Suicide Suffocation 1,965	Suicide Poisoning 1,382	Unintentional Suffocation 3,400	Homicide Firearm 11,078
6	Unintentional Drowning 39	Unintentional Pedestrian, Other 103	Unintentional Other Land Transport 26	Unintentional Suffocation 48	Unintentional Drowning 656	Suicide Poisoning 787	Suicide Poisoning 1,279	Unintentional Fall 1,283	Suicide Suffocation 1,130	Adverse Effects 1,544	Suicide Suffocation 9,493
7	Undetermined Unspecified 35	Homicide Other Spec., classifiable 84	Unintentional Pedestrian, Other 20	Unintentional Fire/Burn 46	Homicide Cut/Pierce 420	Undetermined Poisoning 580	Undetermined Poisoning 712	Homicide Firearm 1,097	Unintentional Suffocation 613	Unintentional Poisoning 1,402	Suicide Poisoning 6,599
8	Adverse Effects 22	Unintentional Natural/Environment 52	Adverse Effects 14	Unintentional Other Land Transport 42	Suicide Poisoning 371	Unintentional Drowning 476	Unintentional Fall 493	Undetermined Poisoning 955	Homicide Firearm 533	Unintentional Fire/Burn 1,088	Unintentional Suffocation 6,165
9	Unintentional Fire/Burn 22	Homicide Firearm 43	Unintentional Natural/Environment 14	Unintentional Poisoning 40	Undetermined Poisoning 282	Homicide Cut/Pierce 438	Unintentional Drowning 409	Unintentional Drowning 578	Undetermined Poisoning 480	Suicide Poisoning 709	Unintentional Unspecified 5,688
10	Unintentional Natural/Environment 22	Unintentional Struck by or Against 37	Unintentional Poisoning 14	Unintentional Firearm 26	Unintentional Other Land Transport 221	Unintentional Fall 299	Homicide Cut/Pierce 349	Unintentional Suffocation 464	Unintentional Fire/Burn 479	Suicide Suffocation 648	Unintentional Drowning 3,782

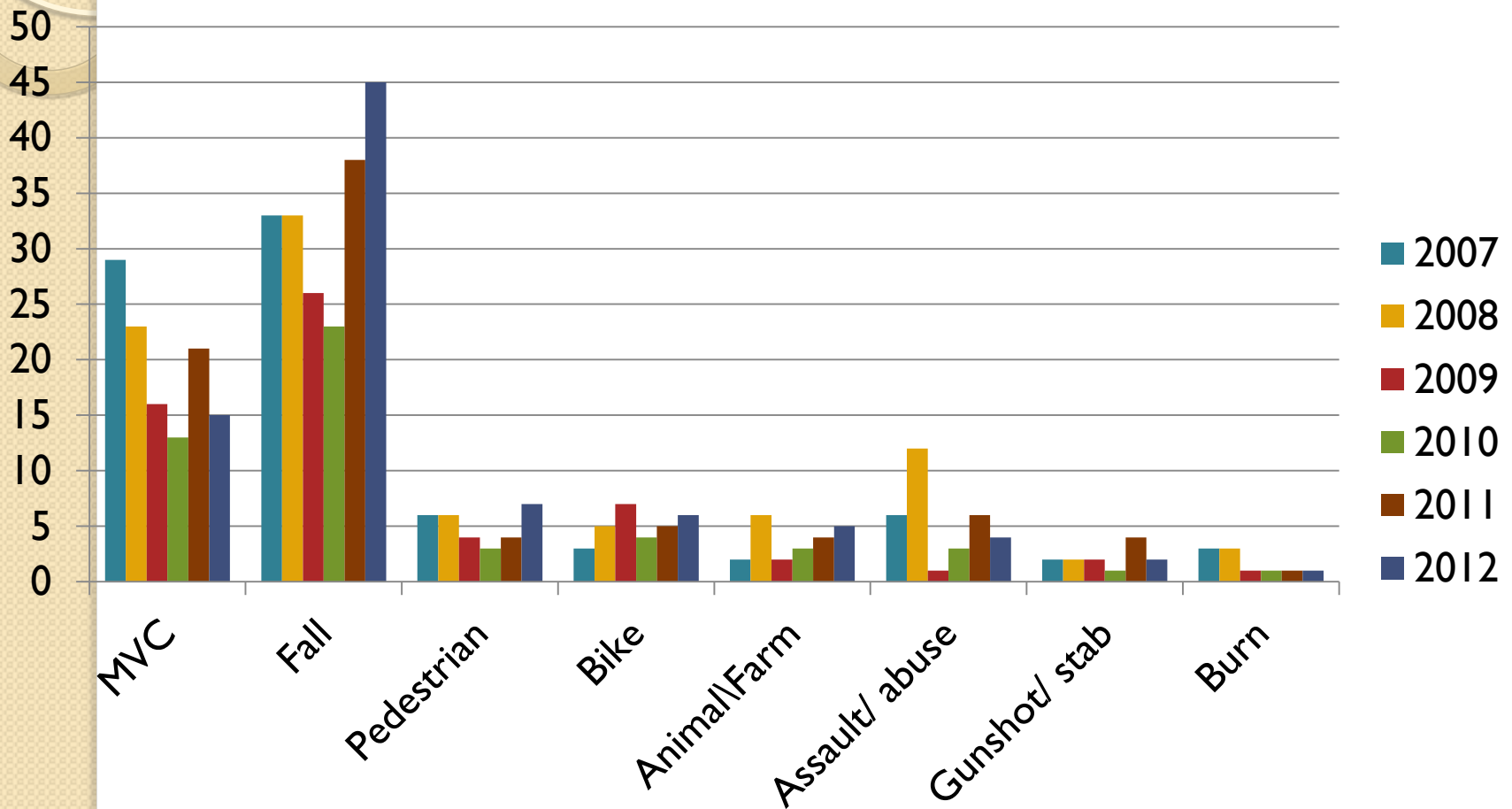
Data Source: National Center for Health Statistics (NCHS), National Vital Statistics System.

Produced by: Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC using WISQARS™.

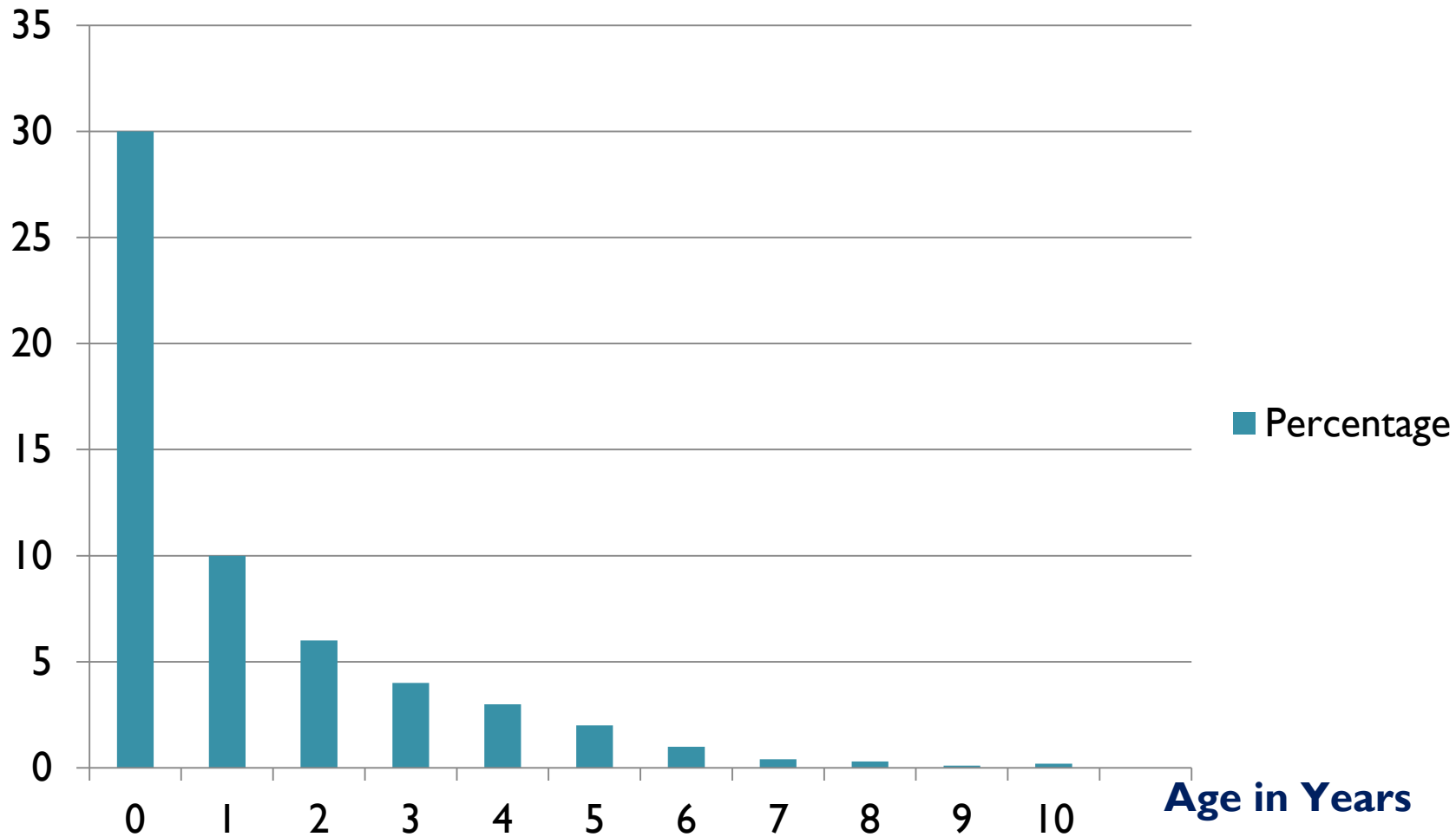


Center for Disease
Control and Prevention
National Center for Injury
Prevention and Control

Penn State Hershey Children's Hospital Top Mechanism of Injury 2007 to 2012



Percentage of Children by Age for Seat Checks



Factors of why the child to place infant forward facing UNDER 12 months old

<u>Factor</u>	<u>Number of Caregivers Identifying Factor^a</u>
It allows me to see my child better	15 (4) [*]
It is safer than the other direction	41 (27)
I am following physician recommendation	43 (29)
My child prefers facing in this direction	10 (2)
Family member/friend told me to install it this way	7 (5)
It is easier to get my child in/out of the car this way	7 (2)
It keeps the sun out of my child's eyes	3 (1)
My child weighs enough to face in this direction	59 (27)
My child has enough head control for this direction	20 (5) [*]
This direction reduces the risk of spinal injury	22 (14)
I am following the AAP recommendation	53 (32) [#]
The infant seat was needed for a younger child	3 (3)

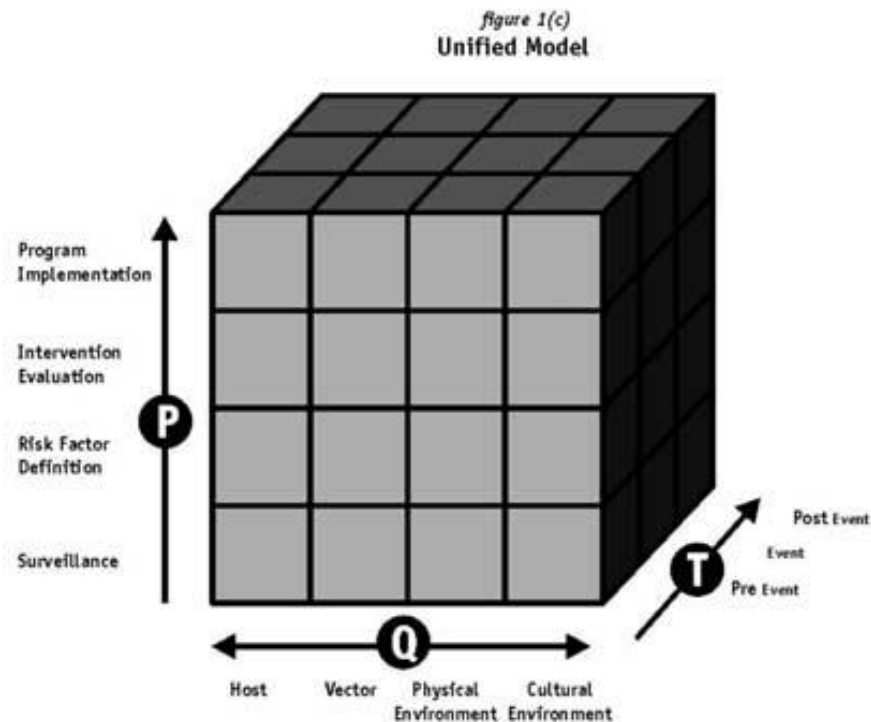
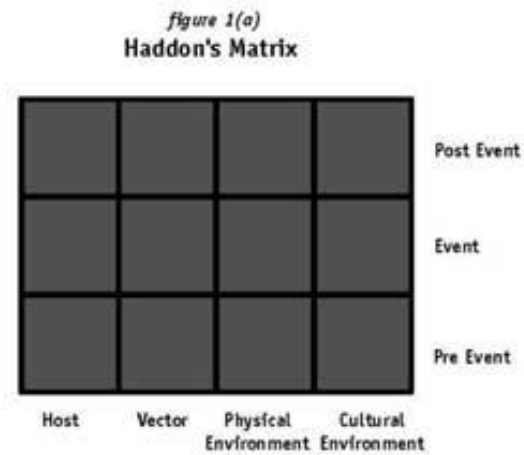
Develop Your Strategy :

What to do with the data ?



DATA INTO ACTION

- **What is your message**
- **Who needs to know**
- **How to package the message**
- **Is it working**



Ronald Lett , Olive Kobusingye & Dinesh Sethi (2002):A unified framework for injury control:The public health approach and Haddon's Matrix combined, Injury Control and Safety Promotion, 9:3, 199-205

Haddon's Matrix

A Multifaceted Approach

	Human Factors	Agent	Physical Environment	Sociocultural Environment
Pre-Event	Child Driver	Vehicle type Restraints	Time of day Road conditions	Rural Suburban Urban
Event	Child Driver	Vehicle type Restraints	Time of day Road conditions Speed	Mobilize community to consider strategies to reduce injuries
Post-Event	Extent of injuries and access to care	Vehicle type Restraints	Road signage, stop signs /traffic lights, speed limits, traffic calming	Media, legislation Community education – children, parents, drivers

The Spectrum of Prevention

Influencing Policy & Legislation

Changing Organizational Practices

Fostering Coalitions & Networks

Educating Providers

Promoting Community Education

Strengthening Individual Knowledge & Skills

Influencing Policy & Legislation
Changing Organizational Practices
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Educating Providers
Promoting Community Education
Strengthening Individual Knowledge & Skills

Figure 1: Spectrum of Prevention: Level of Spectrum Definition

Source: www.preventioninstitute.org

1. Strengthening Individual Knowledge and Skills

Enhancing an individual's capability of preventing injury or illness and promoting safety

2. Promoting Community Education

Reaching groups of people with information and resources to promote health and safety

3. Educating Providers

Informing providers who will transmit skills and knowledge to others

4. Fostering Coalitions and Networks

Bringing together groups and individuals for broader goals and greater impact

5. Changing Organizational Practices

Adopting regulations and shaping norms to improve health and safety

6. Influencing Policy and Legislation

Developing strategies to change laws and policies to influence outcomes

The Spectrum of Prevention

Influencing Policy & Legislation

Changing Organizational Practices

Fostering Coalitions & Networks

Educating Providers

Promoting Community Education

Strengthening Individual Knowledge & Skills

Strengthening Individual Knowledge

- Car seat checks
- Parenting classes
- Safety in and Around Cars, Count Down to Drive, Safe Travel, Cub Scout Patch
- Education materials targeting high risk groups, consider literacy and your message
- Provider and car seat technician classes
- Website links and social media strategies to encourage use of best resources

The Spectrum of Prevention

Influencing Policy & Legislation

Changing Organizational Practices

Fostering Coalitions & Networks

Educating Providers

Promoting Community Education

Strengthening Individual Knowledge & Skills

Promoting Community Education

- Car seat checks and parenting classes
- Education materials targeting high risk groups
- Car seat technician classes
- Coalition member info distribution : message to many
- Hospital newsletter
- Media



We Are Penn State

PENNSTATE



Children's Hospital



3 BROTHERS WHO SURVIVED A HEAD-ON COLLISION



The Spectrum of Prevention

Influencing Policy & Legislation
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Promoting Community Education
Strengthening Individual Knowledge & Skills

Educating Providers

- Resource for education materials for offices, ED waiting areas
- Hospital Provider education – residents to car seat checks, nursing orientation, trauma course lectures, therapists, nursing students
- Community providers – EMS, MD, Fire
- Car seat technician classes



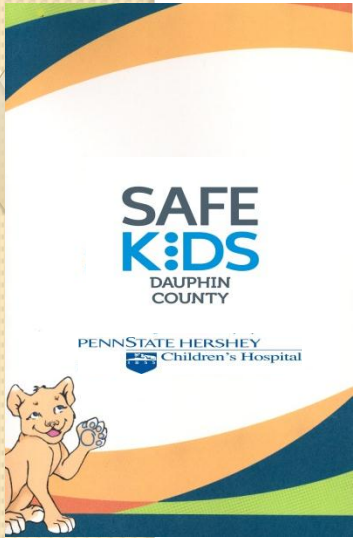
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Fostering Coalitions & Networks

- Child Death Review Teams
- Head Start
- Advisory Boards \ Work Groups
- Local and government agencies – PennDOT, county probation/parole, child welfare agencies, housing authority
- Public Service – Fire, Police, EMS
- Schools
- Media
- Other Health Care Providers
- Civic Groups – Rotary, Boy and Girl Scouts
- Safe Kids / ATS / MADD / Red Cross / AARP
- Think First

Institutional Commitment : Resources for Infrastructure



- **Safety Center opened Feb 2013 with \$1 million from The Hershey Company**
- **Extramural funding:** Children's Miracle Network, The Hershey Company, Pa DOH, Safe Kids Worldwide, SafeKids Worldwide, PA Dept of Health , PennDOT, Sutliff Auto Group, The Hershey Company, American Trauma Society-PA division
- **Internal support:** Development, marketing, management for volunteers, printing
- **Staffing of 2 health educators**
- **Lead agency for Dauphin County Safe Kids since 1994**
- **Regional, state and national activities based on injury data**

Programs : Child Seat Inspection Stations, SAFE KIDS Walk This Way, Home Safe Home, Shaken Baby Awareness, Wheel SMART, Cribs for Kids, Think First: brain and spinal cord injury prevention, Teen Driver Awareness Education, Family Disaster preparedness

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Changing Organizational Practices Managing Policy & Legislation

- **Media**
- **Institutional policies** – tolerance test all babies under 37 wks -not just NICU, education of providers in orientation, car seat distribution
- **Legislation**
 - Booster seat (2002 and 2011) and restraints for passengers 8 to 18 years
 - Graduated Teen Licensing Law

Media, Legislators and The Public

On average a \$36.00 booster seat generates \$2500 in benefits to society

From Children Safety Network, 2012

- How can this be made viewer friendly ?
- Who would best share the message ?
 - A really cute 6 year old
 - An insurance company rep
 - A trauma nurse
 - ALL OF THE ABOVE 😊

What Can You DO ??



DEFINING THE ISSUE



REAR FACING RESTRAINTS

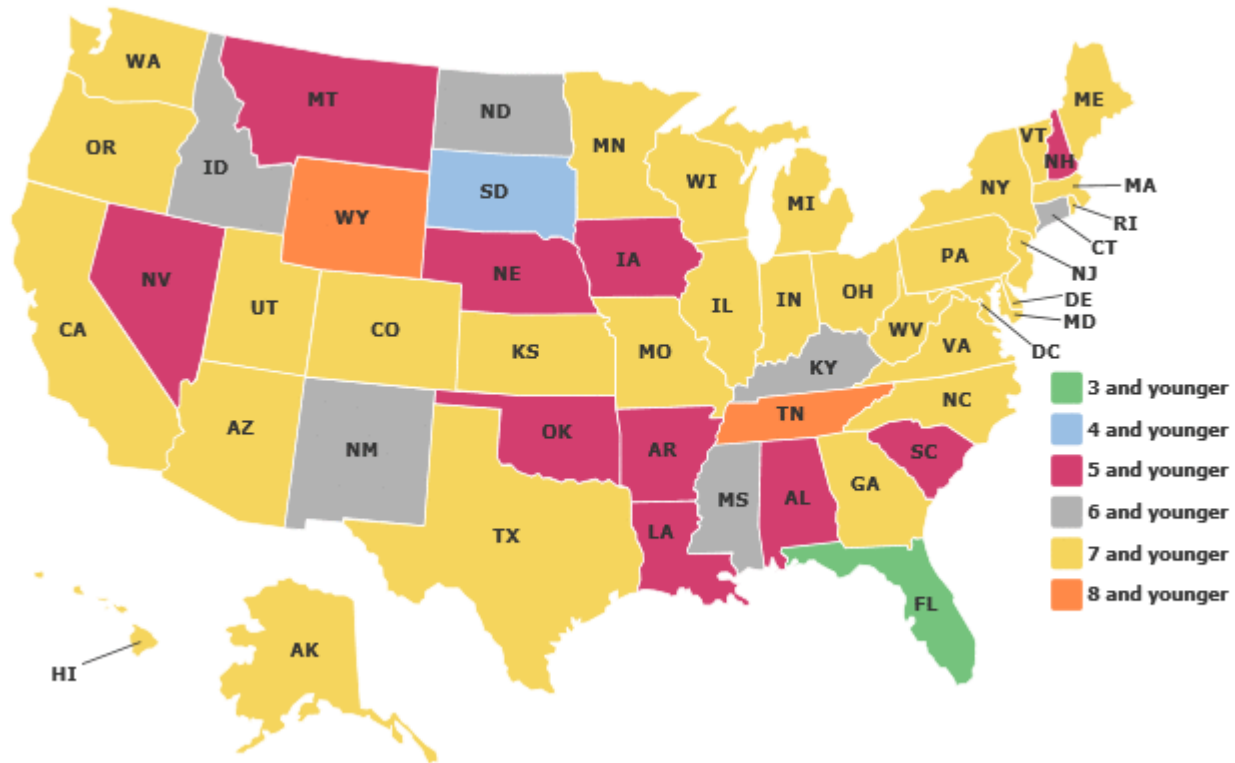
Pre 3-2011: Infant birth to 20 pounds
AND 1 year of age

NEW : Age 2 - Upper weight limit of
the restraint



April 2013

Age at which children must be in a restraint or a booster seat



Source: Insurance Institute for Highway Safety

Educational Resources



for your family
Partners for Child Passenger Safety

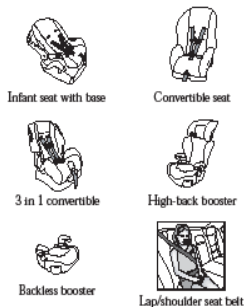
Protect my children on every trip

This sheet can be filled out by a parent, child passenger safety technician or physician and then shared with the drivers who transport your children. Download it again and again from www.chop.edu/carseat.

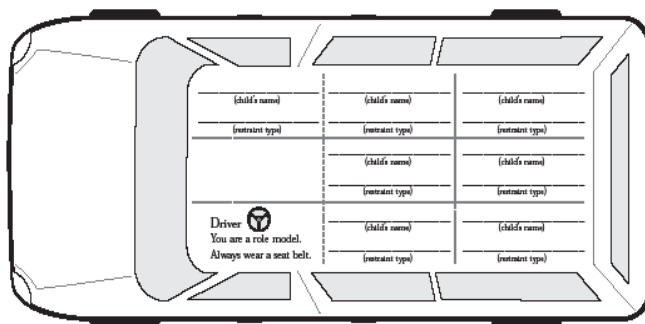
Use the proper restraint for each child's age and size

- Keep your baby in a rear-facing seat until she is at least 1 year old and at least 20 pounds. Never place a rear-facing infant seat in the front seat with an active airbag.
- Use a forward-facing seat with a harness after your child has outgrown her rear-facing seat and she is at least 20 pounds and 1 year of age. She should stay in this seat until she weighs approximately 40 pounds or her ears reach the top of the seat.
- Use a booster seat when she has outgrown the forward-facing seat. Be sure to check the height and weight limits for the seat you own. Your child needs to use a booster seat from about 4 to at least 8 years old or until she reaches about 4 feet, 9 inches.
- Keep her in a booster seat until the adult lap-and-shoulder belt fits properly. The shoulder belt should lie across the chest between the neck and arm and the lap belt must be across the upper thighs, not the soft stomach.
- An adult lap-and-shoulder belt can be used when your child is tall enough (usually about 4 feet, 9 inches) to sit against the back of the car's seat with her legs bent at the knees and feet hanging down.

Types of Restraints



Here's where the children sit.



www.chop.edu/carseat

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Prevention
Alternatives, Inc.

CPS Training Dolls
PO Box 16, Haslett MI 48840
Email: shinn@comcast.net
Call: 517-927-7731 Fax: 517-913-5999

Huggable Images™

CPS Training Dolls



Preemie
\$70.00 each



Infant
17" tall
12.5 lbs
\$76.00 each



16-Month
31" tall
20 lbs
\$81.00 each



3-Year
38" tall
30 lbs
\$88.00 each



6-Year
48" tall
45 lbs
\$97.00 each

CPS Training Dolls

- * Designed specifically for CPS Training.
- * For easy transport, the largest doll weighs less than 10 lbs.
- * Firm torso that doesn't collapse during seat belt demonstration.
- * For training purposes, a lanyard with plastic sheath is attached so age, size and weight can be displayed.
- * Varied skin tones available to represent diverse ethnicities.
- * Can be fully customized for your specific need.

Pricing: Purchase dolls individually at pricing shown above.

Discounts for purchase in sets:

- * \$299.00 for Set of 4 Dolls (17", 31", 38", 48")
- * \$360.00 for Set of 5 Dolls (Preemie, 17", 31", 38", 48")

Skin tone (light, medium, dark) can be specified for each doll. If skin tone is not specified, a combination of skin tones will be sent.

Introductory Discount of 5% on all Doll orders during January and February, 2009.



Outcome Oriented Programming

- 1. Conduct an assessment
(community-based & trauma data)**
- 2. Define the injury problem based on
#1**
- 3. Inventory of available resources**
- 4. Develop goals and objectives**
- 5. Plan your intervention**
- 6. Implement**
- 7. Evaluate outcomes**

Data to Evaluate your program

- What are your goals ?
- Who is your audience
- What resources do you have for the work
- Who needs to know – grant, hospital, donor
- If you planned your program well - -
Evaluation is the foundation of the plan !!



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**THANK YOU
QUESTIONS or COMMENTS**