Table of Contents

- The chapter is based on the four steps of correct use — Selection, Direction, Location, and Installation.
- Children with Special Health Needs are addressed — Upright vests and harnesses, modified vest, large medical seats, specialized child restraints for children in casts.
- Selection, harnessing, and installation errors are addressed.
- An activity is also provided to allow students to practice communicating best practice and tough choices.
- Slides are provided to practice identifying misuse.
- A hands-on activity is provided for students to practice selecting the appropriate restraint, securing the child in the restraint, and installing the restraint in the vehicle.

Children in Booster Seats

- **This chapter discusses selecting, securing and installing booster seats. (NHTSA's 4 Steps — Step 3)**
- A hands-on activity is provided for students to practice the proper use of a booster seat and to explain the proper placement of the lap and shoulder belt.

Kids in Safety Belts

- **This chapter discusses the appropriate use of a seat belt. (NHTSA's 4 Steps — Step 4)**
- Misuse of safety belts and the consequences of misuse are discussed.

Child Passenger Safety in Other Vehicles/Modes of Transportation

- **This chapter discusses how vehicle design (pick-up truck, school bus, airplane, and emergency vehicles) affects CR selection and use.**
- Recommendations are made for securing a child restraint in an ambulance.
- A workbook activity asks students to determine vehicle designs that affect the selection of child restraints and to determine what child restraints are available.
- An activity allows students to practice communicating best practice.

In the Field

- **Students will participate in a "where does everyone sit safely?" exercise to determine the safest locations in vehicles for all occupants**
- Communication skills will be addressed and a video activity will show effective communication skills and describes what a certified CPS Technician does.
- Key issues to consider when planning an event or setting up an inspection station will be discussed.

The Appendix

Many "nice to know" pieces of information are found in the Appendix. The Appendix will also be used extensively for Instructor Candidates to assure basic knowledge of both "need to know" and "nice to know" information relative to CPS.

Also included in the Appendix are two information sheets:

- **Using Your New Skills** provides examples to assist newly certified technicians to build community partners and develop CPS programs. It also includes resources for the new technician
- **CPS Inspections and Check Up Events** is adapted from NHTSA's "A Guide to Implementing CPS Inspection Stations." This has been included to provide students with information pertaining to policies and procedures that should be implemented and followed to help assure that each child leaves the event safer than when he/she came in while making safety the number one priority for staff as well as participants .

Curriculum Updates and Policy Clarifications

Updates and corrections to the Instructor Manual, policy and procedures, as well as supplemental information that may change more frequently, such as the "Planning and Logistics Guide", are available for download from the Instructors' restricted access area on the cpsboard.org website. Instructors can gain access to this site through the "Instructor Downloads (CPS Board)" action item in their Safe Kids CPS Certification program profiles.

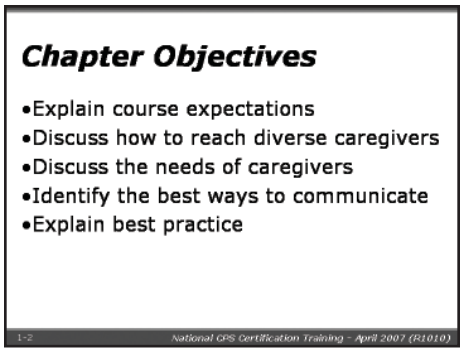
Instructors will be notified through emails and/or the "CPS Express" CPS Certification newsletter whenever updates or corrections are available. It is very important that all Instructors regularly check to be sure that their contact information in their online profiles is correct and up-to-date in order to be assured of receiving these alerts as well as other important certification information.

We thank you for your continued commitment to educating parents and caregivers on the importance of the safe transportation of their children, and we look forward to continuing to work with you in the future.

STUDENT NOTES

(Student Manual page 2)

- This chapter will explain the role of the child passenger safety technician (CPST) and teach the certified technician how to help parents/caregivers safely transport their child based on the child's age, weight, height, physical development, and needs.



INSTRUCTOR NOTES:

Review chapter objectives.

State that this course will:

- Explain course expectations
- Explain Child Passenger Safety (CPS) Technician Role
- Introduce Learn, Practice, Explain

CLASSROOM NOTES:

Activity 1: Meet Your Neighbor

CLASSROOM NOTES:

INSTRUCTOR NOTES:

Activity 1: Meet Your Neighbor — 5 minutes (Be brief!)

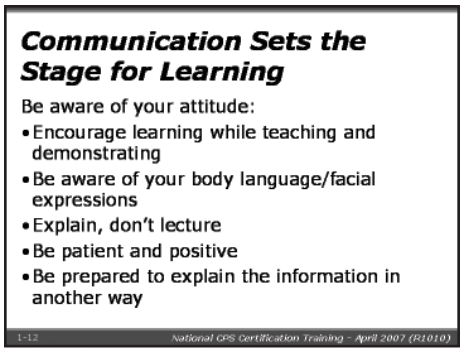
Instructions: Ask all students to introduce themselves to the group by using the information in the slide.

- Review ground rules:
  - Participants should show respect for fellow classmates.
  - One person speaks at a time.
  - Class will begin and end on time.
  - Everyone should turn cell phones and pagers off or on vibrate.
  - There is no such thing as a dumb question.
- Provide administrative information (e.g. location of restrooms, phones, etc.).

STUDENT NOTES

(Student Manual page 9)

- Communication is important to learning. Caregivers will pick up on the tone of your voice and your body language. If you are negative toward the parent/caregiver, they may not listen to your message.
- Caregivers are trying to keep their children as safe as possible — that is why they have come to you for help.
- This is your opportunity to show the parent/caregiver that CPSTs are helpful and understanding.
- The first video that follows will show what makes a good technician and how to thoughtfully approach an inspection.



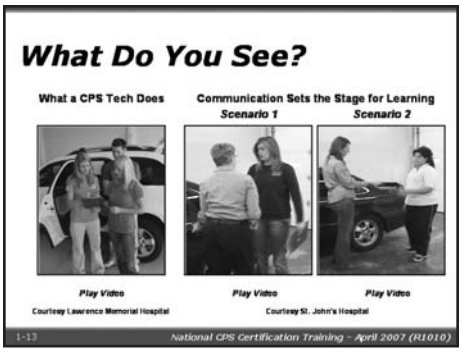
INSTRUCTOR NOTES:

- Point out that good customer service is an important role for the CPST. Good customer service builds trust with caregivers.
- If the caregiver feels that he/she is not being judged, he/she will be more likely to listen and practice what the technician is teaching.

CLASSROOM NOTES:

STUDENT NOTES

(Student Manual pages 9 – 10)



- In the other two videos you will also see examples of good and bad communication skills. After viewing each of these videos, the class will discuss the communication skills used by the technicians in each scenario.

Instructions: After viewing each video, the class will discuss the communication skills used by the technicians in each video. Please write your notes below:

- Scenario 1:
- Scenario 2:
- How well do I communicate? Do I really listen to others?
- What is my strategy for effective communication?

CLASSROOM NOTES:

INSTRUCTOR NOTES:

Show the Abbey video 8 minutes

Instructions:

- Explain to the class that the video will provide a good overview of what a technician does.
- Do not discuss the video at this time since you will discuss it fully in Chapter 14.
- Also mention that the other two video clips that follow will show good and bad examples of a technician as well.

What Do You See? 10 minutes

Instructions: After showing each video, use the following questions to lead discussion. This discussion should help the class practice good communication skills.

- Did the technician respond in a positive manner to the caregiver?
- Did the technician communicate well with the caregiver?

- Did the parent/caregiver seem to listen to the technician?
- Did the technician seem to listen to the caregiver?
- What could the technician have done differently to better communicate with the caregiver?

Video 1: What do you see?

Answer:

- The technician does not communicate in an effective manner.
- The technician is not approachable, nor does she have an empowering attitude toward the parent/caregiver.
- The technician is negative, hostile, not an educator, rude and chewing gum.
- She is negative and makes the parent/caregiver feel that installing the car seat will be almost impossible.

Video 2: What do you see?

Answer:

- The technician includes the parent.
- She is an educator.
- She is friendly and open.

Activity Objective:

To show obvious communication errors to the students

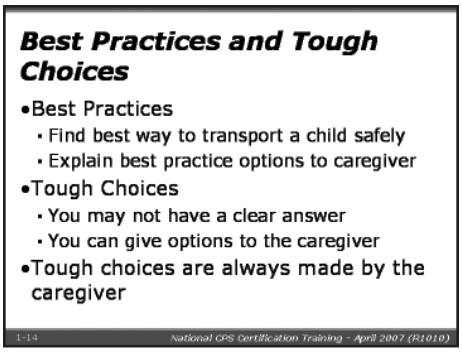
Materials Needed:

Video Clips

CLASSROOM NOTES:

STUDENT NOTES

(Student Manual pages 10 – 11)



- ***Best practice*** is the gold standard of protection. It is the most acceptable way to transport a child safely on the basis of the child's age, weight, height, and body development.
- Often, parents/caregivers do not choose the best practice because they do not understand the reason for it.
- As a technician, it is your job to understand the reason and explain it in simple, clear terms to the parent/caregiver.
- ***Tough choices*** are issues that may not have a clear answer regarding the safest way to transport a child. Parents/caregivers will then need to decide among the options.
- In many cases, there will be best practices related to the tough choices. A technician must provide caregivers with available options. Parents/caregivers are then better able to make tough choices about how best to restrain their own child.
- Tough choices are ***always*** made by the parent/caregiver, not the technician.
- As a technician, you should never support a parent/caregiver in breaking the law or going against the manufacturers' instructions.
- You should place the parent/caregiver's tough choice on your checklist to prevent liability and risk.

Remember: Watch your attitude and body language when a parent/caregiver does not choose a best practice.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

- Give students State Law Handouts.
- Point out that the instructor needs to be comfortable explaining best practices and tough choices and understanding how they are different.
- Show students where to document tough choices on the checklist in the Comments section. Give the following examples:

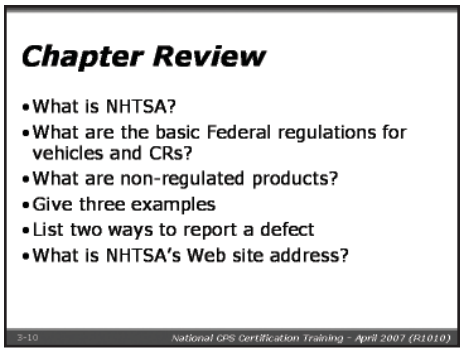
EXAMPLE:

- Best practice standard:
  1. Children should ride in a booster seat until the adult lap and shoulder belt fits properly, usually when a child reaches around 4 feet 9 inches tall.

STUDENT NOTES

(Student Manual pages 39 – 40)

Activity 1: Chapter Review



Instructions: Use your workbook to answer the questions.

1. What is NHTSA? _____

2. What are the three basic Federal regulations for vehicles and CRs? _____

3. What are non-regulated products?

   Examples _____

4. Who do you report a product defect to? _____

5. What is NHTSA's Web site address? _____

6. Where can you find the most updated recall list? _____

- Do I understand NHTSA's role in CPS?
- Do I have any other questions about non-regulated products or reporting defects?

7. What are the basic reasons recalls may be issued? _____

INSTRUCTOR NOTES:

Activity 1: Chapter Review — 5 minutes

Instructions: Have students complete this in-class review worksheet or provide as a homework assignment.

1. What is NHTSA?

National Highway Traffic Safety Administration

2. What are the three basic Federal regulations for vehicles and CRs?

FMVSS 208, FMVSS 213, FMVSS 225

3. What are non-regulated products?

Examples:

Non-regulated products that are designed to improve the comfort, fit, or installation of CRS and/or seat belts.

CLASSROOM NOTES:

CLASSROOM NOTES:

- Shoulder belt-positioning devices
- Belt-tightening tools

4. Who do you report a product defect to?

- NHTSA
- CR Manufacturer

5. What is NHTSA's Web site address?

http://www.nhtsa.gov

6. Where can you find the most updated recall list?

http://www.nhtsa.gov

OR

http://www-odi.nhtsa.dot.gov/cars/problems/recalls/childseat.cfm

7. What is the basis of a recall?

Product non-compliance is when a product does not conform to safety standards. An example such as flammability standard not met or a seat utilizes an assembly where a variation in the components resulted in the potential for a buckle to release. This does not conform to dynamic testing requirements of FMVSS 213.

- Detected defect is when an error is found with part of a safety seat. An example would be that a base is defective and should not be used with the carrier. The carrier may be used with a seat belt until the base is repaired or replaced according to the manufacturers' corrective action. Emphasize that manufacturer's corrective action needs to be followed. Many seats are crashworthy even when a repair is needed.

Scenario 3: ELR with locking latchplate.

Answer: Use no additional tool (use latchplate).

Scenario 4: ALR with sewn-on latchplate.

Answer: Use no additional tool (use retractor).

Scenario 5: ELR with sliding latchplate.

Answer: Use regular locking clip or belt shortening clip in place of a locking clip.

Scenario 6: ELR lap belt with sewn-on latchplate and regular locking clip.

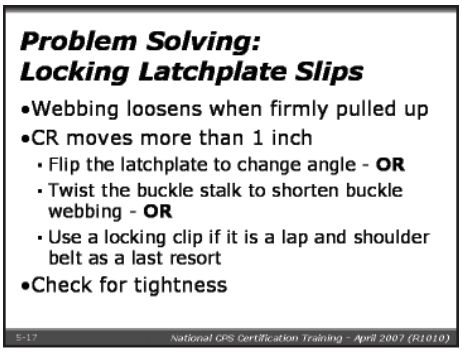
Answer: Wrong locking clip — use belt shortening clip ONLY.

Scenario 7: Switchable retractor with sliding latchplate.

Answer: Use no additional tool (use retractor).

Activity objective: Students will understand when to use belt-shortening clip under different circumstances.

CLASSROOM NOTES:



- Sometimes when a seat belt passes through the CR belt path as directed by the manufacturer, the latchplate will be positioned so that the pre-crash locking mechanism is tilted and does not hold the CR tightly.
- The seat belt is most probably not broken—just out of position (remember that the webbing and the latchplate must be flat).
- There are three approved steps to fix this condition.
  1. flip the latchplate over one time to shorten the seat belt slightly. This changes the locking angle. Always test the seat belt to be sure it remains locked tightly.
  2. Twist the buckle stalk if it is flexible.
  3. Use a locking clip on a lap-shoulder seat belt with a locking latchplate as a last resort after flipping the latchplate and twisting the anchor stalk first to keep the seat belt from pulling out.
- Tests done at the IMMI Child Division in September 1998 found that seat belt buckle stalks could be safely twisted for use with child restraints without taking away the strength set by the Federal standard. The buckle may be safely twisted as long as the vehicle manufacturer approves. IMMI is a seat belt manufacturing company. (See IMMI letter in Appendix for more details).
- Remember to check the vehicle owner's manual to see if a different method to prevent the latchplate from slipping is recommended.
- It is important to remember to check the manufacturer's instructions for both items, as some buckles cannot be twisted and some latchplates cannot be flipped.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

- Explain and then demonstrate the position that some latchplates take when they are placed at the belt path.
- Explain how this causes some seat belts to slip. By flipping the latchplate one time, it re-positions the seat belt so it and the latchplate can lie flat together or parallel. This now enables the seat belt to remain locked pre-crash.
- Show and remind students to check that the seat belt always remains locked by pulling up firmly on the lap belt.
- Sometimes you need to twist the buckle stalk if it is flexible to shorten it and allow the latchplate to come

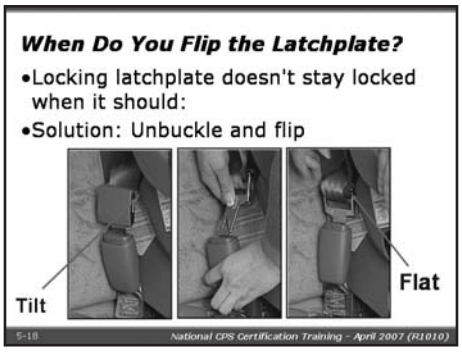
through the belt path before buckling it. In doing that, the latchplate lies flat and locked.

- Remind students to always check the owner's manual instructions first for clarification. Most manuals will not mention or prohibit twisting buckle stalks or flipping latchplates.
- Remind students that a locking clip is used on a lap-shoulder seat belt with a locking latchplate as a last resort after flipping the latchplate and twisting the anchor stalk first to keep the seat belt from pulling out.

CLASSROOM NOTES:

STUDENT NOTES

(Student Manual page 73)



- Sometimes even seat belts that are designed to lock can't because of the CR belt path.
- Flipping the latchplate over is a step that has been crash-tested and can be used in most vehicles if the locking latchplate is tilted and stays in an unlocked pre-crash position.
- Check the vehicle owner's manual to see if the manufacturer does not allow twisting a seat belt to shorten the webbing.

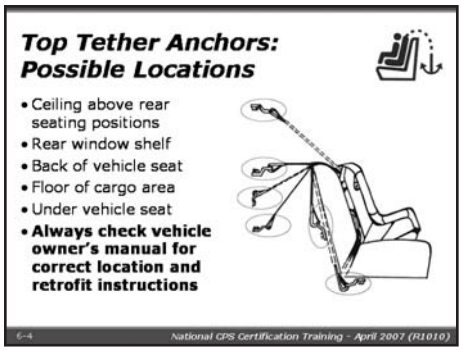
CLASSROOM NOTES:

INSTRUCTOR NOTES:

- Encourage technicians to find other ways that do not require flipping the latchplate.
- Point out the approved, crash-tested fixes allowed by manufacturers.
- Best practice would be to twist as little as is necessary to obtain a tight seat belt fit.
- Suggest that technicians instruct the parent/caregiver to contact the vehicle manufacturer directly to discuss.
- The IMMI study completed in September 1998 never gave an exact number of times a buckle stalk can be twisted. (Refer to IMMI study and list of vehicle manufacturers in the Appendix.)

STUDENT NOTES

(Student Manual pages 82 – 83)



- Many older vehicles have pre-drilled holes, dimples, or actual tether anchors.
- Top tether anchors are located where the car body is strong enough to withstand crash forces. Top tether anchors have upper weight limits that vary. Always refer to the vehicle owner's manual and child restraint manual for installation guidance. Both manuals must be in agreement for tether and lower anchor use on seats with higher weight limits. When no guidance is provided, discontinue use of the lower anchors and/or tether and use the vehicle seat belt for a child heavier than 40 pounds.
- Top tethers may look very different in pickup trucks. Remember, the only way you can be sure about LATCH use is to read the owner's manual.
- Top tether anchors alone have been required in vehicles made after September 2000, but many auto manufacturers provided them or marked the tether anchor location in much older vehicles so that tether anchors could be installed at a later date.
- You may find vehicles with more top tether than lower anchors.
- Students should encourage parents with young children and older cars to have top tether anchors added to their cars.
- The LATCH Manual can tell parents the part number for some older and newer vehicles. Most CRs that can be used in the forward-facing mode, as well as some seats that can be used forward facing made after September 2002, have a top tether strap attached from the factory.

INSTRUCTOR NOTES:

- Point out to students the universal tether symbol located on the slide.
- Encourage top tether anchor use when appropriate for the age and weight of the child. Be aware that top tether anchors have an upper weight limit set by the vehicle manufacturer. Always refer to the vehicle owner's manual and child restraint manual for installation guidance. Both manuals must be in agreement for tether and lower anchor use on seats with higher weight limits. When no guidance is provided, discontinue use of the lower anchors and/or tether and use the vehicle seat belt for a child heavier than 40 pounds.
- Encourage students to contact the vehicle manufacturer customer service help line to find out

CLASSROOM NOTES:

CLASSROOM NOTES:

the actual top tether weight limit approved for that particular vehicle. This information might also be found in the LATCH Manual (http://www.saferidenews.com).

- Although car seat manufacturers were required to meet a more strict head excursion safety limit by September 1, 1999, a tether was not required to meet this standard. By September 2002, when LATCH was available in both vehicles and on CRs, most car seats used a top tether strap to meet the tougher standard and top tether straps were attached to the CR at the factory.
- There is a top tether strap on almost all forward-facing CRs with a harness and some rear-facing CRs manufactured after September 2002.

- Air bags can be almost anywhere in a vehicle, so proper positioning and use of restraints are needed to prevent injury when a crash happens and an air bag opens suddenly. Child occupants are at great risk for injury if they are not properly positioned to benefit from the air bags.
- Read the owner's manual very carefully and assume all air bags are fully active unless the owner's manual says something different. If there are any questions, advise the vehicle owner to contact the vehicle maker.
- Avoid having your body or other objects blocking the air bag. Occupants should always sit in an upright position, buckled into the seat belt.

Driver air bag:

- Generally opens in frontal crashes
- Found in the steering wheel

Front seat passenger air bags:

- Generally open in crashes that occur in the front of the car
- Some cover middle and right front passenger seating positions, some only the right front seating position.
- Found in instrument panel

Side air bags:

- Generally open in crashes that occur on the side of the car
- Found in the door or the vehicle seat

Inflatable curtains:

- Generally open in crashes that occur on the side of the car or when the car rolls over
- Cover one or more rows of seats
- Found above doors at the edge of the roof

Knee air bags:

- Generally open in crashes that occur in the front of the car
- Found under steering columns or lower instrument panel

CLASSROOM NOTES:

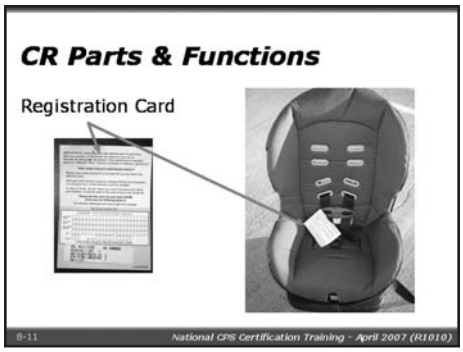
INSTRUCTOR NOTES:

- Remind students that they will be helping families find air bags in their vehicles.
- Encourage student to use owner's manuals and labels to find all air bags that could affect a CR. Properly positioned according to manufacturer's instructions, some CRs can be used near air bags (usually side curtain air bags and air bags in the front of the car under some special conditions).
- Remind students that a rear-facing CR must never be placed in a seating position with an active front air bag, although there are some systems coming out that may deactivate the air bag in the presence of a rear-facing CR.
- The ability to place a CR near a side impact air bag varies. Vehicle manufacturers that believe this is a problem have stated so in their owner's manual.
- Remind students to stay informed about new changes in air bags.
- Inform students that some vehicle manufacturers are working on an air bag contained in the seat belt webbing, most likely to be found in rear seating positions. Students should check the vehicle owner's manual and child restraint manual for location and correct use of seat belts with child restraints.

STUDENT NOTES

(Student Manual pages 108 – 109)

- All CR manufacturers must provide a label on the seat with their contact information.
- All CR owners are encouraged to register the CR with the manufacturer either online or by mailing in the registration card.
- Manufacturers use this information to contact owners about safety issues, including recalls, and are not allowed to use owner data for other purposes.
- Recall lists and checklists need to be used for every seat check.



- Remember that a recall may be initiated through compliance testing or through defect monitoring. A CR that has a recall may be crashworthy and useable until the repair has been made. Follow the manufacturer's recall instructions.

INSTRUCTOR NOTES:

- Point out the importance of registering the seat.
- If a CR has not been registered, the owner should contact the CR manufacturer by phone or via their Web site.
- The owner can use NHTSA's registration form, which is found on the their Web site http://www.nhtsa.gov.
- A current copy of the registration form is also in the Appendix.
- Remind students that a recall may be initiated through compliance testing or through defect monitoring. A CR that has a recall may be crashworthyand useable until the repair has been made. Follow the manufacturer's recall instructions.

CLASSROOM NOTES:

There are several harness types that meet FMVSS 213:

- **Five-point:** A harness that has five points of contact; over each shoulder, one on each side of the pelvis, and one between the legs, with all five coming together at a common buckle.
- **Three-point:** A harness that has three points of contact; shoulder straps coming together at a buckle in the shell or on a crotch strap; not to be confused with three-point (*lap-shoulder*) *vehicle belt*.
- **T-shield:** A triangular or "T"-shaped pad that is attached to the shoulder harness, fits over the child's abdomen and hips, and buckles between the legs.
- **Tray shield:** A wide, curved padded surface that swings down around the child's body and is attached to the shoulder harness and crotch buckle. It looks like a padded armrest, but is a basic part of the harness system. It's also called an overhead shield.

CLASSROOM NOTES:

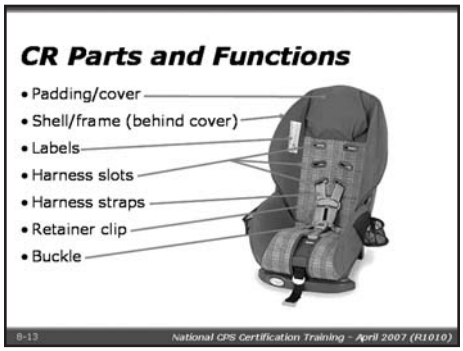
INSTRUCTOR NOTES:

- Be brief and simple.
- Have a variety of seats available as you teach students to identify CR harness types
- This chapter is an introduction to CR Parts. Be very brief as you review with students. More details will be discussed in the following chapters. **Do not expand and discuss the parts in detail here**.
- Purpose is to get them familiar with the names of the parts only.

STUDENT NOTES

(Student Manual pages 110 – 111)

- Throughout the course you will have access to different kinds of child restraints.
- There are changes to new models, so what you see here may not be available next year or next month. Pay attention to labels and become familiar with how different seats look and adjust.
- Parts may be called different things by different manufacturers, such as a lock-off/built-in locking clip or splitter plate/connector.



Following are definitions we will be using for the different parts. We will go into more detail about them later.

- **Buckle**: Where the harness locks.
- **Harness**: The straps that keep the child in the CR and spread out the crash forces.
- **Retainer clip**: The plastic tie or clasp that holds the shoulder straps together over the child's chest at armpit level.
- **Harness Adjuster**: This part is used to tighten or loosen the harness.
- **Harness Slots**: The part of the CR where the harnesses go through.
- **Labels**: Information affixed to the CR that is required by Federal standards.
- **Shell/Frame**: The molded plastic structure of the CR.
- **Seat Padding**: This covers the shell and/or frame.
- **Instruction Book/Storage Location**: both are required

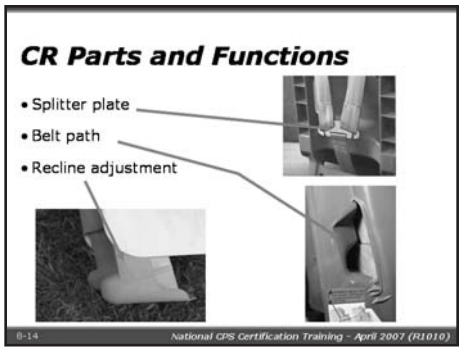
INSTRUCTOR NOTES:

- Be sure students have access to a CR to follow along as you explain the different parts of the CR.
- This is a **show and tell** part of the class. Students should work in pairs/teams with a car seat on hand as you explain the parts and pieces.
- Do not go into full detail.
- Be brief. Stay simple.

CLASSROOM NOTES:

STUDENT NOTES

(Student Manual page 111)



- **Belt Path**: The place on the CR where the seat belt or lower anchor strap is placed to secure the CR in the vehicle.
- **Recline adjuster**: This allows convertible restraints to be reclined for rear-facing and semi-reclined or upright for forward-facing use.
- **Splitter Plate**: The metal plate that connects the two ends of the shoulder harnesses to a single piece of webbing used for adjustment.
- As you look at and identify the different parts of the seat, remember to check for obvious defects such as frayed harnesses or other damage. When assisting parents and other caregivers and defects are seen, you will encourage them to contact the manufacturer and report the possible defect to the NHTSA hotline.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

- As you do this review, have students identify the parts on their CRs, so that they are hearing and touching at the same time.
- As you show students parts of the seat, guide them to check for obvious defects such as frayed harnesses. Make note that when CPSTs are assisting parents and other caregivers and defects are seen, they should encourage the parent/caregiver to contact the manufacturer and report the possible defect to the NHTSA hotline.

Chapter 9
Rear-Facing Child Restraints

(Student Manual page 121)

Chapter length of time: Approximately 2 hours; 40 minutes

Activity total time: 55 minutes.

- Activity 1: Identifying Rear Facing CR — 10 minutes.
- Activity 2: Selection and Installation (outside) — 30 minutes.
- Activity 3: Communicating Best Practice and Tough Choices Role Play – 15 minutes.

Video:

Video clips are available for this chapter. Refer to the readme_first_video.txt file on the instructor CD.

Chapter materials:

- CR instructions — (if unavailable, download from manufacturer website)
- Infant dolls.
- Infant-only CR with three-point and five-point harness/removable base.
- Infant-only CR with five-point harness/removable base.
- Convertible CR.
- Harness adjusters: metal slide, strap adjuster, A-lock, automatic lock, metal rod, etc.
- Rear Facing CR with rigid lower anchors.
- Rear Facing CR with flexible lower anchors.

CLASSROOM NOTES:

CLASSROOM NOTES:

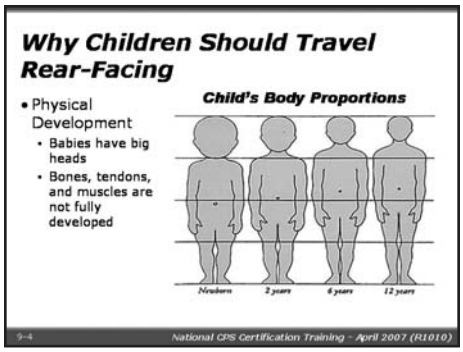
- Rear Facing CR with tether (if possible).
- Non-regulated products (i.e. additional padding, etc.).
- NHTSA recall list.
- Seat belt simulation/Demo Seat.
- Checklist form.
- Lightweight object (i.e., rolled towel or foam pool noodle).

Appendix Materials:

- Rear Facing Quotables: Guiding Parents to Keep Children Rear-facing Longer
- AAP "Selecting and Using the Most Appropriate Car Safety Seats for Growing Children: Guidelines for Counseling Parents"
- AAP "Safe Transportation of Newborns at Hospital Discharge"
- AAP "Safe Transportation of Premature and Low Birth Weight Infants"
- James Whitcomb Riley Hospital For Children "Hospital Discharge Protocol Essentials"
- AAP "Transporting Children with Special Health Care Needs"
- AAP "Car Safety Seats: A Guide for Families 2007"

STUDENT NOTES

(Student Manual page 123)



- This slide shows how a child's body changes as the child grows. Different types of CRs are made to support the child's growth.
- The infant's head is larger and heavier in proportion to its body than that of an older child. The shoulders of an infant are narrow and flexible. This is important to know for proper placement and snugness of the CR harness straps.
- The child's pelvis is small, rounded, and not fully developed until puberty. This is important to know because the lap belt does not always stay below the hip bones in pre-school or elementary school age children.

INSTRUCTOR NOTES:

- Point out that there are many resource materials in the Appendix showing the need to transport children in a rear-facing position.

CLASSROOM NOTES:

- A rear-facing CR supports the entire head, neck, and back in a head-on collision.
- In a head-on crash, the restraint cradles and moves with the child, reducing stress to the neck and spinal cord.
- It is the shell of the CR itself that absorbs the forces in a head-on crash.
- Refer to "Rear Facing Quotables: Guiding Parents to Keep Children Rear-facing Longer" in the Appendix for information technicians can use in the field to communicate with parents about keeping children rear-facing longer.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

- Point out resource materials in the Appendix, including "Rear Facing Quotables: Guiding Parents to Keep Children Rear-facing Longer" in the Appendix for information technicians can use in the field to communicate with parents about keeping children rear-facing longer.
- In a rear-end crash, the forces are absorbed by the harness system. Rear end crashes are much less frequent and usually involve lower crash forces.
- Refer participants to the Appendix for the resource titled "Hospital Discharge Protocol Essentials" produced by the James Whitcomb Riley Hospital For Children.

Play Video

Video demonstrates a rear-facing restraint vs. a front-facing restraint for an infant. The charts present the resulting forces loaded on the neck during the crash and demonstrates that the rear-facing restraint prevents excessive loading on the neck.

Video courtesy of Children's Hospital of Philadelphia.

STUDENT NOTES

(Student Manual page 124)

- Rear-facing infant only CRs may have a 3-point harness or a 5-point harness.
- Some models have a detachable base that can be used with or without the base. Other models can only be used with the base.
- Convertible CRs have a 5-five-point, T-shield (no longer manufactured after 2002) or Tray shield.

Activity 1: Identifying Rear Facing CR

Instructions: You will be divided into small groups with each group having a CR. You will answer questions related to the CR. Each group will identify:

1. Type of CR.
2. Type of harness.
3. Minimum/maximum weight/height limits.

INSTRUCTOR NOTES:

Activity 1: Identifying Rear Facing CR — 10 minutes

Instructions:

1. With assistance from a member of the teaching team show rear-facing infant-only CRs with 3-point and 5-point harness systems. Show rear-facing CR with/ without base. Show rear-facing convertible CRs with 5-point, T-shield (if available) and Tray shield.
2. Divide class into small groups. Provide each group with a CR. Instruct small groups to answer the questions related to CR assigned.
3. Have one person from each group identify the type of CR he or she has.

Activity #1 Objective: Students will identify different features found on rear-facing CRs.

Activity #1 Wrap-up: Quickly have one person from each group identify the type of CR they have, describe the harness system and show the label, stating the minimum/ maximum weight/ height limits.

CLASSROOM NOTES:

- The infant seat is designed to be used rear facing only.
- Many parents/caregivers may be tempted to place the infant seat forward facing to allow them to view their child more easily. This is a serious error and places the child at a significant risk of injury/death in the event of a crash.
- Parents need to understand why it is important for infants to always ride facing the rear.
- Some CR manufacturers recommend that infants under 5 pounds not be placed in their products. Always check the CR label for the starting weight. Some CRs say birth; others state a specific number of pounds.
- Do not use the rear-facing seat above the weight or height limits designated by the manufacturer. Once child outgrows seat move to a rear-facing convertible seat with a higher weight rating.
- The top of the child's head should be well contained within the shell (unless the manufacturer's instructions state otherwise) not less than 1 inch from top of shell.
- The harness needs to be snug and to hold the infant down in the seat so he/she does not slide up in a crash and suffer ejection from the car.
- CRs should be used only for travel. Sleeping children should be removed from their car seats in the home or at child care and placed in a crib that is free from pillows, blankets, stuffed animals, loose sheets, bumper pads, etc.

Appendix—American Academy of Pediatrics, "Car Safety Seats: A Guide for Families 2007"

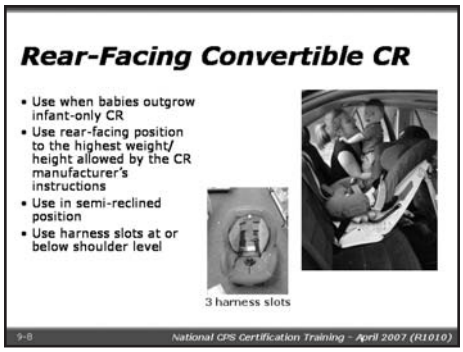
Appendix—American Academy of Pediatrics' Clinical Report, "Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge"

INSTRUCTOR NOTES:

Point out the labels, including air bag label and weight/ height limits on the CRs.

- Point out that students should encourage parents/caregivers to use the rear-facing CR to the highest weight or height allowed by the CR manufacturer. This applies even if the child has reached 1 year of age and 20 pounds.
- Provide students with suggestions on ways to ease parents' need to see the baby during driving. For example, babies sleep through the night without being under the parents' watchful eye. If the CR is installed correctly, the baby should be fine.
- Refer students to the AAP Guidelines for Selecting Child Safety Seats.
- Refer to and discuss the "CRs should be used only for transporting children" Instructor Notes on the following page.

STUDENT NOTES (Student Manual page 126)



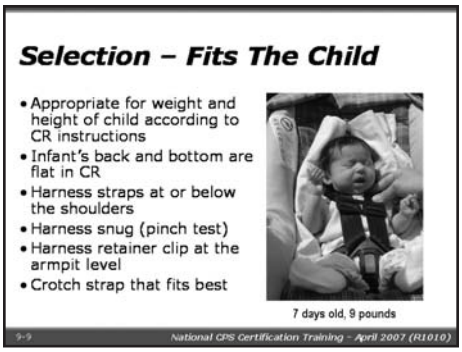
- Most new convertible CRs are approved for rear-facing use with up to 30- to 35-pound children and should be considered for infants whose weight and/or height have exceeded the limits of the rear-facing-only CR.
- ***Always*** check the CR manufacturer's instructions for upper and lower weight/ height limits.
- Parents may wonder if legs are at risk for injury. Children commonly sit with their legs crossed or resting on the back of the vehicle seat. Risk of injury to legs in a crash is low, and injuries to the lower extremity are usually less severe with fewer long-term complications than injuries to the head, neck, or spine, which occur more commonly when a child is seated in the forward-facing position.
- Because the rear-facing position is safest, children should ride rear facing as long as possible (but never exceed the manufacturer's weight and height limits).
- Older children with poor head control who are within height and weight requirements of a CR benefit from staying rear facing longer.

[Instructor Notes continued from page 184]

- Stress to students that CRs should only be used for transporting children.
  - When caregivers, new parents or parents-to-be attend a checkup event, technicians are in a great position to talk to them about safe sleep practices for their baby. While car seats are designed to hold sleeping babies during travel, many children are kept in their car seats long after travel is complete.
  - Since parents may feel comfortable with baby in the car seat, they may be tempted to leave the child harnessed but unattended. They may even loosen the harness (making it easy for baby to slouch or "submarine" into the webbing.) This can be dangerous.
  - Parents should break the "never wake a sleeping baby" rule. As recommended in the May 2009 American Academy of Pediatrics' Clinical Report, "Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge," parents/caregivers are "advised that the duration of time the infant is seated in a car safety seat should be minimized. Parents should be advised that car safety seats should be used only for travel."
  - Sleeping children should be removed from their car seats in the home or at child care and placed in a crib that is free from pillows, blankets, stuffed animals, loose sheets, bumper pads, etc.
  - Car seats should be used for car travel—not for sleep in the home or daycare! Each child deserves his or her own sleeping space that offers a safe environment.
  - Refer students to www.cribsforkids.com for additional information

INSTRUCTOR NOTES:

- Stress the importance of following the CR manufacturer's instructions.
- Refer students to the AAP Clinical Report, "Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge" in the Appendix for additional information.



- Select the CR that is right for the child's weight, height, physical development and behavioral needs.
- Select a CR with multiple harness slots and a short crotch strap to offer many options for a small but rapidly growing infant.

Securing the infant in the CR:

- Place the infant in the CR.
- Put harness straps over shoulders and buckle at the crotch. The harness holds the infant down low in the CR so he/she does not slide up and out of the CR in a crash. The crotch strap keeps the infant from moving forward.
- Tighten harness straps snugly. NHTSA requires CR manufacturers to state in the instructions: "A snug strap should not allow any slack. It lies in a relatively straight line without sagging. It does not press on the child's flesh or push the child's body into an un-natural position." You should not be able to pinch excess webbing at the shoulder once the harness is buckled. This is called the "pinch" test.
- Place the harness retainer clip at armpit level.
- Place blankets **around** baby after harness is snug and secure. Thick padding placed behind/under the child or under harnesses can compress in a crash and create slack in the harness.
- Use only the harness comfort covers or head padding that the CR manufacturer has included with the CR, or that the CR manufacturer sells separately for the specific CR.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

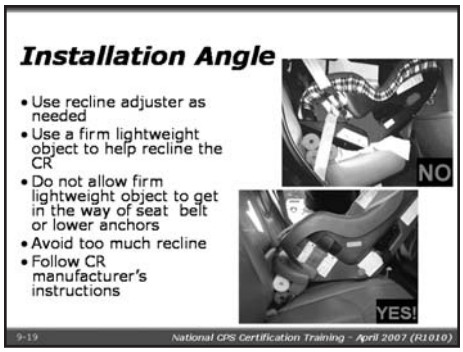
Reinforce the following selection points about aftermarket or non-regulated CR features:

- Choose the proper CR. Parents should select the CR that fits their vehicle, their child, and their budget.
- Remind students that all CRs meet the same Federal standard.
- Place blankets around baby after harness is snug and secure. Concern about padding placed behind/under the child or under harnesses including thick compressible foam, quilting, bunched materials, and soft blankets can compress in a crash and create slack in the harness.
- On some CRs, the harness retainer clip is designed to slide down the harness straps in a crash. It should be positioned at armpit level on the child.

STUDENT NOTES

(Student Manual page 134)

- Many rear-facing CRs have an adjustable base (foot) that is used to correct the angle.
- For CRs that do not have an adjustable base, a firm lightweight object (i.e., a tightly rolled towel or pool noodle) can be placed at the vehicle seat crack or bight.
- Use as few as possible.
- Then the CR can rest on the firm lightweight object to maintain the correct angle. This is helpful when CRs are used on vehicle seats that are not flat like those used in the testing laboratory.

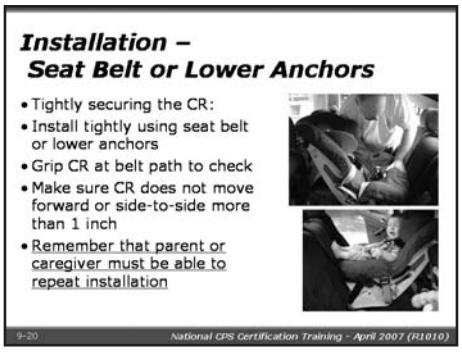


- Always consult CR manufacturer's instructions for how to obtain proper angle.
- Unless the CR manufacturer indicates otherwise, a rule of thumb is to use either the adjustable base (foot) or firm lightweight object—but not both. The CR is not tested this way.
- Remember that the vehicle must be on a level surface.

INSTRUCTOR NOTES:

- If at all possible, teach this section in the vehicles. If not feasible, use a demonstration seat for this demonstration.

CLASSROOM NOTES:



- CR must be installed with a seat belt or with lower anchors—usually not both. While the systems are different, they are equally safe.
- CRs have not been tested with both systems being used together. Some manufacturers allow this now or at may at some time in the future, so always be sure to read both the vehicle and CR instructions for help.
- General methods to obtain a tight installation:
    - Place CR on vehicle seat in the proper direction and at the correct recline angle.
    - Place the seat belt through the belt path as directed by the manufacturer.
    - Place hand in the CR to compress the vehicle seat cushion.
    - Buckle, tighten, and lock the seat belt or lower anchorage system.
    - Remember that the CR should not move forward or side-to-side for more than 1 inch.
- Be sure to check CRS installation for tightness before each use.
    - To test the installation, grip the CR at or near the belt path and pull on the CR. There should be no more than 1 inch of side-to-side or forward movement at the belt path.
- Many parents who mistakenly grab their rear-facing CR near the baby's head (instead of near the belt path) think the CR is not installed properly beacuse it moves more when tested at this point.
- To reduce the risk of entanglement from unused seat belts, technicians should educate the caregiver to evaluate and note unused seat belts that may be within reach of a child. If possible, switch the retractor to ALR mode to lock the unused seat belt against the seat back. Refer to vehicle and CR owner's manuals for guidance.

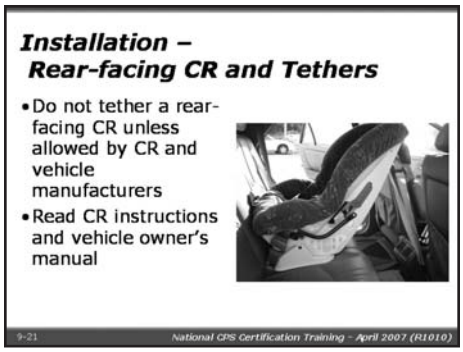
INSTRUCTOR NOTES:

- Using a vehicle seat or a dial-a-belt seat, demonstrate to the class how to attach a CR tightly to a vehicle seat.
- Inform students that to reduce the risk of entanglement from unused seat belts, technicians should educate the caregiver to evaluate and note unused seat belts that may be within reach of a child. If possible, switch the retractor to ALR mode to lock the unused seat belt against the seat back. Many vehicle and child restraint manufacturers provide guidance in their owner's manuals. As always, follow the child restraint and vehicle manufacturer instructions. This includes seating positions when LATCH is used, shoulder belts on booster seated children, as well as unused belts next to the CR.

STUDENT NOTES

(Student Manual page 136)

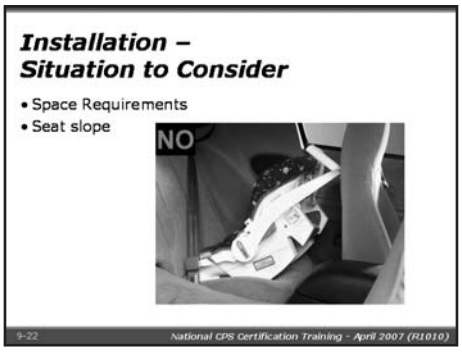
- The use of tethers on rear-facing CRs, while common in Australia and Sweden, is unusual in the United States.
- A rear-facing CR should never be tethered unless recommended by the CR manufacturer. Several products have optional tethers in the rear-facing position.



INSTRUCTOR NOTES:

- Remind students that this approach is unusual and that they should carefully review CR manuals.
- Inform students that the LATCH and Tether manual contains a lot of information on these topics.

CLASSROOM NOTES:



Check the following to see if the CR fits in the vehicle:

- Do the contours of the vehicle seat permit the CR to stay level?
- Is there enough space for the CR to allow for the correct angle?
- Does at least 80% of the CR base (footprint) fit on the vehicle seat? Many manufacturers say that no more than 20% of the CR can hang over the front edge of the vehicle seat. At least one manufacturer requires that 100% of the footprint fit on the vehicle seat.
- Does the seat belt/lower anchor allow for a tight installation?

Special considerations for rear-facing infant seats and rear-facing convertible CRs:

- Steep angle may cause infant to ride too upright.
- Front seats may need to be pushed forward to make the rear-facing CR fit in the vehicle's back seat.
- A rear-facing CR can be installed so that it rests against the back of the vehicle seat in front of it if this is ***not*** against the CR manufacturer's instructions.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

- Explain some special factors to consider for rear-facing CRs: width of CR, vehicle seat shape, seat belt anchor points that may be too close together or have buckles forward of the seat bight or crack, size of vehicle, two-door vehicles, small interiors, etc.
- Remind students to check the CR instructions if the CR base hangs over the edge of the vehicle seat. Many manufacturers say that no more than 20% of the CR can hang over the front edge of the seat — put another way, at least 80% of the CR base (footprint) must fit on the vehicle seat . At least one manufacturer requires that 100% of the footprint fit on the vehicle seat.

STUDENT NOTES

(Student Manual pages 161 – 162)

- Consider the needs of each child and how they relate to the needs of other children or adult occupants.
- Although there may be many seating positions in a vehicle, not all will necessarily be suitable for installation of a CR.
- Most crashes are frontal, and the back seat is furthest from the point of impact.
- The center rear seating position may be safer because it is furthest from impact and intrusion from any direction as long as the CR fits. Unfortunately, the rear center position may not work well for installing the CR because of space and vehicle seat shape (e.g. humps)
- The CR manufacturer's instructions may not allow certain vehicle seating positions. The vehicle owner's manual may not allow CR installation in certain seating positions.
- Weight limits on lower anchors and tether anchors can affect the seating position choice. Each vehicle manufacturer sets their own weight limits. Check the vehicle owner's manual or most current LATCH manual for individual vehicle limits.
- A parent may tell you what they want. Listen.
- Consider how many are usually transported to determine the safest seating positions for all occupants.
- For multiple children, width of CR, width of vehicle seat, and number of seating positions must be considered.
- Refer to Safe Ride News LATCH Manual for information about LATCH systems.

INSTRUCTOR NOTES:

- Discuss the benefits of listening to parents to find out the transportation needs of the family
- Remind students to note unused seat belts that may be within reach of a child when a CR is installed with lower attachments. Technicians should educate the caregiver to evaluate the risk of entanglement from unused seat belts and if possible, switch the retractor to ALR mode to lock the unused seat belt against the seat back in order to reduce this risk.

CLASSROOM NOTES:

Activity 2: Belt Paths

Instructions: You will be placed in a small group to identify the correct seat belt or lower anchor path for a forward-facing convertible seat.

- Identify the forward-facing seat belt, lower anchor belt path, and tether strap on the CR. Where is the tether stored when not in use?
- Adjust the CR to either the upright or forward recline position (if allowed by manufacturer).
- Look on the CR for belt path arrow or label.
- Read the manufacturer's instructions to identify the correct belt path for both seat belt and lower anchors.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

Activity 2: Belt Paths — 5 minutes

Instructions: Each group should identify the CRs forward-facing, lower anchor belt path and tether strap.

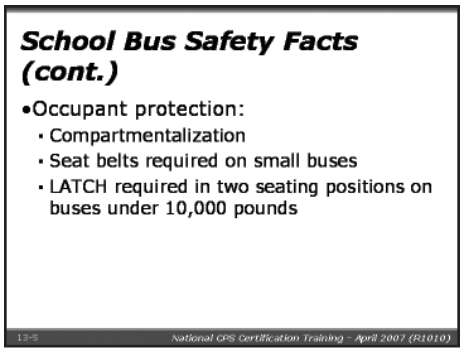
- Instruct students to look on the CR to identify seat belt and lower anchor belt path.
- Identify the correct belt path on a forward-facing convertible.

Materials needed: Forward-facing CR with lower anchors.

STUDENT NOTES

(Student Manual pages 195 – 196)

- Passenger seating and crash protection, known as "compartmentalization," is required on school buses.
- Small school buses (weighing less than 10,000 pounds) are required to have seat belts. Lower anchors are also required in at least two seating positions. Tether anchors are not required in school buses.



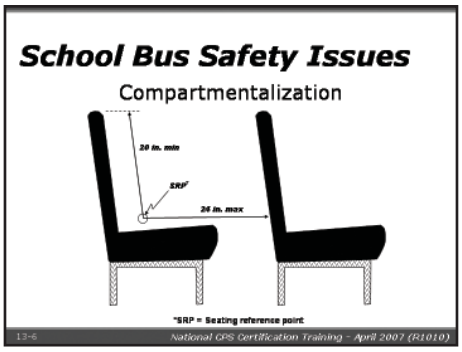
INSTRUCTOR NOTES:

Federal Motor Vehicle Safety Standard (FMVSS) 222, "School Bus Passenger Seating and Crash Protection", does not require the installation of seat belts (other than for the driver) on new school buses with gross vehicle weight ratings (GVWRs) of greater than 10,000 pounds, the standard large school bus. Buses with GVWRs of 10,000 pounds or less are required to have seat belts for all passenger positions, but the larger buses rely on strong, well-padded, energy absorbing seats and higher seat backs to "compartmentalize" and protect passengers during a crash.

CLASSROOM NOTES:

STUDENT NOTES

(Student Manual page 196)



- Compartmentalization is a passive occupant protection system using the concept of eggs in a carton.
- Seats on school buses must have flexible, energy-absorbent, high seat backs (about 20 inches from the seat reference point.)
- The combination of energy-absorbent seat backs and narrow spacing creates a compartment within which each occupant is confined in a crash.
- For more information on the safety recommendations for school buses, go to http://www.ntsb.gov/publictn/1999/sir9904.pdf.
- For AAP recommendations on school bus safety see policy statements at http://www.aap.org

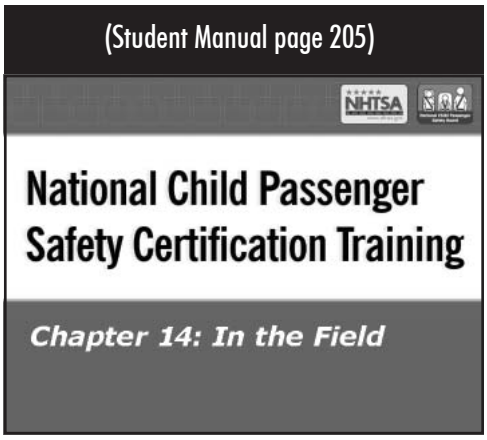
CLASSROOM NOTES:

INSTRUCTOR NOTES:

- Current school bus occupant protection rules are based on compartmentalization. School bus seats made since April 1, 1977, meet the compartmentalization requirement.
- SRP = Seated reference point

Chapter 14
In the Field

(Student Manual page 205)



CLASSROOM NOTES:

Chapter length of time: 1 hour and 15 minutes

Pre-chapter activities: None.

Materials needed for chapter: none

Activity total time: 55 minutes.

- Activity 1: Where does everyone sit safely?—20 minutes
- Activity 2: Watch the Abbey video—8 minutes
  Video discussion—7 minutes
- Activity 3: Planning a checkup event—20 minutes

Appendix:

- Using Your New Skills
- CPS Inspection and Checkup Events

CLASSROOM NOTES:

Important Checkup Event Reminder for Instructor Team

- It is the responsibility of the Lead Instructor to assure that the end-of class checkup event is planned in advance and that, barring circumstances beyond the control of the Instructor team, will allow all students to actively participate as a checker in the clinic. The Lead Instructor may delegate the planning and coordination for the end-of-class checkup to another Instructor and/or local CPS program coordinator. The Lead Instructor and/or the end-of-class checkup coordinator should:
- Visit the site of the planned checkup event to identify safe traffic patterns and establish a safe environment for all attendees, especially children.
- Assure that the planned checkup site will be able to accommodate the desired size of the event and the number of traffic lanes you will need to enable all students to actively participate as checkers.
- Use a grid to draw a map of the physical environment and layout of the event so it can be explained to the students and any other event volunteers who may be assisting with the event
- Be sure to include a clearly marked entrance, registration area and exit with one way traffic flow, if possible.
- Identify lane locations and where supplies will be available for technicians.
- Course Instructors must take the time to review important information about the end-of-class checkup to be sure all students and instructors know what to expect and how the clinic will be set up and operated.

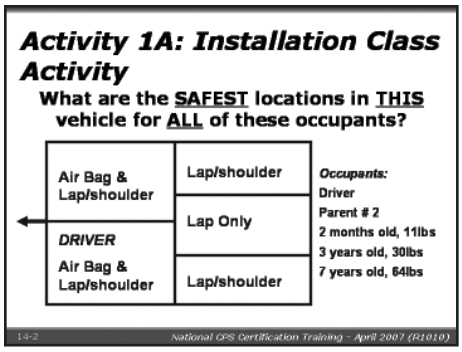
STUDENT NOTES

(Student Manual pages X – X)

Activity 1: Where can everyone sit safely?

Using your new skills, review the needs of the family and identify possible safe seating arrangements. Start with identifying what seat belt system is required for each occupant using the appropriate restraint. You will try this on your own and then discuss as a group.

- Parent #2: _____
- 2 month old: _____
- 3 year old: _____
- 7 year old: _____



This is a general activity based on available seating and best practice recommendations. The answers based on best practice may not conform to your State's CPS laws.

INSTRUCTOR NOTES:

Activity 1A: Where can everyone sit safely?

Instructions:

- Instruct students to use the information provided in the chart to:
  - Mark down where each family member could safely sit.
  - Select the appropriate CR.
- Instruct students that their answers should be based on best practice recommendations rather than requirements of your State's CPS laws.
- Have everyone work independently.
- Use a white/chalk board/flipchart draw the scenario while students are working on their answers
- After 5 minutes:
  - Ask for volunteers to share their findings and discuss with the class.
  - Use a white/chalk board/flipchart draw the scenario.

CLASSROOM NOTES:

CLASSROOM NOTES:

- Write ideas on the white/chalk board/flipchart,
- Discuss if the seat belt system is appropriate for the selected seat/person or CR selected.

Materials: workbook, whiteboard or chalkboard

Time: 20 minutes (10 minutes for each scenario)

Activity 1A: Where can everyone sit safely?

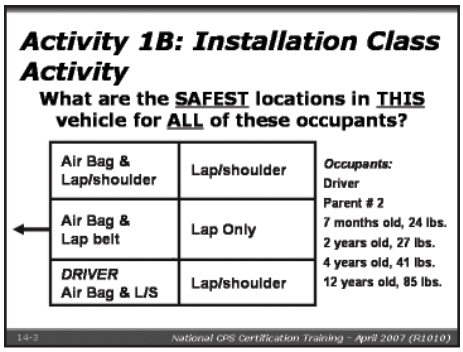
Answers:

- Parent #2: Front passenger
- 2 month old: Rear passenger (may swap with 3 year old)
- 3 year old: Rear center (may swap with 2 month old)
- 7 year old: Rear driver (NEED Lap-Shoulder belt system for BPB)

Activity 1B: Where can everyone sit safely?

Using your new skills, review the needs of the family and identify possible safe seating arrangements. What seat belt system is required for each occupant? Where can they sit?

- Parent #2: _____
- 7 month old: _____
- 2 year old: _____
- 4 year old: _____
- 12 year old: _____



INSTRUCTOR NOTES:

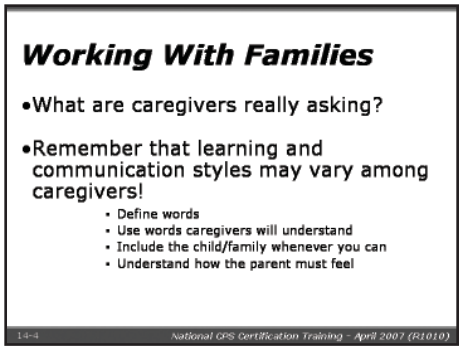
Activity 1B: Where can everyone sit safely?

Conduct this activity the same way as for 1A.

Answers:

- Parent #2: Front passenger (NEED Lap-Shoulder belt system)
- 7 month old: Rear middle
- 2 year old: front center (NOTE: full harness will keep him away from active airbag)
- 4 year old: Rear outboard (NEED Lap-Shoulder belt system — however, if the 4 year old is in a seat with a higher weight full harness he/she could be interchanged with the 2 year old in the front center position)
- 12 year old: Rear outboard (NEED Lap-Shoulder belt system)

CLASSROOM NOTES:



Many CPS words may be confusing to the caregiver. For example:

- "Baby seat" may mean convertible seat to the parent/caregiver.
- "Infant seat" may mean infant carrier to the parent/caregiver.
- CPS may mean child protective services or child passenger safety.

Use words caregivers can understand:

- Some parents/caregivers may not understand the words that technicians use. For example, which makes more sense to the parent/caregiver: "Retractor" or "the part that winds up and stores the seatbelt"?
- Speak in simple terms.
- As a technician, your goal is to help the parent/caregiver use the seat the right way every time.

Include the family:

- When caregivers and children are left out of the process of education, they cannot learn. An important part of the CPST's role is to decide what caregivers are really asking when they request information and help.
- Use the caregiver's name, and use the children's names.

What are they really asking?

- When they ask: "Which car seat is escape-proof?" But mean: "My child can get out of the car seat himself."
- When they ask: "When can I turn him around?" But mean: "I want to see my child. Why is it safer to face the back?"

Look for information about the vehicle or children that can help you understand what the family may need, so you can communicate better:

- Who is in charge? The parent/caregiver or the child?
- Financial concerns: Old vehicle, old car seats.

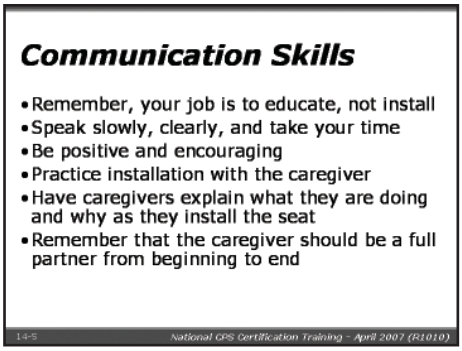
INSTRUCTOR NOTES:

- Ask the student to provide examples of good communication with individuals.
- Ask students to provide examples of good communication techniques with individuals without English as their first language?

CLASSROOM NOTES:

STUDENT NOTES

(Student Manual pages 208 – 209)



- Some families will need more time than others to learn proper use and correct installation of the car seat. Do not rush them through the process. Allow enough time when you make appointments for families who may need it.
- Stay focused on the caregiver during the learning process.
- As the caregiver demonstrates correct installation, have him/her explain what he/she is doing. This provides a better learning experience.
- Technicians can actually talk a parent/caregiver through correct installation and harnessing without even getting into the vehicle. This is a challenge to some technicians who want simply to install the seat for the parent/caregiver.
- Your goal should be for the parent/caregiver to have a complete understanding of the seat and its use.

CLASSROOM NOTES:

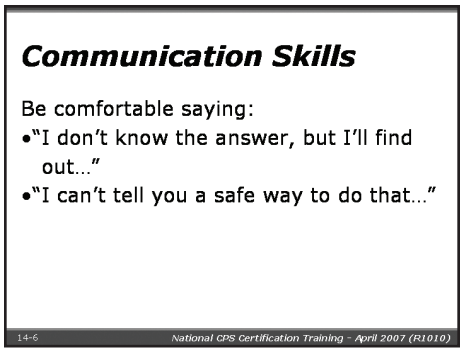
INSTRUCTOR NOTES:

- Point out that all adults learn best by practicing the skill being taught (adult learning theory).
- Remind students that if they tell parents/caregivers they will get back to them, they must remember to do so.

STUDENT NOTES

(Student Manual pages 209 – 210)

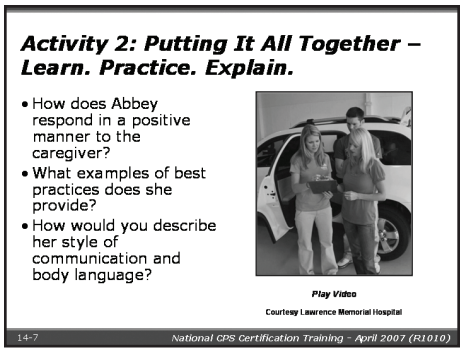
- Even the most experienced CPSTs do not know all the answers. The field of CPS is always changing because of new technology.
- It is OK to tell the parent/caregiver that you do not know the answer, but you should find out the answer. It is a good idea always to have a phone available to contact CPSTs, instructors, or manufacturers if needed.
- CPSTs need to know the facts to prevent misinformation. Other technicians may provide information to you that is misinformation because "we have always done it that way."



- Make sure your information is correct before sharing it with the parents/caregivers.

INSTRUCTOR NOTES:

CLASSROOM NOTES:



Activity 2: "Abbey the CPS Tech" video

Watch the Abbey video (8 minutes)

Video discussion: (7 minutes)

- The "Abbey the CPS Tech" video shows and describes what a certified CPS Technician does.
- Think about what makes Abbey such a good technician and her thoughtful approach to the inspection:
  - How does Abbey respond in a positive manner to the caregiver?
  - What examples of best practices does Abbey provide to the parent/caregiver?
  - How would you describe Abbey's style of communication and body language?

CLASSROOM NOTES:

INSTRUCTOR NOTES:

Activity 2: "Abbey the CPS Tech" video

Watch the Abbey video (8 minutes)

Lead a discussion: (7 minutes)

Explain to students becoming a good technician takes time and practice. Refer students to "Using Your New Skills" in the Appendix.

Discuss what makes Abbey such a good technician and her thoughtful approach to the inspection:

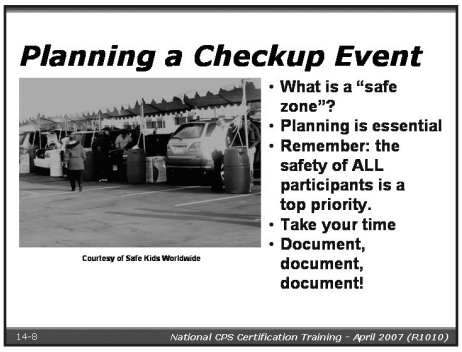
- How does Abbey provide an environment conducive to learning?
  - Well organized checking station
  - Adequate supplies and resources—forms, recall lists, LATCH Manual, CR instructions, Technician Manual, etc.
  - Works with a team
- Does Abbey respond in a positive manner to the caregiver?

- Explains they will check the CR and teach parents how to use it correctly
- Involves parents in the check and discusses use of the CR to them
- Tries to tell them in a nice way how to make adjustments
- Makes sure parents demonstrate back how to install and use the CR

- What examples of best practices does Abbey demonstrate and/or provide to the parent/caregiver?
  - Uses the CR instructions to point out how to adjust the harness
  - Points out warnings in instructions, but allows parents to make the final decisions (e.g., leaving the foam toy attached to the handle)
  - Points out neither LATCH nor seat belt installations are safer, but to use only one method
  - Used the CR angle indicator to check recline angle

- How would you describe Abbey's style of communication and body language?
  - Pays attention to parents facial expressions to determine if they understand points she is trying to get across
  - Asks parents questions to gauge understanding
  - Doesn't try to answer questions she is not sure of, but points them towards references
  - Provided written materials as a part of the checkup

CLASSROOM NOTES:



Activity 3: Planning a checkup event

- The main purpose for conducting a CPS checkup event is to provide a public service to educate and provide needed hands-on assistance to parents and other caregivers.
- Teams of checkers work with and teach parents/caregivers the basics of correct selection, use and installation of CRs and the proper fit and use of seat belts.
- Checkup events also provide opportunities to detect unsafe child restraints (recalled, damaged, missing parts or labels/ instructions, etc.).
- Course Instructors will be reviewing important information about the end-of-class checkup event you must actively participate in to be eligible for certification as a CPS technician
- First, it is important to understand how checkup events are planned and operated. Note also that many of the details for setting up and operating a permanent inspection station are similar as those for a "parking lot" event.
- See "Map It Out" worksheet in the appendix as an example of a diagram to sketch your checkup event traffic flow.

Planning and Operating a Checkup Event — The following are several key issues to consider when planning an event or setting up an inspection station. Additional details may be found in the appendix under "Using Your New Skills" and "CPS Inspections and Checkup Events".

- Do not wait until the last minute to plan your event!
- Who is your target audience?
- How many families do you expect at the event?
- How much time should be allocated per child seat?.
- Determine who the event coordinator will be. Each event needs a designated event coordinator.
- Conduct a pre-site visit.
- At the event:
  - Physical Environment:
  - Staffing:
- Educate the caregiver by fully involving the caregiver in the checkup
- Have adequate supplies

What to expect during the end-of-class checkup event

Be sure you understand

- What will be the time allocations per child seat?

STUDENT NOTES

(Student Manual pages 210A – 210C)

- Who will be the event coordinator?
- Which checkup form will be used and how to use it?
- Who will be responsible for reviewing the work of each checkup team?
- Where will supplies — forms, clipboards, recall lists, LATCH manual, CR manufacturers' instructions, educational materials for caregivers, etc. — be available for technicians

Remember that the safety of all participants is a top priority

- Promote one way traffic flow
- Turn off all vehicle motors
- Watch small children as parents may be distracted
- Walk around every car before starting the engine to be sure there are no children or materials around near or under the vehicle
- Announce "car moving" and guide car to exit

Take your time with conducting the checkup and documentation.

- Ask for help if you need it
- Read instructions and labels
- Fully involve the parent/caregiver in the event
    - Remember the Learn, Practice, Explain teaching method
    - By the end of the checkup, the parent/caregiver should feel confident and competent in their abilities
- Document, document, document
    - Everything you do
    - Advice you give the parent/caregiver
    - Choices the parent/caregiver makes, especially advice the parent/caregiver chooses not to follow
- Due to the sensitive nature of adjusting a child's harness at the crotch, it is advisable to have the parent adjust the child's harness under the supervision of the certified technician.
- There will be an event wrap up to talk about what you saw and what you learned.

For more details, refer to "Using Your New Skills" and "CPS Inspections and Checkup Events" in the Appendix.

CLASSROOM NOTES:

INSTRUCTOR NOTES:

Discuss the end-of-class checkup event

Explain to students that there are recommendations for policies and procedures for conducting CPS programs and events. Refer students to "Using Your New Skills" and "CPS Inspections and Checkup Events" in the Appendix. Also refer students to any State-specific policies or procedures for conducting CPS events or setting up programs or services such as CPS Inspection Stations.

Remind students that they must stay for and actively participate in the end-of-class checkup event in order to be eligible for certification as a CPS technician

Be sure participants understand:

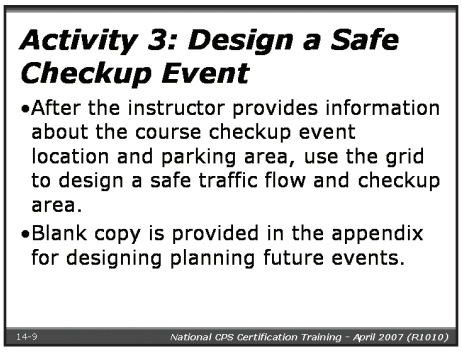
- Who has been invited to the course checkup event and how they were recruited. Are they from a local daycare center, library, community group, etc?
- How many families can be expected at the event?
- How will registration be handled?
- What will be the time allocations per child seat?
- Who will be the event coordinator?
- Which checkup form will be used and how to use it?
- Who will be responsible for reviewing the work of each checkup team?
- Where will supplies — forms, clipboards, recall lists, LATCH manual, CR manufacturers' instructions, educational materials for caregivers, etc. — be available for technicians

Be sure to have a wrap up following the end-of-class checkup

- For all involved to talk about what they saw, what they learned and how it could have been a better event.
- To remind class participants about what to expect following class:
    - o When grades will be entered online and processed as CPSTs

- How to access individual profiles and print wallet cards
- Locate State and local resources
  - Locate more experienced Techs to work with
  - Learn about and sign up for CPS events and/or inspection stations
  - Learn about and sign up for CPS continuing education opportunities
  - Obtain educational and promotional materials
  - Find out about potential funding for local CPS programs

CLASSROOM NOTES:



It is important that all CPS technicians understand the importance of planning and taking steps to design and conduct a safe and well documented event, no matter how large or how small.

Refer to the relevant resources in the Appendix, especially:

- National Child Passenger Safety Resources
- Using Your New Skills
- CPS Inspections and Check up Events
- Map It Out—CPS Check Up Events

CLASSROOM NOTES:

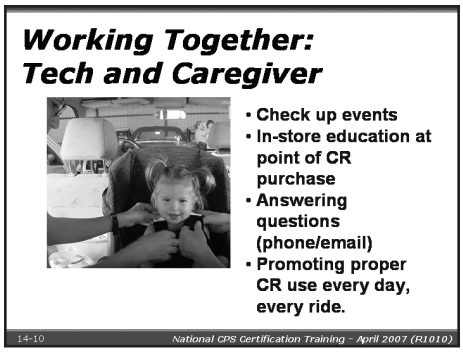
INSTRUCTOR NOTES:

When reviewing the check up, be sure everyone is comfortable with the expectations and understands this importance of taking steps for a safe and well documented event whether a large or small.

Review the relevant resources in the appendix:

- National Child Passenger Safety Resources (Student Manual p. 213)
- Using Your New Skills (p. 311)
- CPS Inspections and Check up Events (p. 315)
- Map It Out—CPS Check Up Events (p. 320-A)

Emphasize the benefits of referring to their student workbooks.



INSTRUCTOR NOTES:

Remind students that:

- The end product of their hard work for the entire class is that they will be able to provide quality caregiver communication.
- The caregiver makes any tough choices.
- As technicians, their duty is to promote the safe travel of the entire family.
- By practicing what they have learned, using the Learn, Practice, Explain model, providing fact rather than opinion, carefully reading instructions and taking time to find the right answers, they will be able to serve the families of their communities at health fairs, community events, retailers, and check up events.

CLASSROOM NOTES:

CLASSROOM NOTES:

Appendix

National Child Passenger Safety Resources[1]

April 2007 (R10/10)

AAA Foundation for Traffic Safety

607 14th Street NW
Suite 201
Washington, DC 20005
202-638-5944
info@aaafoundation.org
www.aaafoundation.org

AAA Foundation for Traffic Safety is a not-for-profit, publicly-supported charitable educational and research organization that funds research projects designed to discover the causes of traffic crashes, prevent them, and minimize injuries when they do occur. This research is then used to develop educational materials for drivers, pedestrians, bicyclists and other road users.

American Academy of Pediatrics

Publications Department
141 Northwest Point Boulevard
Elk Grove Village, IL 60007-1098
800-433-9016
847-434-4000
www.aap.org

The AAP's child passenger safety information includes policy statements relevant to recommendations for transporting children safely. Pamphlets on safety seat use, restraint choice available. Produce a shopping guide for children with special transportation needs and an annual car seat shopping guide.

Automotive Safety Program, Riley Hospital for Children

575 West Drive, Room 004
Indianapolis, IN 46202
317-274-2977
www.preventinjury.org

The Automotive Safety Program provides general consumer information for the State of Indiana. In addition, information is available for transporting children with special needs including ambulance transport safety.

[1]Please note that this list is not meant to be all inclusive.

Children's Hospital of Philadelphia

Center for Injury Research and Prevention
3535 Market Street, Suite 1150
Philadelphia, PA 19104
267-426-6092
www.research.chop.edu/programs/injury/
www.research.chop.edu/programs/carseat/

The Center for Injury Research and Prevention at the Children's Hospital of Philadelphia (CHOP) is a comprehensive pediatric trauma research facility at The Children's Hospital of Philadelphia dedicated to addressing injury, the leading cause of death for children and adolescents.

CHOP maintains the “Keeping Kids Safe During Crashes: Every Child Deserves a Safe Ride” web site that includes videos and other useful information on installing and using child safety seats and on seat belt use for older children and quick tips to help you review the information and links to other online resources.

Partners for Child Passenger Safety now has a Spanish version of their "Keeping Kids Safe" site on their Cómo mantener a los niños fuera de peligro durante los choques: Todos los niños merecen viajar seguros site.

Continuing Education Credits (CEUs) to Maintain Certification

Refer to the “National Child Passenger Safety Board” and “Safe Kids Worldwide CPS Certification Program” listings below.

Federal Aviation Administration (FAA) Child Safety on Airplanes

U.S. Department of Transportation
Federal Aviation Administration
800 Independence Ave. SW
Washington, DC 20591
1-866-835-5322
www.faa.gov/passengers/fly_children/crs/

Provides information and guidance for travelers with children. Downloadable brochure that caregivers may take with them when they travel. Additional information concerning travel tips, screening procedures, and traveling with children with disabilities may go to www.tsa.gov/travelers/airtravel/children.

Insurance Institute for Highway Safety

Communications Dept.
1005 N. Glebe Rd.
Arlington, VA 22201
703-247-1500
www.hwysafety.org

Distributes the newsletter "Status Report", and produces low-cost videos on a variety of highway safety topics. Produce fact sheets and lists of state seat belt and child passenger safety laws.

National Association for Pupil Transportation

NAPT Foundation
111 Scooter Lane
Hicksville, New York 11801
516-579-1620
www.napt.org

A nonprofit group committed to enhancing the safety of children transported by school buses. Provides resources to inform local communities about the benefits of school bus transportation, conducts research regarding safer school buses and provides additional training and educational opportunities for pupil transportation professionals.

National Center for the Safe Transportation of Children with Special Health Care Needs

Riley Hospital for Children
575 West Drive, Room 004
Indianapolis, IN 46202
800-755-0912
www.preventinjury.org/NationalCenter.asp

The National Center for the Safe Transportation of Children with Special Health Care Needs is funded by the National Highway Traffic Safety Administration and is based at the Riley Hospital for Children Automotive Safety Program.

The National Center for the Safe Transportation of Children with Special Health Care Needs serves as a resource for families, health care professionals, transportation providers, and child passenger safety advocates. The National Center has a toll-free hot line (Monday – Friday, 8:00 a.m. – 5 p.m. EST) staffed by child passenger safety technicians who are experienced in resolving issues associated with the transportation of children with special health care needs.

National Child Passenger Safety Board

1025 Connecticut Avenue N.W., Suite 1200
Washington, D.C. 20036-5405
202-296-6263
www.cpsboard.org

The mission of the National Child Passenger Safety Board (NCPSB) is to maintain the quality and integrity of the National Standardized Child Passenger Safety Training Program. This program is used to train and certify child passenger safety (CPS) technicians and instructors. The Board works collaboratively with the National Highway Traffic Safety Administration and with the CPS Certifying Body. The Board channels insight from their representative organizations to NHTSA and the Certifying Body.

The Web site of the NCPSB provides CPS Technicians with a variety of continuing education materials including *Tech Update*. *Tech Update* is an electronic newsletter published by the National Highway Traffic Safety Administration and the National Child Passenger Safety Board for certified Child Passenger Safety Technicians and Instructors. Technicians may qualify for up to 1 CEU per certification cycle for reading the Tech Update.

Individuals can sign up to be notified via e-mail whenever Tech Update is published or any significant announcements or updates to the CPS Board website are made. To read sign up for the CPS Board e-mail list, visit www.cpsboard.org/elist.htm.

National Highway Traffic Safety Administration

Washington, DC 20590
Auto Safety Hotline: 888-327-4236
www.nhtsa.dot.gov

Federal agency with primary responsibility for establishing and enforcing motor vehicle safety standards. NHTSA establishes and promotes national and state highway safety related programs and materials including child passenger safety. Pamphlets, technical reports; program manuals, recall lists, etc. are available through NHTSA.

Visitors to the NHTSA child passenger safety page can find information related to:

- Find a Child Safety Seat Inspection Station - Search NHTSA's Child Safety Seat Inspection Station Locator for Inspection Stations in your State or zip Code.
- Keeping Kids Safe Inside and Out - Addresses safety in and around vehicles for children. www.nhtsa.gov
- www.safercar.gov for information on vehicle safety such as Buying a Safer car, crash rating reports, air bags, rollover prevention, and NHTSA safety standards and regulations.

National Safety Council

1121 Spring Lake Drive
Itasca, IL 60143-3201
630-285-1121
info@nsc.org
www.nsc.org

Safety belt tips and other important information on how to protect yourself and your family on the road.

Safe Kids Worldwide

1301 Pennsylvania Ave., NW
Suite 1000
Washington, DC 20004-1707
202-662-0600
www.safekids.org
http://cert.safekids.org

Safe Kids Worldwide is the certifying body for the National Standardized Child Passenger Safety Certification Training Program and manages the online system for registration and other certification processes. Parents and other caregivers can find a Certified Child Passenger Safety Technician in their state or zip code by using the Safe Kids Child Passenger Safety Contact Locator.

For information on policies & procedures related to class scheduling, participant registration, certification, and recertification - as well as frequently asked questions and answers - visit the

Safe Kids CPS Certification web site. Recertification information available through the "Resources" section includes:
- Personal Re-certification Log
- Re-certification flow chart
- Verified Inspection Activity Worksheet
- Tips on How to Get CEUs
- Putting Together a Successful Tech Update

Also included are links to CEU opportunities including
- Examples of scientific articles
- Safe Ride News LATCH Manual quiz
- SafetyBeltSafe USA car seat manufacturer instructions quiz
- CPS Board's Tech Update
- www.SafeKidsWebinars.org
- www.cpsboard.org online presentations
- www.buckleupnc.org/training/index.cfm online videos from NC CPS Conference

Safe Ride News Publications, Inc.

PO Box 38
Edmonds, WA 98020
Phone: 800-403-1424 / 425-640-5710 • Fax: 425-640-5417
www.saferidenews.com

Publisher of a national CPS quarterly (by subscription) newsletter and the LATCH Manual which is updated every 2 years. Technical updates and fact sheets related to child passenger, pedestrian, and bicycle safety are also available.

SafetyBeltSafe U.S.A.

PO Box 553
Altadena, CA 91001
310-222-6860
www.carseat.org
Safe Ride Helpline: 800-745-SAFE
Spanish Helpline: 800-747-SANO

SafetyBeltSafe U.S.A (SBS USA) produces pamphlets in multiple languages, flyers on correct use of safety seats, training courses, child restraint recall list, and other materials available for download and/or purchase. Technician and Instructors can subscribe to their CPS Tech Access Package which includes; internet access to new child restraint instructions, internet access to a printable version of the SBS USA List of Recalls and Replacement Parts for Child Restraints, SafetyBeltSafe News bi-monthly newsletter on child passenger safety and advocacy, Child Restraint Manufacturers' Instructions with Summary Sheets CD, and Safe Ride News newsletter subscription.

Tech Update

Refer to the "National Child Passenger Safety Board" listing above.

Child Restraint and Vehicle Manufacturer Contacts

Child Restraint Manufacturer Contacts

Angel Guard Products
c/o Mercury Distributing
7001 Wooster Pike
Medina, OH 44256
800-815-6330
330-723-5928
www.angel-guard.com

Baby Trend
1607 S. Campus Ave
Ontario, CA 91761
800-328-7363
www.babytrend.com

Bergeron Health Care
15 South Second St
Dolgeville, New York 13329
800-371-2778
315-429-8407
www.adaptivemall.com

BESI
9445 Sutton Place
Hamilton, OH 45011
800-543-8222
513-874-0232
www.besi-inc.com

Britax Child Safety
(Britax, Fisher Price)
13501 South Ridge Dr
Charlotte, NC 28273
888-427-4829
704-409-1700
www.britaxusa.com

Chicco
1826 William Penn Way
Lancaster, PA 17601
877-424-4226
717-735-6200
www.chiccousa.com

Columbia Medical Manufacturing
13577 Larwin Circle
Santa Fe Springs, CA 90670
800-454-6612
www.columbiamedical.com

Combi USA
1962 Highway 160 West
Suite 100
Fort Mill, SC 29708
800-992-6624
www.combi-intl.com

Dorel Juvenile Group
(Cosco, Eddie Bauer, Maxi Cosi, Safety 1st)
2525 State St
Columbus, IN 47201
800-457-5276 (sales)
800-544-1108 (service)
www.djgusa.com

Evenflo
1801 Commerce Dr
Piqua, OH 45356
800-233-5921
www.evenflo.com

E-Z-ON Products
605 Commerce Way West
Jupiter, FL 33458
800-323-6598
www.ezonpro.com

Graco Children's Products
150 Oaklands Blvd
Exton, PA 19341
800-345-4109
888-224-6549
www.gracobaby.com

Harmony Juvenile Products
1600 53rd St
North Bergen, NJ 07047
877-306-1001
www.harmonyjuvenile.com

Jané USA
P.O. Box 410007
San Francisco, CA 94141
866-355-2630
www.janeusa.com

Jeffco Fibres
(LaRoche Brothers)
451 Quarry St.
Fall River, MA 02722
508-673-1001
www.jeffcofibres.com

KIDSEmbrace
3940 Laurel Canyon Blvd., Suite #1172
Studio City, CA 91604
866-947-3287
kidsembrace.com

Learning Curve
(Compass, The First Years)
1111 West 22nd St, Ste 320
Oak Brook, IL 60523
630-573-7200
www.learningcurve.com

Magna Aftermarket of America (clek)
600 Wilshire Dr
Troy, MI 48084
866-656-2462
www.magnaclek.com

Mercedes-Benz USA
Accessories, P.O. Box 350
Montvale, NJ 07645
www.mbusa.com

Merritt Manufacturing
PO Box 17152
Indianapolis, IN 46217
317-409-0148
www.eztether.com

Mia Moda
1 Meridian Blvd
Wyomissing, PA 19610
1-866-642-6632
www.miamodainc.com

Child Restraint Manufacturer Contacts

Orbit Baby
5437 Central Ave, Ste 10
Newark, CA 94560
877-672-2229
www.orbitbaby.com

Peg Perego U.S.A.
3625 Independence Dr.
Fort Wayne, IN 46808
800-671-1701
www.perego.com

Porsche Cars Of North America
980 Hammond Drive
Suite 1000
Atlanta, Georgia 30328
800-545-8039
www.porsche.com

ProRider
Children-N-Safety Program
7818 S 212th St #106
Kent, WA 98032
800-642-3123
www.prorider.com/nonprofit

Q'Straint
5553 Ravenswood Road, #110
Ft. Lauderdale, Fl 33312
800-987-9987
www.qstraint.com

Recaro
3275 Lapeer Rd West
Auburn Hills, MI 48326
248-364-3818
www.recaro.com

Safe Traffic System
3343 W Eastwood Ave
Chicago, IL 60625
847-329-8111
www.safetrafficsystem.com

Safeguard / IMMI
18881 US 31 North
PO Box 408
Westfield, IN 46074
800-586-7839
www.safeguardseat.com

Safety Angel / Safe Start
P.O. Box 740151
Boynton Beach, FL 33474
888-743-3798
www.safetyangel.com

Sammons Preston Rolyan
1000 Remington Blvd
Bolingbrook, IL 60440
800-323-5547
www.sammonspreston.com

Serenity Safety Products
75 W Baseline Rd #29
Gilbert, AZ 85233
800-536-0676
serenitysafetyproducts.com

Snug Seat
12801 E. Independence Blvd
Stallings, NC 28105
800-336-7684
www.snugseat.com

Sunshine Kids Juvenile Products
3104 142nd Ave South, #105
Sumner, WA 98390
888-336-7909
www.skjp.com

Team-Tex America
(Nania, Car Seat Specialty)
PO Box 3194
Rock Hill, SC 29732
877-912-1313

Teutonia USA
150 Oaklands Blvd.
Exton, PA 19341
877-838-8664
www.teutoniausa.com

Triple Play Products
(Safeline Kids)
904 Main St, Suite 330
Hopkins, MN 55343
800-829-1625
www.tripleplayproducts.com

Volvo Cars of North America
Seven Volvo Dr
Rockleigh, NJ 07647
800-458-1552
www.volvocars.com/us

Vehicle Manufacturer Contacts

Manufacturer	Customer Service	Web site
Acura	800-382-2238	www.acura.com
Audi	800-822-2834	www.audiusa.com
Bentley	800-236-8539	www.bentley.com
BMW	800-831-1117	www.bmwusa.com
Buick	800-521-7300	www.buick.com
Cadillac	800-458-8006	www.cadillac.com

Vehicle Manufacturer Contacts

Manufacturer	Customer Service	Web site
Chevrolet	800-222-1020	www.chevrolet.com
Chrysler - DaimlerChrysler	800-992-1997	www.chrysler.com
Daewoo	877-362-1234	www.daewoous.com
Dodge - DaimlerChrysler	800-992-1997	www.dodge.com
Ferrari	201-816-2600	www.ferrariusa.com
Ford	800-392-3673	www.ford.com
GMC	800-462-8782	www.gmc.com
Hummer (H2) -GMC	800-732-5493	www.hummer.com
Honda	800-999-1009	www.hondacars.com
Hyundai	800-633-5151	www.hyundaiusa.com
Infiniti	800-662-6200	www.infiniti-usa.com
Isuzu	800-255-6727	www.isuzu.com
Jaguar	800-452-4827	www.jaguar.com
Jeep/Eagle-DaimlerChrysler	800-992-1997	www.jeep.com
Kia Motors	800-333-4542	www.kia.com
Land Rover	800-637-6837	www.landrover.com
Lexus	800-255-3987	www.lexus.com
Maserati	201-816-2600	www.maserati.com
Mazda	800-222-5500	www.mazdausa.com
Mercedes_Benz	800-367-6372	www.mbusa.com
Mini	866-275-6464	www.miniusa.com
Mitsubishi	800-222-0037	www.mitsucars.com
Nissan	800-647-7261	www.nissan-na.com
Oldsmobile-GMC	800-442-6537	www.oldsmobile.com
Plymouth-DaimlerChrysler	800-992-1997	www.daimlerchrysler.com
Pontiac-GMC	800-762-2737	www.pontiac.com
Porsche	800-545-8039	www.porsche.com
Rolls-Royce	877-300-8803	www.rollsroyce.com
Saab	800-955-9007	www.saabusa.com
Saturn	800-553-6000	www.saturn.com
Subaru	800-782-2783	www.subaru.com
Suzuki-GMC	800-934-0934	www.suzuki.com
Toyota	800-331-4331	www.toyota.com
Volkswagen	800-822-8987	www.vw.com
Volvo	800-458-1552	www.volvocars.com

Rear Facing Quotables: Guiding Parents to Keep Children Rear-facing Longer

Prepared by the National Child Passenger Safety Board
May 2010

"Children should face the rear of the vehicle until they are at least 1 year of age and weigh at least 20 pounds to decrease risk of cervical spine injury in the event of a crash. Infants who weigh 20 pounds before 1 year of age should ride rear facing in a convertible seat or infant seat approved for higher weights until at least 1 year of age. If a car seat accommodates children rear facing to higher weights, for optimal protection, the child should remain rear facing until reaching the maximum weight for the car safety seat, as long as the top of the head is below the top of the seat back."

- American Academy of Pediatrics, Selecting and Using the Most Appropriate Car Safety Seats for Growing Children: Guidelines for Counseling Parents, PEDIATRICS Vol. 109 No.3 March 2002, pp. 550-553.

- -

"For the best possible protection keep infants in the back seat, in rear-facing child safety seats, as long as possible up to the height or weight limit of the particular seat. At a minimum, keep infants rear-facing until a minimum of age 1 and at least 20 pounds."

- National Highway Traffic Safety Administration, Growing Up Safe: It's a four step process. (publication: 4 Steps Flyer)

- -

"Use a rear-facing car seat to at least age 1 and 20 pounds. Use your rear-facing car seat longer if the seat has higher weight and height limits."

- Safe Kids Worldwide (http://www.usa.safekids.org/skbu/cps/index.html; 6-18-2009)

- -

"Infants should ride rear-facing as long as possible until they reach the upper weight limits of their rear-facing convertible seat, usually around 30-35 pounds. At a very minimum, they should ride rear-facing until they are one year old and 20 pounds."

- AAA (http://www.aaa.com/carseat "Stage 1: Rear-Facing")

- -

"Keep your baby's car safety seat rear facing in the back seat of your vehicle until your baby is at least 1 year old and weighs at least 20 pounds. It is preferable to wait even longer, until the baby reaches the highest weight or height allowed by the manufacturer of the seat."

- Hagen JF, Shaw JS, Duncan PM, eds. 2008. Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents, Third Edition. Elk Grove Village, IL: American Academy of Pediatrics.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

CLINICAL REPORT

Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge

Guidance for the Clinician in Rendering Pediatric Care

Marilyn J. Bull, MD, William A. Engle, MD, the Committee on Injury, Violence, and Poison Prevention and the Committee on Fetus and Newborn

ABSTRACT

Safe transportation of preterm and low birth weight infants requires special considerations. Both physiologic immaturity and low birth weight must be taken into account to properly position such infants. This clinical report provides guidelines for pediatricians and other caregivers who counsel parents of preterm and low birth weight infants about car safety seats. *Pediatrics* 2009;123:1424–1429

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doi:10.1542/peds.2009-0559

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Key Words
safe transportation, preterm, premature, low birth weight, car safety seats, car beds

Abbreviation
FMVSS—Federal Motor Vehicle Safety Standard

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

INTRODUCTION

Improved survival rates and earlier discharge of preterm (<37 weeks' gestation at birth) and low birth weight (<2500 g at birth) infants have increased the number of small infants who are being transported in private vehicles. Car safety seats that are used correctly are 71% effective in preventing fatalities attributable to passenger car crashes in infants.[1] To ensure that preterm and low birth weight infants are transported safely, the proper selection and use of car safety seats or car beds are necessary.

Federal Motor Vehicle Safety Standard (FMVSS) 213, which establishes design and dynamic performance requirements for child-restraint systems, applies to children weighing up to 65 lb. However, the standard has no minimum weight limit and does not address the relative hypotonia and risk of airway obstruction in preterm or low birth weight infants. Most rear-facing car safety seats are designated by the manufacturer for use by infants weighing more than 4 or 5 lb, with some designated for use from birth regardless of weight.

Infant dummies as small as 3.3 lb have been shown to be satisfactorily restrained in standard rear-facing car safety seats during crash tests.[2,3] Test dummies, however, cannot replicate the airway and tone variables that occur in preterm infants, and there is no information on restraint of infants who weigh less than 3.3 lb (1.5 kg).

Rear-facing car safety seats provide the best protection in a frontal crash, because the forces are transferred from the back of the restraint to the infant's back, the strongest part of an infant's body. The restraint also supports the infant's head. Severe tensile forces on the neck in flexion are also prevented by use of rear-facing car safety seats.[4]

The long-term experience and documented protective value of car safety seats make them the preferred choice for travel for all infants who can maintain cardiorespiratory stability in the semireclined position.[4] A car bed that meets FMVSS 213 may be indicated for infants who manifest apnea, bradycardia, or low oxygen saturation when positioned semireclined in a car safety seat.[2,5] Of note, some preterm and term infants positioned in car beds and car safety seats seem to have similar rates of apnea, bradycardia, and oxygen desaturation.[6,7]

A car bed is designed to accommodate an infant in a fully reclined position and is oriented in the vehicle seat perpendicular to the direction of travel. An infant is secured in the car bed with an internal harness, and the car bed is secured to the vehicle with the vehicle's seat belt. Car beds, like car safety seats, have specific weight requirements designated by the manufacturer and, like car safety seats, should be used according to manufacturer recommendations.

The size of the infant, especially for those born preterm, is an important consideration when selecting a car safety seat or car bed.[2,8] Weight, length, neurologic maturation, and associated medical conditions (especially bronchopulmonary dysplasia) all influence the potential risk of respiratory compromise for infants in seating devices.[6,9]

Preterm infants are subject to an increased risk of oxygen desaturation, apnea, and/or bradycardia,[10] especially when placed in a semireclined position in car safety seats.[5,11–13] Furthermore, frequent cardiorespiratory events and

intermittent hypoxia may adversely affect later neurodevelopment, psychosocial behavior, and academic achievement.[14,15] In 1 study, mental development in preterm infants with 5 or more cardiorespiratory events during 210 hours or more of cardiorespiratory monitoring was associated with a lower mental development index on the Bayley Scales of Infant Development (95.8 vs 100.4; $P = .04$)[14]; physical developmental indices were not different (94.4 vs 91.7; $P = .37$). It is unclear whether the association of cardiorespiratory events and lower mental development reflects an underlying abnormality or a negative consequence of the events. It is rational, if practical, to attempt to reduce the frequency and severity of cardiorespiratory events experienced by preterm infants seated in car safety seats to minimize potential neurodevelopmental sequelae. Therefore, car safety seat monitoring in the infant's own car safety seat before discharge from the hospital should be considered for all infants less than 37 weeks' gestation at birth to determine if physiologic maturity and stable cardiorespiratory function are present, as recommended in the American Academy of Pediatrics publication *Guidelines for Perinatal Care*.[16] Because information is limited about the severity and frequency of adverse outcomes in preterm infants who experience cardiorespiratory events, including those events that occur while in car safety seats, additional research is needed.[17]

Many infants are discharged from the hospital with cardiac/apnea monitors, supplemental oxygen, and, occasionally, portable ventilators, suction machines, batteries, and other equipment. These objects are heavy and could cause injury if they were to hit the child or another vehicle occupant in the event of a sudden stop or crash. Although there is no commercially available securement system for portable medical equipment, restraint is recommended.[18]

No data are available to establish a specific age or neurodevelopmental status at which an infant with respiratory compromise who was discharged from the hospital in a car bed can safely transition to a semireclined car safety seat. Before discontinuing use of a car bed, the physician can consider arranging for a follow-up study to determine when the infant can travel semireclined without apnea, bradycardia, or oxygen desaturation. The time to perform the test may vary depending on the rate of growth and neurologic maturation of the infant and the infant's respiratory status and should be determined by the treating physician.

Car safety seats are used frequently for positioning infants for purposes other than travel. Potential detrimental effects of excessive use of infant seating devices, including exacerbation of gastroesophageal reflux and potentiation of plagiocephaly, have been documented.[19,20] Use of car safety seats for purposes other than travel also may increase the risk of adverse cardiorespiratory and other adverse medical events.

CLINICAL IMPLICATIONS

Several important considerations for transportation of preterm and low birth weight infants at risk for recurrent oxygen desaturation, apnea, or bradycardia include the following.

1. The increased frequency of oxygen desaturation and episodes of apnea or bradycardia while sitting in car safety seats suggests that preterm infants should have a period of observation in a car safety seat, preferably their own, before hospital discharge. This period of observation should be performed with the infant carefully positioned for optimal restraint and the car safety seat placed at an angle that is approved for use in the vehicle. A period of observation for a minimum of 90 to 120 minutes or the duration of travel, whichever is longer, is suggested.[5,6,11,21]
2. Hospital staff who are trained in positioning infants properly in the car safety seat and in detecting apnea, bradycardia, and oxygen desaturation should conduct the car safety seat observation.
3. Hospitals should develop protocols to include car safety seat observation before discharge for infants born at less than 37 weeks' gestation.[22] Some hospital protocols include car safety seat observations for infants at risk of obstructive apnea, bradycardia, or oxygen desaturation other than those born at less than 37 weeks' gestation. Examples include infants with hypotonia (eg, Down syndrome or congenital neuromuscular disorders), infants with micrognathia (Pierre Robin sequence), and infants who have undergone congenital heart surgery.[9]
4. Families should be taught by trained hospital staff how to position the infant properly in the car safety seat.
5. The duration of time the infant is seated in a car safety seat should be minimized. Parents should be advised that car safety seats should be used only for travel.
6. A conventional car safety seat that allows for proper positioning of the preterm infant should be selected if a semiupright position can be maintained safely by the infant. Better observation of the infant may be possible when the child is in a rear-facing car safety seat adjacent to an adult rather than in a car bed. In addition, the protection provided by a rear-facing car safety seat is better documented than the protection provided by car beds.[4]
7. If events documented on cardiorespiratory monitoring in a car safety seat are deemed significant by the treating physician or the hospital policy, interventions to reduce the frequency of desaturation and episodes of apnea and bradycardia are recommended (eg, use of car bed; supplemental oxygen; continued hospitalization or further medical assessment). If a car bed is considered, a similar period of cardiorespiratory monitoring while the infant is in the car bed should be performed before discharge.
8. Infants with documented oxygen desaturation, apnea, or bradycardia in a semiupright position should travel in a supine or prone position in an FMVSS 213–approved car bed after an observation period

that is free of such events as described in point 1 above. This may need to be revised as new evidence becomes available from future research. Specific information regarding currently available car beds can be obtained from several resources.[23]

9. Before transitioning from a car bed, a period of observation of an infant for apnea, bradycardia, and oxygen desaturation in the infant's own semireclined car safety seat should be considered. The study can be performed as a home oxypneumocardiogram, as an outpatient polysomnogram, or as an observed outpatient clinical evaluation performed similarly to that described in point 1 above.
10. Infants at risk of respiratory compromise in car safety seats may be at similar risk with use of other upright equipment, including infant swings, infant seats, backpacks, slings, and infant carriers. Consideration should also be given to limiting the use of these devices until the child's respiratory status in a semireclined position is stable.[24]
11. Infants for whom home cardiac and apnea monitors are prescribed should use this monitoring equipment during travel and have portable, self-contained power available for at least twice the duration of the expected transport time.
12. Commercially available securement systems for portable medical equipment such as monitors are not available; therefore, this equipment should be wedged on the floor or under the vehicle seat to minimize the risk of it becoming a dangerous projectile in the event of a crash or sudden stop.[2,8]

Proper positioning of preterm and low birth weight infants in car safety seats is important for minimizing the risk of respiratory compromise. Specific national guidance for selecting car safety seats and positioning preterm and low birth weight infants includes the following.

1. Infants should ride facing the rear as long as possible and to the highest weight and length allowed by the manufacturer of the seat for greatest protection.[25-27] By the time infants weigh 20 lb or reach the top length allowed by the manufacturer of the seat, they should ride facing the rear in infant seats or convertible car safety seats approved for rear-facing use at higher weights and lengths. Most convertible car safety seats are approved for rear-facing use up to 30 to 35 lb and 36 in. Parents of infants born preterm may benefit from specific counseling about this concept.
2. Infant-only car safety seats with 3-point or 5-point harness systems or convertible car safety seats with 5-point harness systems provide optimum comfort, fit, and positioning for the preterm or low birth weight infant. A small infant should not be placed in a car safety seat with a shield, abdominal pad, or arm rest because of potential breathing difficulty behind the shield or injury to an infant's face and neck during a sudden stop or crash.[2,21]
3. Car safety seats with the shortest distances from the crotch strap to the seat back should be selected to reduce the potential for the infant to slip forward feet-first under the harness (ie, "submarining"). Some car safety seats have crotch-to-seat back distances as short as 5.5 in, which may accommodate some preterm or low birth weight infants well. A small rolled diaper or blanket between the crotch strap and the infant may be added to reduce the risk of submarining (Fig 1) in smaller infants. A car safety seat with multiple harness-strap slots provides more choice and may be more suitable for small but rapidly growing infants. Ideally, car safety seats with harness straps that can be positioned at or below the shoulders should be selected.[21]
4. The infant should be properly positioned in the car safety seat, with buttocks and back flat against the back of the car safety seat. The harness must be snug, and the car safety seat's retainer clip should be positioned at the midpoint of the infant's chest, not on the abdomen or in front of the neck (Fig 1).
5. Some car safety seats come with head-support systems as standard equipment. Many head-support systems, however, are sold as aftermarket products and may decrease the safety provided by the seat and harness system, because they introduce slack into harness straps. Only products that come with the seat or are sold by the manufacturer for use with their specific seat should be used. Most very small infants require positioning support in addition to the head support that comes with the seat. Blanket rolls may be placed on both sides of the infant to provide lateral support for the head and trunk (Fig 1).
6. The rear-facing car safety seat should be reclined approximately 45° or as directed by the instructions

FIGURE 1
Car safety seat with a small cloth between crotch strap and infant, retainer clip positioned at the midpoint of the infant's chest, and blanket rolls on both sides of the infant.

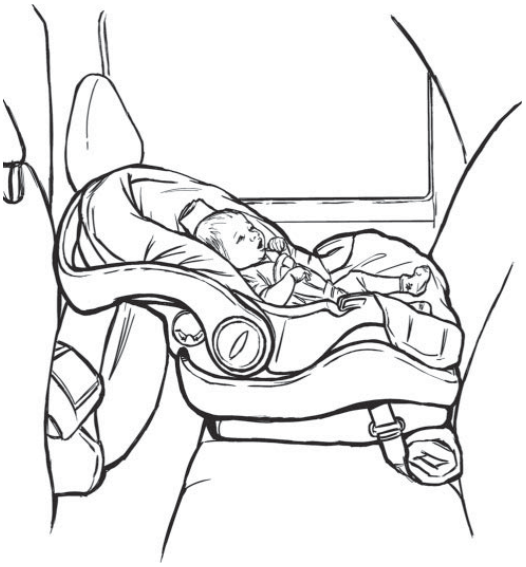

FIGURE 2
Seat with tightly rolled towel to recline seat halfway back at a 45° angle.

provided with the car safety seat. If the vehicle seat slopes and the seat is too upright, the infant's head may fall forward. A lightweight, noncompressible object, such as a tightly rolled blanket or pool "noodle," may be placed under the car safety seat to achieve the appropriate angle. Some car safety seats have built-in angle indicators and angle adjusters to assist with achieving the proper angle (Fig 2).

7. A rear-facing car safety seat should never be placed in the front passenger seat of any vehicle equipped with a passenger-side front air bag because of risk of death or serious injury from the impact of the air bag. In some vehicles without rear seating positions, the air bag can be deactivated when the front seat is used for a child passenger. The back seat is the safest place for all children to travel.[28,29]
8. Infants riding in the rear seat may be more difficult to observe, and whenever possible, parents should arrange for an adult to be seated in the rear seat adjacent to the infant. In the event of a monitor alarm, if a second caregiver is not available, the driver may need to come safely to a stop and assess the infant.
9. An infant should never be left unattended in a car safety seat inside or out of the car.

RESEARCH IMPLICATIONS

1. Studies are needed to gather more information on the severity and frequency of adverse outcomes in preterm infants who experience cardiorespiratory events, including those events that occur while in car safety seats.
2. Studies need to be conducted to determine the risk factors associated with cardiorespiratory events among preterm and low birth weight infants and criteria that indicate neurodevelopmental and physiologic maturity required for an infant to be positioned upright without respiratory compromise.
3. Studies should be designed to assess the correlation of car safety seat monitoring performed in the hospital, while stationary in the car, and while traveling.
4. Methods should be developed to better determine the relative protection provided by rear-facing car safety seats and car beds.
5. Design of car safety seats should be encouraged to specifically meet the positioning and transportation needs of preterm and low birth weight infants.
6. Methods should be developed to better secure heavy medical equipment, such as monitors and oxygen, in vehicles.
7. The efficacy of various protocols for car safety seat monitoring and car safety seats for different patient populations of at-risk infants needs to be determined.

SUMMARY

Proper selection and use of car safety seats or car beds are important for ensuring that preterm and low birth weight infants are transported as safely as possible.

The increased frequency of oxygen desaturation or episodes of apnea or bradycardia experienced by preterm and low birth weight infants positioned semireclined in car safety seats may expose them to increased risk of cardiorespiratory events and adverse neurodevelopmental outcomes.

It is suggested that preterm infants should have a period of observation of 90 to 120 minutes (or longer, if time for travel home will exceed this amount) in a car safety seat before hospital discharge. Educating parents about the proper positioning of preterm and low birth weight infants in car safety seats is important for minimizing the risk of respiratory compromise. Providing observation and avoiding extended periods in car safety seats for vulnerable infants and using car seats only for travel should also minimize risk of adverse events.

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MAP IT OUT
CPS CHECK UP EVENTS

Prepared by the National Child Passenger Safety Board
August 2010

- Design your safe checkup event by use a grid (such as the one included below) to draw a map of the physical environment to be sure you can fit it all in the space available and so you can explain it to your event volunteers.
- Draw the event location and the safety needs that must be in place for technicians, children and parent/caregivers. Personalize it to include:
  - Entrance and exit
  - Directional arrows to show traffic flow
  - Median curbs
  - Checkup lanes - you do not need to stay within the white lines at a shopping center, but be sure to have plenty of traffic cones to manage your traffic flow - put a circle for each traffic cone
  - Materials table
  - Registration location
  - Businesses (stores, gas stations, restaurants) relative to the event

"Map It Out" Sample Grid