Child passenger safety has dramatically evolved over the past decade; however, motor vehicle crashes continue to be the leading cause of death for children 4 years and older. This policy statement provides 4 evidence-based recommendations for best practices in the choice of a child restraint system to optimize safety in passenger vehicles for children from birth through adolescence: (1) rear-facing car safety seats as long as possible; (2) forward-facing car safety seats from the time they outgrow rear-facing seats for most children through at least 4 years of age; (3) belt-positioning booster seats from the time they outgrow forward-facing seats for most children through at least 8 years of age; and (4) lap and shoulder seat belts for all who have outgrown booster seats. In addition, a fifth evidence-based recommendation is for all children younger than 13 years to ride in the rear seats of vehicles. It is important to note that every transition is associated with some decrease in protection; therefore, parents should be encouraged to delay these transitions for as long as possible. These recommendations are presented in the form of an algorithm that is intended to facilitate implementation of the recommendations by pediatricians to their patients and families and should cover most situations that pediatricians will encounter in practice. The American Academy of Pediatrics urges all pediatricians to know and promote these recommendations as part of child passenger safety anticipatory guidance at every health supervision visit.

Improved vehicle crashworthiness and greater use of child restraint systems have significantly affected the safety of children in automobiles. Major shifts in child restraint use, particularly the use of booster seats among older children, have occurred in response to public education programs and enhancements to child restraint laws in nearly every state. In addition, there has been a substantial increase in scientific evidence on which to base recommendations for best practices in child passenger safety. Current estimates of child restraint effectiveness indicate that child safety seats reduce the risk of injury by 71% to 82% and reduce the risk of death by 28% when compared with children of similar ages in seat belts. Booster seats reduce the risk of nonfatal injury among 4- to 8-year-olds by 45% compared with seat belts. Despite this

abstract

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All infants and toddlers should ride in a rear-facing car safety seat (CSS) as long as possible, until they reach the highest weight or height allowed by their CSS’s manufacturer.

2. All children who have outgrown the rear-facing weight or height limit for their CSS should use a forward-facing CSS with a harness for as long as possible, up to the highest weight or height allowed by their CSS’s manufacturer.

3. All children whose weight or height is above the forward-facing limit for their CSS should use a belt-positioning booster seat until the vehicle lap and shoulder seat belt fits properly, typically when they have reached 4 ft 9 inches in height and are between 8 and 12 y of age.

4. When children are old enough and large enough to use the vehicle seat belt alone, they should always use lap and shoulder seat belts for optimal protection.

5. All children younger than 13 years should be restrained in the rear seats of vehicles for optimal protection.

progress, each year, nearly 1000 children younger than 16 years die in motor vehicle crashes in the United States.8

The American Academy of Pediatrics (AAP) strongly supports optimal safety for children and adolescents of all ages during all forms of travel. This policy statement provides 5 evidence-based recommendations for best practices to optimize safety in passenger vehicles for all children, from birth through adolescence (summary of recommendations in Table 1):

1. All infants and toddlers should ride in a rear-facing car safety seat (CSS) as long as possible, until they reach the highest weight or height allowed by their CSS’s manufacturer. Most convertible seats have limits that will permit children to ride rear-facing for 2 years or more.

2. All children who have outgrown the rear-facing weight or height limit for their CSS should use a forward-facing CSS with a harness for as long as possible, up to the highest weight or height allowed by their CSS’s manufacturer.

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FROM THE AMERICAN ACADEMY OF PEDIATRICS
FIGURE 1
Algorithm to guide implementation of best practice recommendations for optimal child passenger safety. (See Table 1 for summary of recommendations and Table 2 for definitions and explanations.)
**TABLE 2** Explanations of Decision Points and Additional Resources

<table>
<thead>
<tr>
<th>Question</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the child have significant health needs?</td>
<td>Consult complementary AAP Policy and other resources for best practice recommendations</td>
</tr>
<tr>
<td>Has the child outgrown weight or height limit for seat?</td>
<td>Children with certain temporary or permanent physical and behavioral conditions such as altered muscle tone, decreased neurologic control, skeletal abnormalities, or airway compromise that may preclude the use of regular CSSs may require specialized restraint systems. The AAP has a Policy Statement providing specific guidance on best practice recommendations for children with special health care needs (<a href="http://aappolicy.aap.org/cgi/content/full/pediatrics%3B104/4/988">http://aappolicy.aap.org/cgi/content/full/pediatrics%3B104/4/988</a>). To locate a child passenger safety technician in your area with special training in special health needs, go to <a href="http://cert.safekids.org">http://cert.safekids.org</a>.</td>
</tr>
<tr>
<td>Is weight or height less than rear-facing limit for convertible CSS?</td>
<td>Infants and toddlers have relatively large heads and several structural features of their neck and spine that place them at particularly high risk of head and spine injuries in motor vehicle crashes. Rear-facing CSSs provide optimal support to the head and spine in the event of a crash. Children who are small for their age may need to be evaluated like younger children. Consult a child passenger safety technician with enhanced training in special needs or other resources for assistance.</td>
</tr>
<tr>
<td>Is weight or height less than forward-facing limit for convertible combination CSS?</td>
<td>The AAP annually updates information on child restraint systems currently available in the United States (<a href="http://www.healthychildren.org/carseatguide">www.healthychildren.org/carseatguide</a>). The weight thresholds provided in the algorithm are considered minimum standards. More recent products have higher weight limits and should be used when possible. In general, children should remain in a child restraint system until they outgrow the weight or height limits for its intended use. Most children 4–8 years of age are not large enough to fit properly in the vehicle seat belt and will require a CSS or booster seat for optimal restraint. A belt-positioning booster seat positions a child so that the lap and shoulder portions of the seat belt fit properly: the lap portion low across the hips and pelvis and the shoulder portion across the middle of the shoulder and chest. Most children under 4 ft 9 inches in height will not fit properly in vehicle lap and shoulder seat belts.</td>
</tr>
<tr>
<td>Does child fit properly in the vehicle seat belt, usually around 4 ft 9 inches in height?</td>
<td>These 3 questions are an evaluation to determine whether a child is ready to be restrained by the vehicle seat belt without a booster seat. If the answer is “no” to any of these questions, the child should use a booster seat: 1. Is the child tall enough to sit against the vehicle seat back with her knees bent at the edge of the vehicle seat without slouching and stay in this position comfortably throughout the trip? 2. Does the shoulder belt lie across the middle of the chest and shoulder, not against the neck or face? 3. Is the lap belt low across the hips and pelvis?</td>
</tr>
</tbody>
</table>

Of note, the recommendation that all children be restrained in a rear-facing-only or convertible CSS used rear facing as long as possible represents a significant change from previous AAP policy and is based on data from the United States as well as extensive experience in Sweden. It is important to note that nearly all currently available CSSs have weight limits for rear-facing use that can accommodate children 35 to 40 lb.

Certain considerations contained in this policy statement are relevant to commercial airline travel as well and are noted in the accompanying technical report. Additional AAP policy statements provide specific recommendations to optimize safety for preterm and low birth weight infants, children in school buses, and children using other forms of travel and recreational vehicles. In addition, complementary AAP policy statements provide recommendations for teen drivers and for the safe transport of newborn infants and children with special health care needs. Pediatricians play a critical role in promoting child passenger safety. To facilitate their widespread implementation in practice, evidence-based recommendations for optimal protection of children of all ages in passenger vehicles are presented in the form of an algorithm (Fig 1) with an accompanying table of explanations and definitions (Table 2).

A summary of the evidence in support of these recommendations is provided in the accompanying technical report. Because pediatricians are a trusted source of information to parents, pediatricians need to maintain a basic level of knowledge of these best practice recommendations and promote and document them at every health supervision visit. Prevention of motor vehicle crash injury is unique in health supervision topics, as it is the only topic recommended at every health supervision visit by Bright Futures. Pediatricians can also use this information to promote child passenger safety public education, legislation, and regulation at local, state, and national levels through
a variety of advocacy activities, including aligning their state’s child passenger safety law with the best practice recommendations promoted in this policy statement.

Pediatricians are urged to keep abreast of the evolving multifaceted guidance and resources on motor vehicle safety for children. In particular, many communities have child passenger safety technicians who have completed a standardized National Highway Traffic Safety Administration course and who can provide hands-on advice and guidance to families. In most communities, child passenger safety technicians work at formal inspection stations; a list of these is available at https://www.nhtsa.gov/equipment/car-seats-and-booster-seats#install-inspection. If your community does not have an inspection station, you can find a child passenger safety technician in your area via the National Child Passenger Safety Certification Web site at http://cert.safekids.org or via the National Highway Traffic Safety Administration Child Safety Seat Inspection Station Locator at http://www.nhtsa.dot.gov/cps/cpsfitting/index.cfm. Car Seat Check Up Events are updated at https://www.safekids.org/events/field_type/check-event. In addition, additional resources for pediatricians and families can be found at www.aap.org or www.healthychildren.org.

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**ABBREVIATIONS**

AAP: American Academy of Pediatrics
CSS: car safety seat

**REFERENCES**


