

# **RESTRAINT**

## **Position Statement**

WHEREAS age- and size-appropriate child safety seats reduce the risk of death in a crash for infants by 71% and for toddlers age 1-4 by 54%, and

WHEREAS, for children between 4 and 8 years of age, belt positioning boosters reduce the risk of injury in a crash by 45% -59% compared with lap/shoulder belts alone, and

WHEREAS primary enforcement of legislation requiring the presence and use of restraints is the most effective method of increasing occupant restraint use and such legislation has been demonstrated to decrease deaths and serious injuries among occupants,

BE IT RESOLVED that the Association for the Advancement of Automotive Medicine urges all countries to adopt and enforce legislation mandating that all passenger vehicles contain functional three point restraint systems for all seating positions,

And further

BE IT RESOLVED that the Association for the Advancement of Automotive Medicine urges all countries to adopt and fully enforce legislation requiring that all occupants of moving passenger vehicles be restrained appropriately as dictated by their age and size.

Adopted: October, 2010

## **Background for Restraint Policy**

According to the World Health Organization, in 2004 1.2 million died as a direct result of injuries sustained in a motor vehicle crash.<sup>1</sup> However, when used correctly, adult and child occupant restraints can significantly reduce the incidence of injury and death from a motor vehicle crash. Occupant restraints, including safety belts and child passenger restraints help to prevent injury during a crash in five different ways: preventing ejection, shifting crash forces to the strongest parts of the body's structure, spreading forces over a wide area of the body, allowing the body to slow down gradually, and limiting relative motion between body segments.

When lap and shoulder safety belts are used properly, they reduce the risk of fatal injury to adult front-seat occupants riding in passenger vehicles by at least 45% and perhaps by as much as 86%.<sup>2,3</sup> In the rear position, lap-shoulder belts used by occupants over the age of 5 reduce the risk of fatality by between 44% and 73% compared to no restraint and are 15% - 25% more effective at preventing fatal injury than lap belts alone.<sup>4</sup> In addition, lap-shoulder belts, when used, reduce the risk of moderate to critical injury to front-seat passenger occupants by 50%, and by 65% for light truck occupants.<sup>5</sup>

Children also benefit enormously from the use of occupant restraints. Child safety seats are 71% effective in reducing fatalities among infants (younger than 1 year old) and 54% effective for toddlers (1 to 4 years old) in passenger cars. For infants and toddlers in light trucks, the effectiveness in reducing fatalities is 58% and 59%, respectively.<sup>6</sup> And for children between 4 and 8, belt-positioning booster seats lower the risk of injury to children in crashes by 45%- 59% compared with the use of vehicle safety belts alone.<sup>7,8</sup>

Among vehicle systems for protecting occupants from serious injury or death in the event of a collision, safety belts and child passenger restraints (including boosters) are the simplest and least expensive currently available.<sup>9</sup> However, safety belts require some maintenance over time and mandate active use by occupants to be at all effective. In many countries where vehicle use rates are rising rapidly, not all vehicles have functioning safety belts and not all occupants use them when available. The United Nations has undertaken to suggest standards that are adoptable by nations seeking to require functioning belts in vehicles.<sup>10</sup>

Once vehicles have safety belts available, people begin to use them, but usage increases quite slowly. In the US and other developed countries, extensive and expensive educational campaigns were undertaken in the 1970s and early '80s aimed at motivating occupants to use the available belts. By 1982 in the UK, belt use by front seat occupants was 40% and in 1984 in the US the belt use rate was only 14%.<sup>11,12</sup> Beginning in 1983 in the UK and 1984 in the US, legislation and enforcement programs increased safety belt use for front seat occupants to 95% in the UK and 84% in the US (as of 2009).<sup>13,14</sup> NHTSA estimates that if seat belt use in the United States rose to 90% belt use, an additional 22,372 serious injuries per year would be prevented.<sup>15</sup>

Finally, there is great evidence that safety belt legislation and enforcement has decreased both the number of fatalities and serious injuries among motor vehicle occupants across the globe.<sup>16, 17, 18, 19</sup> Recent translational research demonstrates that methods to increase belt use that worked in higher income countries are also successful in lower income countries.<sup>20</sup>

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- <sup>4</sup> Morgan, C. Effectiveness of Lap/Shoulder Belts in the Back Outboard Seating Position. National Highway Traffic Safety Administration. DOT HS 808 945. 1999. <http://www.nhtsa.dot.gov/cars/rules/regrev/evaluate/808945.html> Accessed 1/20/2010.
- <sup>5</sup> National Highway Transportation Safety Administration (NHTSA). Traffic Safety Facts. 2008 Data, Occupant Protection. DOT HS 811 160. <http://www-nrd.nhtsa.dot.gov/Pubs/811160.PDF> Accessed 4/19/2010.
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- <sup>9</sup> National Highway Traffic Safety Administration. Safety belts save lives. Available at: <http://www.nhtsa.dot.gov/people/injury/enforce/PrimaryEnforcement/pages/Section1.htm>. Accessed August 14, 2009.
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- <sup>11</sup> Broughton J. *Restraint use by car occupants, 1982–1989*. Research Report 289. Crowthorne, United Kingdom, TRL Ltd, 1990.
- <sup>12</sup> US Department of Transportation, National Highway Traffic Safety Administration. DOT HS 809 980 <http://www.nhtsa.dot.gov/people/injury/airbags/Countermeasures/pages/Chapt2/2SafetyBeltUse.htm> Accessed 1/20/2010
- <sup>13</sup> Seatbelt wearing rates: 2009 - Survey results for England and Scotland, Department of Transport, 4 February 2010. <http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/seatbeltmobile> Accessed 4/19/10.
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