

Newer, less aggressive air bags protect adults and pose less risk to children

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Front air bags reduce injury and death for most drivers and front-seat passengers in vehicle crashes, yet first-generation air bags, installed in motor vehicles until 1998, deploy with such force that they put children and small adults at significant risk of death.

Second-generation air bags, developed to lessen this risk, include advanced air bags, which may have such features as activation at different thresholds depending on crash severity or on the occupant's weight, position or use of seat belts, and depowered air bags, which inflate 20--35 percent less rapidly than first-generation air bags. There have been concerns, however, that large, unrestrained occupants propelled forward at high force might not be as well-protected.

The newer air bags are as protective as first-generation air bags, while reducing the risk to children and small adults, according to new research by investigators at the Harborview Injury Prevention & Research Center (HIPRC). "Association of First- and Second-Generation Air Bags with Front Occupant Death in Car Crashes: A Matched Cohort Study" is published in the July 15, 2006 issue of the American Journal of Epidemiology.

The researchers studied data from the National Highway Traffic Safety Administration's Fatality Analysis Reporting System, which collects information on all crashes on public roads in the U.S. that result in a fatality.

A total of 128,208 occupants of 53,249 cars were studied. Subjects were occupants of passenger cars of model years 1987--2003 that crashed during the period 1990--2002. Cars had to have two, three, or four occupants (including a driver), at least one of whom died in the left front (driver's), right front, left rear, or right rear seats.

The researchers estimated the risks for death for each type of air bag generation among driver and passenger subgroups defined by seat position, gender, use of safety restraints, and age, as well as crash characteristics (frontal or non-frontal direction of impact).

First-generation air bags were associated with a 10 percent decrease in the risk of death for an average front-seat occupant; second-generation air bags were associated with an 11 percent decrease. However, while first-generation air bags were associated with a statistically significant increase in the risk of death for children under age 6 years, second-generation air bags were not. There was no important difference between the risk for death with a second- and first-generation air bag for any subgroup, including unrestrained adult males, a group some researchers have suggested might receive less protection with a depowered air bag.

"Occupants in the path of a deploying air bag may receive its full force and be injured by it," says Dr. Carin Olson, University of Washington (UW) associate professor of medicine and adjunct associate professor of epidemiology, and principal investigator for the study. "This is especially true for women and children, who may sit relatively close to the dashboard. We found that second-generation air bags, designed to hit occupants in their path with less force than first-generation air bags, were not associated with a significantly increased risk for death for any type of occupant as compared with the risk for death with first-generation air bags. Consumers, policymakers, and manufacturers can be assured that the increased safety of second-generation air bags for children was not offset by less protection for older occupants."

In addition to Olson, the investigators are Dr. Peter Cummings, a UW professor of epidemiology; and Dr. Frederick Rivara, a UW professor of pediatrics and adjunct professor of epidemiology.

Source: University of Washington

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