

# Widespread airbag use could result in dramatic cost savings for US trauma centers

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According to research published in the May issue of the Journal of the American College of Surgeons, the new generation of airbags not only helps protect motor vehicle collision (MVC) victims from injury and death, but also are associated with dramatic cost saving to trauma centers. The study shows that the deployment of airbags in MVCs, particularly in conjunction with the use of a seatbelt, significantly reduce injuries to the brain, face, spine and chest; as well as lower in-hospital mortality rates, injury severity and hospital-acquired infections for MVC victims.

The study suggests that the optimal use of airbags could potentially reduce the use of resources at trauma centers, thus lowering costs. According to the researchers, if all unrestrained MVC victims evaluated in the study had used both an airbag and a seatbelt, the estimated cost savings in terms of infection-related deaths and saved hospital days would be more than \$60 million over a period of 11 years.

Injury is the leading cause of death among persons age 45 years and younger, and motor vehicle collisions are the most common cause of injury. The original airbag, which was widely available in the 1980s, was associated with injury and death, particularly in young children and drivers of small stature. Depowered, or second-generation airbags, were mandated 1998 in response to evidence that the original airbags were associated with increased risk of injury due to deployment at a very high velocity. This is the first study to evaluate the potential impact of the use of airbags on a Level I trauma center.

“Using both a seatbelt and an airbag can substantially reduce the severity of injury for motor vehicle crash victims,” said Regan F. Williams, MD, resident physician in the Department of Surgery, University of Tennessee Health Science Center, Memphis. “For hospitals, the use of an airbag can mean tremendous cost savings due to reduced length of hospital stay and fewer hospital-acquired infections,” he added.

The study evaluated 14,390 MVC victims admitted to a Level 1 trauma center. Patients were identified as unrestrained (n=7,881); airbag only (n=692); seatbelt only (n=4,909); or airbag and seatbelt (n=908).

In comparison with unrestrained MVC victims, victims who used both seatbelts and airbags were less likely to sustain severe injuries to the brain, face, spine, and chest. Patients with only airbag deployment were less likely to have abdominal injuries, although airbag-only patients were more likely to sustain injuries to the extremities, an association that was also seen when airbags were used in conjunction with seatbelts.

Airbag-only patients had a decreased prevalence of ventilator-associated pneumonia (5.2 percent,  $p = 0.0023$ ) and bacteremia (5.8 percent,  $p=0.0045$ ) compared to unrestrained patients (8.3 percent and 5.8 percent, respectively,  $p = 0.001$ ). The largest reductions in these infections were seen when airbags were used in conjunction with seatbelts (2.9 percent for ventilator-associated pneumonia and 2.3 for bacteremia,  $p$

Most importantly, in-hospital mortality was considerably higher in unrestrained patients (6.8 percent), compared with 4.6 percent in the airbag-only population, 3.4 percent in the seatbelt-alone category and 3.8 percent in the airbag and seatbelt population. Airbags were also associated with fewer days in the intensive care unit (2.8 days vs. 3.7 days for unrestrained patients,  $p < 0.05$ ) and fewer total hospital days (7.1 days vs. 8.6 days for unrestrained patients,  $p$

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