

## Airbags blow ill as well as good

A new study reveals that automobile airbags, which have long been shown to save lives and reduce injuries in collisions, may also be the cause of some injuries—in particular, leg injuries.

A team of investigators—including Kenneth Koval, M.D., a professor of orthopaedics and the director of DHMC's orthopaedic trauma service, and Justin Cummins, M.D., a fourth-year resident in orthopaedics—spent two years reviewing thousands of motor vehicle collision (MVC) records. They used the National Trauma Data Bank, a database maintained by the American College of Surgeons.

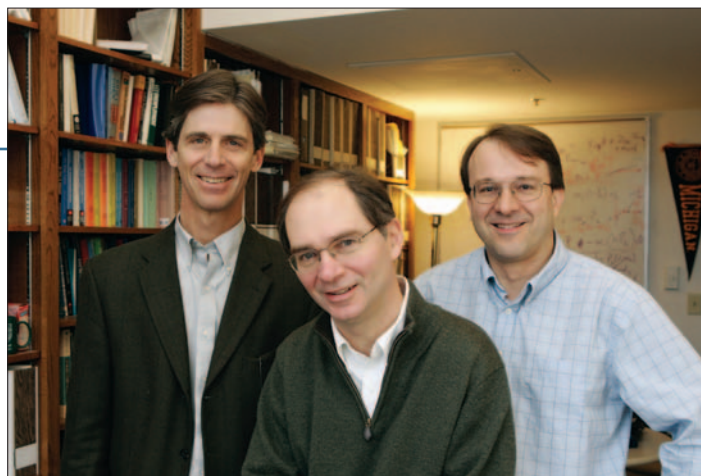
The researchers analyzed approximately 35,000 MVC records from 1988 to 2004, excluding those with only minor injuries and those with insufficient documentation. They divided the collisions into four groups: those in which a seatbelt was used and the airbag deployed; those in which a seatbelt was used but the airbag did not deploy; those in which no seatbelt was used but the airbag deployed; and those in which neither safety device was used. Then the team reviewed eight different body areas of the crash victims within each group: head, chest, abdomen, spine, the two upper extremities (arms and hands), and the two lower extremities (legs and feet).

**Deploy:** “Seatbelts provided protection for all eight areas, so compared to people who used no restraints, seatbelts provided protection across the board,” Cummins explains. When the researchers reviewed the injuries sustained by crash victims whose airbags had also deployed, they discovered that protection for the head, chest, abdomen, and spine increased. However, the seatbelt-airbag combination provided no extra protection against arm injuries and actually increased the risk for leg injuries by about 35%. “Airbags certainly provide protection in some areas,” Cummins observes, “but there’s a tradeoff—you increase your risk in other areas.” A factor in the finding, he cautions, may be that airbags tend to deploy in more serious collisions.

The study also showed that the seatbelt-airbag combination offers the most safety; the death rate for that group was the lowest—3.3%. The seatbelt-only group had a death rate of 3.6%, while the death rate for the airbag-only group (6.0%) was only slightly less than that for the no-device group (6.2%).

The study, which has been submitted for publication to the *Journal of Bone and Joint Surgery*, the leading orthopaedics journal, is sure to raise some questions. Cummins hopes it may also lead to improvements in airbags. “We need to rethink the design of airbags,” he says. “Instead of transferring the blow from your head to your lower extremities, the addition of knee bolster airbags, or some other design, could help provide protection all the way around.”

Cummins's conclusion is based not only on his research, but also on experience: he himself was involved in a car crash in which an airbag deployed. Happily, he was unhurt. But, he says, “the worst part of the crash, actually, was the airbag deploying.” ANN PATTERSON



JOSEPH MEHLING

This trio of researchers—from the left, physician Fisher and health-care economists Skinner and Staiger—found wide variations in the cost of post-heart-attack care.

## Costly care isn't better care

It's worth it” has been the prevailing assumption about the rising costs of treating acute myocardial infarctions (AMIs)—heart attacks. For every 100 elderly heart attack patients, 10 more survived in 2002 than in 1986, thanks to various technological and treatment advances. And every year of life saved cost less than \$25,000, explained three DMS researchers in a recent issue of *Health Affairs*. “But”—and this is a big “but”—“underlying these numbers is tremendous heterogeneity across time and space,” they wrote.

By analyzing Medicare claims data from the nation's 306 hospital referral regions, they found that areas that spent the most on AMI treatment had the lowest gains in survival between 1986 and 2002. Furthermore, improvement in heart attack survival rates stagnated after 1996, though the cost of treatment has continued to grow. The researchers also found that survival gains were lowest in regions where there were more physicians treating each AMI patient.

This message—that spending more doesn't necessarily improve care—has been reinforced time and again by researchers at DMS's Center for the Evaluative Clinical Sciences. CECS physician-researcher Elliot Fisher, M.D., a coauthor of the AMI study, has shown in previous studies that Medicare patients in high-spending regions have neither better outcomes nor more access or satisfaction. But it was unclear until now if this held true in heart attack care, where there have been numerous (costly) technological innovations.

**Measures:** “On average, everyone is better off,” wrote Fisher and his coauthors—Dartmouth health-care economists Jonathan Skinner and Douglas Staiger—“but the regional gains are not correlated with regional spending increases.” The team was careful to note that their study did not evaluate the effectiveness or benefit of high-tech, high-cost treatments. Rather, their findings point to the need to develop “measures of quality and efficiency that can encourage [providers] to adopt low-cost, highly effective care, while discouraging incremental spending with no apparent benefits.”

“Put more simply,” they noted, “the benefits of health spending depend on how one spends the money.” JENNIFER DURGIN