Injury prevention is best achieved through a better understanding of how and why injuries occur. Not long ago, injuries were viewed as accidents or random acts of circumstance, outside the scope of human intervention. Early injury research changed that flawed, fatalistic view, exposing injury as a disease influenced by risk factors like any other threat to human health.

As a biosocial disease, injuries' burden is significant. In the United States and Wisconsin, injury is the leading cause of all deaths for ages 1 to 34 years old.

Successful injury control is best cultivated from the knowledge of physicians who treat injuries. Employing this approach, the Medical College of Wisconsin has stepped forward as a national leader in injury control and prevention research.

The centerpieces of our efforts are two federally designated and funded centers led by Medical College faculty with decades of expertise in injury control. They are the Injury Research Center (IRC) at the Medical College of Wisconsin and the Froedtert & The Medical College of Wisconsin Crash Injury Research and Engineering Network (CIREN) Center.

Funded by the US Centers for Disease Control and Prevention, the IRC takes a comprehensive, multidisciplinary approach to injury control and prevention. Under the leadership of director Stephen W. Hargarten, MD, MPH, professor and chair of Emergency Medicine, and co-director Peter M. Layde, MD, MSc, professor of Family and Community Medicine, IRC faculty study injuries and their outcomes to improve patient care and to find ways to prevent or lessen the severity of injuries.

The IRC's larger research projects include the following:

- Investigators are assessing the functional outcomes and health status of children and adults after moderate to severe trauma. This study may help physicians improve focused and timely rehabilitation, as well as more accurately project when patients with specific types of injuries will begin to function at a capacity they find acceptable.

- Investigators are seeking to identify the risk factors for medical injury in hospitalized patients.

- Researchers are developing computer models that will predict initial survivability and identify damaged areas of the brain in penetrating traumatic brain injury.

- Faculty and research scientists are examining trends and epidemiological patterns of homicides and suicides as well as nonfatal intentional injuries in Wisconsin using a comprehensive statewide Violent Injury Reporting System from the College's Firearm Injury Center.

Additionally, the IRC supports the development of injury researchers at the Medical College and elsewhere by providing seed funding for their short-term projects. IRC faculty members educate medical students and residents in injury and injury research, and advocate for public policies that help prevent or curb injuries.

In 1998, the Medical College established the Wisconsin Injury Research Center to enable faculty conducting injury research to share expertise and coordinate their efforts. In 2001, the center, now called the Injury Research Center, fulfilled a primary goal by becoming the 11th injury center funded by the Centers for Disease Control and Prevention.

Concentrating on the Great Lakes Region (Wisconsin, Minnesota, Illinois, Indiana, Michigan, and Ohio), the IRC draws from strengths in clinical, educational, and research opportunities in the acute care of injuries to inform and influence the other phases of injury control: prevention and rehabilitation. The IRC is affiliated with the Froedtert Hospital Trauma Center,
the only adult Level 1 Trauma Center in eastern Wisconsin, and
Children's Hospital of Wisconsin, the only pediatric Level 1 Trauma
Center in Wisconsin. Together, the
two institutions and their Medical
College faculty leadership are the
largest providers of acute care for
injuries in the state.

The Froedtert and The Medical
College of Wisconsin's CIREN
Center also draws on the expertise of physicians adept at treating
trauma to develop methods to re-
duce deaths and injuries from vehic-
ular crashes. Neurosurgery, trauma
surgery, and emergency medicine
faculty collaborate with engineers,
other clinicians, and research sci-
entists skilled in biomechanics to
produce significant research using
truly unique resources.

Ours is one of only 10 CIREN
centers in the United States design-
nated by the National Highway
Traffic Safety Administration
(NHTSA). The Center features a
full-scale crash laboratory for test-
ing vehicle crashworthiness. It is
one of only a handful of crash labs
in the world, and the only one in
an academic medical setting in the
United States. The crash lab, test-
ing auto safety, is directed by Frank
Pintar, PhD, professor of neurosurg-
ery. Narayan Yoganandan, PhD,
professor of neurosurgery, is chair-
man of Biomedical Engineering.

Led by co-directors Thomas
Gennarelli, MD, and Dennis
Mainman, MD, PhD, both profes-
sors of neurosurgery, the CIREN
Center is specially focused on brain
and spinal cord injuries resulting
from vehicular crashes. College re-
searchers have found that in direct
side impact collisions, the risk of
head injuries increases four-fold,
with a mortality rate of one third.
Their studies show, however, that
side curtain airbags, combined with
safety belts, help reduce head inju-
ries in side collisions. These find-
ings recently led the NHTSA to re-
vise its vehicle safety ratings, which
are based on the chances of incur-
ing chest injuries. The ratings now
indicate when there is a higher risk
of head injuries.

The CIREN Center also collects
data from crash reports and on-site
analyses of crashes, providing a
comprehensive database of medici-
 nal information on real crash inju-
ries. Knowledge contributed by the
Center is used by the auto industry,
government agencies, and health
professionals to prevent injuries
and improve outcomes.

Crash injury research is of signif-
icant importance here in Wisconsin,
and new insight could not be more
timely. With 838 reported traffic fa-
talities, 2003 was the deadliest year
on Wisconsin roads in more than
two decades.

No matter how they occur, most
injuries can be reduced in severity
or prevented. Progress in control-
ling this biosocial disease is made
where leadership in injury research
and education intersects with phy-
sicians and hospitals that treat the
injured.

American Heart
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Fighting Heart Disease and Stroke

It's the gift of
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A bequest to the American Heart Association
says something special about the giver. It's an
expression of hope, a gift of health given
to generations to come. It's an unselfish act that
shows you care about others and want to leave
the world better than you found it. Your gift will be used
to fund research and educational programs to fight heart attack, stroke, high
blood pressure and other heart and blood vessel diseases. To find new ways to stop the sadness,
suffering and death — and give others the freedom of good health. To learn more about how you can leave a
legacy for the future, call 1-800-AHA-USA1. Do it today.

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