

The Southern Consortium for Injury Biomechanics at the UAB ICRC

WE'VE COME A LONG WAY where automotive safety is concerned. Seat belts, air bags, child safety seats, and motorcycle/bicycle helmets—when used properly—can dramatically reduce the likelihood of death and serious injury.

On the other hand, a great deal of work is still needed to more fully understand the mechanics of vehicle injuries, particularly in children. And the technology has its shortcomings as well. Restraint device standards are established for average adult males, not for

women, smaller adult males, or children. And while helmets can be somewhat effective in preventing traumatic brain injury in sports and cycling, there's been no significant improvement in helmet design for some three decades.

These problems, and more, make up the challenges facing the Southern Consortium for Injury Biomechanics, headquartered at the UAB ICRC. The consortium is working to enhance injury prevention and biomechanics research and training at UAB, Duke University, the University of Virginia, and other key institutions throughout the South. This landmark collaborative effort has been made possible with the help of Senator Richard Shelby and funds earmarked by the United States Congress through the United States Department of Transportation.

The consortium's unique approach is enabling scientists, engineers, and physicians to combine their expertise across traditional professional disciplines to better understand the biomechanical properties and behavior of a child's head and neck under conditions that lead to injury. In addition, the consortium is working to address and solve the complex medical problems typically encountered in emergency and acute care of children with spinal cord injury or traumatic brain injury.

The consortium is currently supporting two major research projects. The first, "Pediatric Head and Neck Impact Injury," is being led by Dr. Barry Myers and associates at the Duke University Injury and Orthopedic Biomechanics Laboratory. Dr. Jay Meythaler, an assistant

Director

(A Message from the Director)

Since its inception in 1987, the UAB Injury Control Research Center has grown substantially and has made significant contributions to the field of injury control. The UAB ICRC continues to be a forerunner in this vital arena of research.

We are grateful to people such as Dr. Jim Pittman and Dr. Bill Koopman for having had the vision and foresight to provide an environment in which such a center could be established and flourish.

We are excited about the direction our center is taking as we forge working relationships with distinguished scientists from prestigious institutions such as Duke University in The Southern Consortium for Injury Biomechanics at the UAB ICRC.

Furthermore, we are eternally grateful to Randy and Kelly Owen for their enduring support and active roles in the important and life-changing work that is being done here at the center.

I would also like to acknowledge a great, long-time friend, United States Senator Richard Shelby, for his unwavering support of the goals and objectives of the UAB Injury Control Research Center. Senator Shelby is our voice to the nation.

In closing, we are ever mindful that we are only able to do this meaningful work because of the American taxpayer. We are sincerely grateful to you for this privilege.



Russ Fine

Right: United States Senator Richard Shelby continues to support the UAB ICRC.

Below: Members of the Consortium gather at the ICRC; pictured (from left to right) are Dr. Barry Myers, Dr. Jay Meythaler, Dr. Jay Goldman, and Dr. Russ Fine.

Not pictured: Dr. Kurt Denninghoff and Dr. Evangelos Eleftheriou.



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HITTING HOME:

How does public policy affect the rate of injury?

WHAT EFFECTS do state regulations for motor vehicle use have on the incidence of traffic fatalities? And how do those effects vary among drivers in various age groups?

Those are only two of the questions UAB ICRC faculty members Dr. David Grabowski and Dr. Michael Morrisey are trying to answer, examining six classes of state traffic laws in hopes of offering guidance to both policy makers and the research community in interpreting the existing professional literature and determining what areas should receive priority in future studies.



GRABOWSKI



MORRISEY

It's an established fact that drivers less than 25 years of age are substantially overrepresented in motor vehicle crashes. In fact, according to the most recent statistics from the U.S. Department of Transportation, the fatality rate for drivers between the ages of 16 and 20 is approximately triple that of middle-aged drivers.

But safety problems posed by older drivers, the study found, are not only less obvious but also are often different from popular perceptions. The topic is especially significant because the elderly represent the fastest growing segment of the driving population in the United States, both in the number of drivers on the road and in the number of miles driven annually.

According to current estimates, by the year 2024 at least one in four drivers will be over the age of 65. Older drivers rank second in crash rates per vehicle mile driven, while those in the 16 to 24 age group hold first place. Rates in the elderly rise steadily after the age of 70, and due to their more frail physical condition, older drivers are more likely to be killed or seriously injured in a comparable car crash.

Among younger drivers, four main factors were found to be the most significant causes of motor vehicle crashes: inexperience on the road, a tendency toward increased risk-taking, peer pressure, and alcohol-impaired driving.

For older drivers, three categories of

impairments were identified as most significant in fatal crashes: deterioration of vision, cognitive impairment, and psychomotor slowing.

The project is examining six policies that may play a role in reducing the incidence of motor vehicle deaths: graduated licensing for teenage drivers, relicensure for elderly drivers, alcohol taxes, alcohol control measures, speed limits, and seat belt laws.

In the future, ICRC scientists plan to examine the inclusive effects of such things as license renewal tests for the elderly, maximum speed limit laws, graduated driver licensing systems (particularly given their recent enactment and varying forms), and certain DUI policies

such as preliminary breath tests, sobriety checkpoints, anti-plea-bargaining statutes, and changes in tort liability laws on motor vehicle-related fatalities.

Studies also need to address particular methodological issues from existing literature. There is no comprehensive study, for instance, that examines all the policies cited above in a common framework as they affect motor vehicle fatalities. And state-by-state differences in the rate of motor vehicle deaths are influenced by factors such as road conditions that are difficult to observe. Fully specified models, with better study designs, should reduce bias in the evaluation of policies.

Finally, overall, there is a dearth of information about the effects of motor vehicle laws on the elderly. With the huge increase in the U.S. aging population, this area of investigation should be a top priority for the future.

NCIPC Leadership Team visits ICRC

SUE BINDER, M.D., is director of the National Center for Injury Prevention and Control (NCIPC) of the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, where she has been working in that capacity since her appointment in December 2000. Dr. Binder visited the center on November 14, 2001, and was accompanied by Dr. Lynda Doll, assistant director for science, NCIPC; Ms. Louise Galaska, deputy director, NCIPC; and the UAB ICRC's project officer, Mr. Tom Voglesonger.

The afternoon was dedicated to familiarizing the guests with the current research projects at the UAB ICRC and the faces behind the science. The ICRC was pleased to have had the opportunity to meet with Dr. Binder and her staff members and to show them, in person, the nationally recognized, cutting-edge injury control research under way at UAB.

American Burn Association presentation by ICRC Project Coordinator

TOM STROUD, M.P.H., ICRC PROJECT COORDINATOR, has been invited to present and discuss an ICRC-driven research effort, "The Impact of Rehabilitation on Long-Term Functional Outcomes in Burn Patients," at the 34th Annual American Burn Association Meeting. Other ICRC-based workers collaborating with Mr. Stroud include Dr. Pamela V. Valentine, Dr. Alfred A. Bartolucci, Dr. Rajan Grover, and Dr. Philip R. Fine.

The annual American Burn Association meeting will be held in Chicago, Illinois, on April 24-27, 2002, at the Hyatt Regency Chicago. For more information, go to www.ameriburn.org.



Many Thanks to BRUNO'S

ON DECEMBER 6, 2001, the Bruno's Memorial Classic Foundation announced its 2001 tournament charity donations of \$700,238—the largest single donation ever. The monies have been distributed to more than 100 worthy organizations in Alabama, including the UAB Injury Control Research Center. The UAB ICRC was one of two UAB-based centers that received support from the foundation. This year's donation brings the Bruno's Memorial Classic Foundation's 10-year charity total to more than \$5.5 million, a record for any PGA Tour event's first 10 years.

Earlier this year, Sports Illustrated named the Bruno's Memorial Classic the number one stop on the Senior PGA Tour. The faculty and staff of the UAB ICRC are proud to volunteer annually during the tournament.

The 2002 Bruno's Memorial Classic will be held April 30-May 5 at Greystone Golf and Country Club. Please call the tournament office at (205) 967-4745 for sponsorship, volunteer, charity, or general information.



(Left to right) Jim Demme, Chairman & CEO, Bruno's Supermarkets, Inc., Gene Hallman, BMC Tournament Director, and Ronald Bruno, BMC Tournament Chairman, with a young representative from United Cerebral Palsy of Greater Birmingham, one of many charities the foundation supports.

WHO YOU SHOULD KNOW:

Kurt Denninghoff, M.D.

ICRC Assistant Director
and Acute Care Core Director
Associate Professor of Emergency Medicine



DR. DENNINGHOFF graduated magna cum laude with a double major in biomedical and electrical engineering from Vanderbilt University, where he also completed his medical training. He joined the UAB School of Medicine faculty in 1993, and in 2000 earned the rank of associate professor of emergency medicine. Dr. Denninghoff is the research director for the Department of Emergency Medicine, a position he has held since 1995. He is a diplomat of the American Board of Emergency Medicine, a founding member of the American Academy of Emergency Medicine, a member of the Society for Academic Emergency Medicine, and a member of the American College of Emergency Physicians.

Dr. Denninghoff is chairman of the Department of Emergency Medicine's Research Advisory Committee and the founder and first faculty advisor for the UAB School of Medicine's Emergency Medicine Society. He also serves as deputy director of the UAB ICRC's companion center, the UAB Comprehensive Youth Violence Center. In addition, Dr. Denninghoff is the principal investigator for the UAB eye oximeter program, a secondary project in the ICRC's Acute Care Core. This is a multiyear effort conducted in collaboration with faculty from the Department of Physics at the University of Alabama in Huntsville.

His previously completed funded research studies examined aspects of retinal venous oxygen saturation, changes during blood loss, and hypoxia. Dr. Denninghoff has renewed this research interest through grant awards from the Office of Naval Research. The initiative allows him to study additional aspects of the eye oximeter for noninvasive monitoring. This effort is developing significant instrument improvements, such as an infrared retinal viewing system, and a next-generation device will be constructed and tested. Large-scale animal studies are being performed to test the device and determine the efficacy of retinal saturation measurements to diagnose the earliest stages of blood loss in a trauma setting.

HOW WE MEASURE UP: *Extramural Review, February 2002*

IN FEBRUARY 2002, the ICRC will host a team of outside experts invited to Birmingham to conduct a rigorous, extramural review of the center's activities and progress. This is the second review of its kind held here at the ICRC, the first having been conducted in 1997. This review will take place at midpoint of the ICRC's current five-year grant from the NCIPC. Such an exercise provides an impartial quality assessment of the ICRC and its operations, since it is conducted by nationally recognized individuals with content area expertise and no ties to the center or its governance.

Extramural reviewers will not only familiarize themselves with the center on paper through grant applications, work plans, and progress reports for ICRC-funded research projects, but they will also visit the UAB ICRC, meeting with individual principal investigators and center leadership and offering advice and guidance regarding research projects UAB might pursue for the 2004 competitive renewal.

The UAB faculty looks forward to hosting its extramural colleagues and hopes to better the UAB Injury Control Research Center through their contributions and critiques.



SOUTHERN CONSORTIUM
(Continued from front page)

director of the UAB ICRC, and Dr. Jean Peduzzi are leading the second project, "Diffuse Axonal Injury," in collaboration with the Mercedes-Benz CIREN Center and UAB.

The current focus of the consortium is the development, enhancement, and application of tools and techniques of injury biomechanics to the unique environment of vehicular crashes, with specific attention to injuries to children and to the head, neck, and extremities. With continuing funds being made available to the consortium, future research activities include crash dummy development, computer modeling of devastating human injuries, and policy research affecting the automobile industry.

This UAB-based multi-institutional program is unparalleled by any other, for the consortium brings together some of the most accomplished, experienced workers in the field of biomechanics. By working in unison towards the common goal of preventing catastrophic injuries resulting from vehicular crashes, the whole promises to significantly exceed the sum of its parts.

(U p c o m i n g C o n f e r e n c e s)

National Symposium for Research on Aging and Injury
February 21-22, 2002
Web Site: www.nrcai.org

Third National Congress On Childhood Emergencies: "Taking Action, Saving Lives"
April 15-17, 2002
Web Site: www.ems-c.org

Sixth Annual International Child Passenger Safety Technical Conference
April 20-24, 2002
Web Site: www.cipsafe.org/icpstc/2002/

Sixth World Conference on Injury Prevention and Control: "Injuries, Suicide, and Violence: Building Knowledge, Policies, and Practices to Promote a Safer World"
May 12-15, 2002
Web Site: www.trauma2002.com

26th Annual Williamsburg Traumatic Brain Injury Rehabilitation Conference
June 7-9, 2002
E-mail: cmeinfo@vcu.edu

16th Annual California Conference on Childhood Injury Control
September 23-25, 2002
Web Site: www.injurypreventionweb.org



UAB Injury Control Research Center
CHSB 403 • 933 19th Street South
1530 3RD AVE S
BIRMINGHAM AL 35294-2041

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