

AAAM Annual Scientific Conference

October 15-18, 2006 • Chicago

50th

Final Program

Jointly Sponsored by:

MILLER | SCHOOL OF MEDICINE
UNIVERSITY OF MIAMI
and the

**Association for the Advancement
of Automotive Medicine**

PO Box 4176, Barrington, IL 60011
www.aaam.org





General Information

Venue

The Westin Michigan Avenue on the Magnificent Mile
909 North Michigan Avenue, Chicago • Tel: 312-943-7200

Objectives

Participants of this program will —

- Acquire knowledge of the current status of published and active research in multidisciplinary approaches to automotive-related trauma in areas such as epidemiology, biomechanics, treatment and management.
- Strengthen knowledge regarding injuries and injury mechanisms, human tolerance as related to vehicular injury, restraint systems effects, crashworthiness and risk analysis.
- Gain knowledge to more effectively treat and prevent injuries stemming from an automotive environment.

Who Should Attend

This program is intended for emergency physicians and nurses, orthopedic surgeons, trauma surgeons, neurosurgeons, radiologists, physiatrists, urologists, emergency medical personnel, biomechanics and vehicle design engineers, crash investigators, health policy specialists, epidemiologists, internists and other clinicians and allied professionals as well as representatives from the insurance industry.

Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the University of Miami Leonard M. Miller School of Medicine and the Association for the Advancement of Automotive Medicine. The University of Miami Leonard M. Miller School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Credit Designation

The University of Miami Leonard M. Miller School of Medicine designates this educational activity for a maximum of 13 hours AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Approved by the American College of Emergency Physicians for up to 13 hours of ACEP Category I credit.

Disclosure and Conflict of Interest Resolution

All conflicts of interest of any individual(s) in a position to control the content of this CME activity will be identified and resolved prior to this educational activity being provided. Disclosure about provider and faculty relationships, or the lack thereof, will be provided to learners.

Social Program

All social activities will take place at The Westin Michigan Avenue Hotel
Sunday evening, October 15 — Welcome Reception
Tuesday evening, October 17 — AAAM's Recognition Dinner

SPECIAL THANKS to those who helped make this event possible ...

We are honored to recognize this year's contributors —

- Automotive Occupant Restraints Council
- Biodynamic Research Corporation
- Ford Motor Company Fund
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- Toyota
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and the contributors to our \$50 for 50 years campaign —

- | | | |
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Biodynamic Research Corporation



Conference Schedule

Sunday • October 15

6:30 **WELCOME RECEPTION at the Westin Hotel**
*Sponsored by: **BIODYNAMIC RESEARCH CORP**
and **MP HOLCOMB ENGINEERING***

Monday • October 16

8:45 **OPENING REMARKS**
Mark W. Arndt, AAAM President
Jeffrey S. Augenstein, MD, PhD, Course Director/Past President
Brian N. Fildes, PhD, 2006 Scientific Program Chair

The History of Automotive Medicine Moderator: Brian Fildes

9:00 - 9:30 **Engineering Aspect**
Murray Mackay, DSc, Professor Emeritus
Birmingham University, England

9:30 - 10:00 **Medical Aspect**
Thomas A. Gennarelli, MD, Department of Neurosurgery,
Medical College of Wisconsin, Milwaukee, WI

Computer Modeling Moderator: Richard Frampton

10:00 - 10:20 **Brain Strains in Frontal and Side Impacts**
Jiangyue Zhang, PhD, Narayan Yoganandan, PhD, Frank A. Pintar, PhD, Thomas A. Gennarelli, MD, Department of Neurosurgery, Medical College of Wisconsin, VA Medical Center, Milwaukee, WI

10:20 - 10:40 **An Experimental and Computational Study of Blunt Carotid Artery Injury**
F. Scott Gayzik, MS, Stefan M. Duma, PhD, Joel D. Stitzel, PhD, Wake Forest University School of Medicine and Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC; Ola Bolstrom, Autoliv Research, Sweden; Per Ortenwall, Sahlgrenska University Hospital, Sweden

10:40 - 11:00 - **COFFEE BREAK** - and this morning's breakfast
*Sponsored by: **VOLKSWAGEN OF AMERICA***

Epidemiology: Crashes and Injuries Moderator: Jim Fell

11:00 - 11:20 **Factors Related to Fatal Injury in Frontal Crashes Involving European Cars**
Richard J. Frampton, PhD, Marianne Page, Pete Thomas, Vehicle Safety Research Centre, Loughborough, England

11:20 - 11:40 **Comparison of the Delta-V and Occupant Impact Velocity Crash Severity Metrics Using Event Data Recorders**
Douglas J. Gabauer, MS, Hampton C. Gabler, PhD, Center for Injury Biomechanics, Virginia Tech, Blacksburg, VA

11:40 - 12:00 **The Accuracy of WinSmash Delta-V Estimates: The Influence of Vehicle Type, Stiffness, and Impact Mode**
Hampton C. Gabler, PhD, Center for Injury Biomechanics, Virginia Tech, Blacksburg, VA; Peter Niehoff, Rowan University, Department of Mechanical Engineering, Glassboro, NJ

12:00 - 12:20 **Crash Culpability and the Role of Driver Blood Alcohol Levels**
Joseph A. Kufera, MA, Carl A. Soderstrom, MD, Patricia C. Dischinger, PhD, Shiu M. Ho, MS, Angela Shepard, MD, National Study Center for Trauma and EMS, University of Maryland School of Medicine, Baltimore, MD

12:20 - **LUNCH BREAK** -
*Sponsored by: **STATE FARM INSURANCE CO.***

The Future of Automotive Medicine Moderator: Brian Fildes

1:30 - 2:00 **Engineering Aspect**
Richard Kent, PhD, University of Virginia, Center for Applied Biomechanics, Charlottesville, VA

2:00 - 2:30 **Medical Aspect**
Federico Vaca, MD, Clinical Emergency Medicine, University of California, Irvine, CA

2:30 - 2:50 - **COFFEE BREAK** -
*Sponsored by: **TRANSPORTATION SAFETY TECHNOLOGIES, INC.** (Mark Arndt)*

Epidemiology: Frontals and Rollovers Moderator: Debora Marth

2:50 - 3:10 **Abdominal Injury Patterns in Real Frontal Crashes: Influence of Crash Conditions, Occupant Seat and Restraint Systems**
Sophie Lamielle, MS, P Vezin, JP Verriest, Inrets-LBMH; S Cuny, H Guillemot, Ceesar; JY Foret-Bruno, P Petit, Lab PSA Peugeot-Citroen Renault, France

3:10 - 3:30 **Incidence of Thoracic and Lumbar Injuries for Restrainted Occupants in Frontal Collisions**
Janine Pierce, MS, Darrin Richards, Michael Carhart, Christine Raasch, Andrew Ostarello, Duane Steffey, Exponent, Phoenix, AZ

3:30 - 3:50 **Classification of Rollovers According to Crash Severity**
Kennerly Digges, PhD, George Washington University; Ana Eigen, National Highway Traffic Safety Administration, Washington, DC

3:50 - 4:10 **Implications of Vehicle Roll Direction on Occupant Ejection and Injury Risk**
D Claire Gloeckner, PhD, Tara LA Moore, PhD, Duane Steffey, PhD, Hoa Le-Resnick, Exponent, Philadelphia, PA

4:10-4:30 **Effects of Model Year and Vehicle Type on Rollover Crashes and Associated Injuries to Children**
Michael J. Kallan, MS, Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Kristy B. Arbogast, PhD, Dennis R. Durbin, MD, Department of Pediatrics, The Children's Hospital of Philadelphia, PA

4:30 - 5:00 - **INFORMAL REMINISCING** -
Share your AAAM memories with conference delegates.

Tuesday • October 17

8:00 - 9:00 - **MEMBERSHIP BREAKFAST** - Governors Suite, 3rd Fl
For members *and* non-members. The Membership Committee will be available to answer questions about AAAM membership.

Side Impacts

Moderator: **Stephen Arndt**

9:00 - 9:20 **Analysis of Pregnant Occupant Crash Exposure and the Potential Effectiveness of Four-Point Seatbelts in Far Side Crashes**

Stefan M. Duma, PhD, Hampton C. Gabler, PhD, David Moorcroft, , Virginia Tech - Wake Forest, Center for Injury Biomechanics, Blacksburg, VA

9:20 - 9:40 **WorldSID Assessment of Far Side Impact Countermeasures**

Frank A. Pintar, PhD, Narayan Yoganandan, Brian Stemper, Medical College of Wisconsin and VA Medical Center Research, Milwaukee, WI; Ola Bostrom, Autoliv AB, Sweden; Stephen W. Rouhana, Ford Motor Company, Dearborn, MI; Stuart Smith, Laurie Sparke, GM Holden Innovation, Melbourne, Australia; Brian N. Fildes, Monash University, Melbourne; Kennerly Digges, George Washington University, Washington, DC

9:40 - 10:00 **Kid in the Middle: A Discussion of Effectiveness of Center Rear-Seat Restraint Systems**

Jeya Padmanaban, MS, Leila Mortazavi, JP Research, Inc., Mountain View, CA

10:00 - 10:20 **Injury Patterns and Severity Among Hospitalized Motorcyclists: A Comparison of Younger and Older Riders**

Patricia C. Dischinger, PhD, Gabriel E. Ryb, Shiu M. Ho, Elisa R. Braver, The Charles Mc. C Mathias, Jr. National Center for Trauma and EMS, University of Maryland, Baltimore, MD

10:20 - 10:40 - **COFFEE BREAK** - and this morning's breakfast
Sponsored by: TAKATA CORPORATION

AAAM Endowment Grant Scholarships

Moderator: **Don Huelke**

10:40 - 10:50 **Postmortem Computed Tomography as an Adjunct to Autopsy for Analyzing Fatal Motor Vehicle Crash Injuries: Results of a Pilot Study**

Matthew J. Trowbridge, MD, MPH, Mark R. Sochor, MD, Alexis Boscak, MD, Smita Patel, MD, Ronald Maio, DO, University of Michigan Health System, Ann Arbor, MI

10:50 - 11:00 **Pedestrian Kinematic Response to Mid-Sized Vehicle Impact**

Jason R. Kerrigan, ME, JR Crandall, Center for Applied Biomechanics, University of Virginia, Charlottesville, VA; B Deng, JT Wang, W Hahn, General Motors, Warren, MI

11:00 - 11:10 **Crash Injury Tolerance in the Elderly: the Effects of Age-Related Changes in Body Composition**

Jennifer Cannon, MD, Craig Poster, MS, Carla Kohoyda-Ingilis, Stewart C. Wang, MD, PhD, Department of Surgery, University of Michigan, Ann Arbor, MI

11:10 - 11:30 **INVITED KEYNOTE SPEAKER**
Adventures in Highway Safety — Past, Present & Future
Adrian Lund, PhD, Insurance Institute for Highway Safety, Arlington, VA

11:30 - 1:00 - **LUNCH BREAK** -

Sponsored by: JP RESEARCH, INC.

- **VIEWING OF POSTERS and EXHIBITS** -

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AAAM INTERNATIONAL SCHOLARSHIP AWARD POSTERS

“improving traffic safety through science, by increasing participation via traffic safety experts in developing countries”

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Comparison of the KTS, ISS, RTS and NISS in Predicting Survival of Road Crash Patients in the Accident Emergency Wards of Hospitals in Nigeria

Dr. Kehinde Oluwadiya, Ladoke Akintola University of Technology, College of Health Sciences, Osogbo, Nigeria

Working for Road Traffic Injury Prevention and Trauma Care in Nepal

Dr. Gyanenora Sharma, Nat'l Institute for Injury Prevention, Kathmandu, Nepal

Study of Road Crash Reporting System in Malaysia

Dr. Krishnan Rajam, Dept of Primary Care Medicine, University of Malaysia, Kuala Lumpur, Malaysia

1:00 - 2:00 Scientific Poster Panel

Moderator: **Kristy Arbogast**

Revised Injury Severity Score (RISS) Improves Correlation to Trauma Severity Compared to both ISS and NISS

Edward Davis, PhD, US Army Research Laboratory, Aberdeen, MD

Modelling Probability Based on Injury Severity Scores in Logistic Regression Models: The Logit Transformation Should Be Used

Lynne Moore, MSc, Centre Hospitalier Affilie Universitaire de Quebec, Canada

Imputation of Missing Revised Trauma Scores for Motor Vehicle Crash Research

Lynne Moore, MSc, Centre Hospitalier Affilie Universitaire de Quebec, Canada

Observed Frequency of Booster Seat Usage After Legislation

Joseph O'Neil, MD, Dept of Pediatrics, Indiana University, Indianapolis, IN

Observed Frequency of Misuse of Booster Seats

Joseph O'Neil, MD, Dept of Pediatrics, Indiana University, Indianapolis, IN

Lower Anchor and Tether for Children Awareness vs Practice in Indiana

Shayne Merritt, MBA, Indiana University, Automotive Safety Program, Indpls, IN

An Estimation of Side Airbag Effectiveness in Preventing Thoracic Injuries Using French, British and German Crash Data

Yves Page, Laboratoire d'Accidentologie, Peugeot Citroen Renault, France

Association Between Upper Extremity Injuries and Side Airbag Availability

Gerald McGwin, Jr, PhD, University of Alabama at Birmingham

Drinking Characteristics of Drivers Arrested for Driving While Intoxicated

James C. Fell, MS, Pacific Institute for Research and Evaluation, Calverton, MD

Predicting Daytime and Nighttime Drowsy Driving Crashes Based on Crash Characteristic Models

Scott Masten, MA, Highway Safety Research Center, University of North Carolina at Chapel Hill

Smoking is a Marker of Risky Behaviors and Injury History Independent of Substance Abuse in Injured Drivers

Gabriel E. Ryb, MD, MPH, The Charles Mc. C Mathias, Jr. National Study Center for Trauma and EMS, University of Maryland, Baltimore, MD

2:00 - 2:20 - **COFFEE BREAK** -

Sponsored by: HERZFELD & RUBIN, LLP

Trauma and Outcome

Moderator: Elizabeth Raphael

- 2:20 - 2:40 **Quality of Life Outcomes in a Hospitalized Sample of Road Users Involved in Crashes**
Jo Barnes, MMedSci, Pete Thomas, Vehicle Safety Research Centre, Loughborough University, England
- 2:40 - 3:00 **Consensus or Data-Derived Anatomical Severity Scoring?**
Lynne Moore, MSc, Andre Lavoie, PhD, Natalie LeSage, MD, Centre Hospitalier Affilie Universitaire de Quebec, Laval University, Quebec City; Eric Bergeron, MD, Sherbrooke University, Sherbrooke, Canada
- 3:00 - 3:20 **An Approach to the Derivation of the Cost of UK Vehicle Crash Injuries**
Jo Barnes, MMedSci, Andrew Morris, PhD, Ruth Welsh, Dawn Chambers-Smith, Vehicle Safety Research Centre, Loughborough University, England
- 3:20 - 3:40 **Anxiety, Acute- and Post-Traumatic Stress Symptoms following Involvement in Traffic Crashes**
Michael Fitzharris, PhD, Brian Fildes, PhD, Judith Charlton, PhD, Accident Research Centre, Monash University, Melbourne, Australia
- 3:40 - 4:00 **Deriving and Validating a Road Safety Performance Indicator for Vehicle Fleet Passive Safety**
Lucy Rackliff, MSc, Marianne Page, Vehicle Safety Research Centre, Loughborough University, England
- 4:00 - 4:40 - **GENERAL MEMBERSHIP MEETING** -
- 7:00 - **RECOGNITION DINNER** - Cotillion Ballroom, 2nd Floor

Wednesday • October 18

Aging

Moderator: Clay Gabler

- 9:00 - 9:20 **High Risk Characteristics for Motor Vehicle Crashes in Persons with Diabetes by Age**
Thomas J. Songer, PhD, Center for Injury Research and Control, Pittsburgh, PA
- 9:20 - 9:40 **Residual Injuries After Recent Safety Improvements**
Jeffrey S. Augenstein, MD, PhD, Elana Perdeck, Kennerly Digges, George Bahouth, University of Miami, Florida
- 9:40 - 10:00 - **COFFEE BREAK** - and this morning's breakfast
Sponsored by: JOHNSON & BELL, LTD.
- ### Child Restraints
- Moderator: Chris Van Ee
- 10:00 - 10:20 **High Back Booster Seats: In the Field and in the Laboratory**
Julie Brown, BSc, Lynne E. Bilston, PhD, Prince of Wales Medical Research Institute, Sydney, NSW, Australia
- 10:20 - 10:40 **Quantifying the Relationship between Vehicle Interior Geometry and Child Restraint Systems**
Chris P. Sherwood, MS, Y Abdelilah, JR Crandall, Center for Applied Biomechanics, University of Virginia, Charlottesville, VA
- 10:40 - 11:00 **Effect of Tethering Rear-Facing Child Restraint Systems on ATD Responses**
Miriam A. Manary, MSE, Kathy D. Klinich, Nichole L. Ritchie, Matthew P. Reed, Lawrence W. Schneider, University of Michigan Transportation Research Institute, Ann Arbor, MI
- 11:20 - **CLOSING REMARKS** -
Harry L. Smith, PhD, MD - Incoming President

Scientific Program Committee

Jeffrey Augenstein, MD, PhD — *Course Director*
University of Miami Miller School of Medicine • Miami, FL

Brian Fildes, PhD — *Chairman*
Monash University Accident Research Centre • Victoria, Australia

Kristy Arbogast, PhD — *Vice Chair*
Children's Hospital of Philadelphia • Philadelphia, PA

Stephen Arndt, BS
Safety Engineering
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Judith Charlton, PhD
Monash Univ Accident Research Centre
Victoria, Australia

James Fell, MS
Pacific Institute for Research
and Evaluation
Calverton, MD

Richard J. Frampton, PhD
Loughborough University
Leicestershire, United Kingdom

H. Clay Gabler, PhD
Wake Forest Center
for Injury Biomechanics
Blacksburg, VA

Anne E. Hazelton, MD, MSPH
Englewood, CO

Donald F. Huelke, PhD
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The AAAM recognizes with gratitude the financial support given by its **Sustaining Members**, which enables the work of the Association to be extended. Our Sustaining Members help to support the Association through sustaining member dues and contributions. Sustaining Members receive recognition in our Proceedings, Conference Program and our newsletter *INROADS* as well as the choice to exhibit at our annual meeting.

The AAAM invites applications for sustaining membership. Information may be obtained from the *Membership and Credentials Committee, AAAM*.

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October 14-17, 2007

Join the AAAM Down Under!

Melbourne, Australia's second largest city boasts a vibrant and exciting nightlife, a spectacular cityscape, a gastronomic feast and glorious shopping! Don't miss this opportunity to see the other side of the world.



Association for the Advancement of Automotive Medicine
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