Vision tests and driving difficulty in cataract patients

The incidence of cataract is increasing due to the ageing population of Australia. Currently, fitness to drive for older adults with cataract is largely determined by a simple visual acuity test. However, research has shown that this measure may not accurately assess the visual skills necessary for safe driving.

A recent study by Michelle Fraser and Associate Professor Lynn Meuleners examining visual measures associated with self-reported driving difficulty after first eye cataract surgery for older drivers has recently been published in Accident Analysis & Prevention.

A sample of 99 older drivers with cataract was recruited from three hospitals in Perth. They were assessed with four visual tests and a questionnaire before and three months after first eye cataract surgery.

The study found that contrast sensitivity but not visual acuity was associated with change in driving difficulty after first eye surgery. This suggests that using visual acuity alone may firstly not identify all those who are at risk on the road due to visual impairment and secondly, lead to the restriction of older drivers who are not significantly impaired.

As the driving population ages, it is therefore very important for licensing authorities to further investigate the role of contrast sensitivity as a potential screening test for licensing.


From the Director

Welcome to the second edition of the Curtin-Monash Accident Research Centre News.

Our recent seminar on child pedestrian injury delivered by Professor Donna Cross was highly successful and well attended. Our thanks again to Donna for her time and for sharing her expertise.

In collaboration with research partners, C-MARC has recently been successful in receiving funding for two new research projects. An overview of these projects can be found later in this newsletter.

We have had very positive feedback on the first edition of our newsletter and trust that you will continue to find it informative.

Lynn Meuleners
An Enhanced Road Safety Information System for Western Australia

Most road safety data systems currently in existence in Australia and around the world have been developed in an ad hoc system capitalising generally on administrative data systems that have been assembled for other purposes. The elements of the existing systems have often been assembled reactively in response to particular requirements dictated by road safety strategies and policies that have been operational at various points in time. In general, none of the current systems have been developed proactively with a forward vision to the types of data that will be required to facilitate the best possible strategy and policy development and to support the full range of research activities to support these developments. A C-MARC report by Mr Angelo D’Elia and Associate Professor Stuart Newstead outlining the development of a road safety data system for WA to meet the widest possible range of future needs in road safety policy, practice and research.

The project aimed to identify and undertake the fundamental groundwork required prior to the establishment of an online road safety “database access system” that would enable the use of data from multiple sources, quickly answer current road safety questions and provide information on road crashes and injuries, intermediate behaviours, road use, road safety program and other relevant agency inputs. This involved:

- Developing a conceptual framework for defining an ideal, comprehensive and integrated road safety data system to support the Safe System paradigm;
- Determining specific road safety data system requirements in the Western Australian context from the conceptual framework;
- Reviewing existing road safety data systems available in Western Australia including current linkages between these datasets;
- Identifying key requirements for moving from the current Western Australian road safety data system to the ideal system specified including additional data requirements and requirements for additional linkages;
- Developing requirements for a multi-user database access system based on the ideal data system proposed

Key Benefits

The creation of an enhanced road safety information system for Western Australia leading to a multi-user database access system will facilitate all stages of road safety management including problem identification, monitoring of relevant trends and outcomes, selection, formulation and implementation of appropriate countermeasures and countermeasure evaluation. Through these activities, the enhanced road safety information system will facilitate the translation of Safe System principles into practice.

Beyond these general benefits, a comprehensive and integrated road safety data system would deliver numerous specific benefits including:

- The ability to easily monitor and report on key performance targets endorsed by Government as part of Western Australia’s “Towards Zero” Road Safety Strategy 2008-2020.
- Facilitation of a range of new cutting edge research to inform Safe System practice capitalising on the enhanced scope and improved linkage of the available data. The research would more readily be able to address issues in greater detail that cut across the multiple elements of the Safe System.
- Assisting the development of new and highly informed road safety policy through the enhanced evidence base, additional reporting and improved data quality.
- The capacity to answer ad hoc queries by key agencies, researchers, policy makers and members of the public.
- The ability to be used for specific planning and research purposes beyond road safety including infrastructure and transport planning.


For Your Diary

22-25 Oct: R552013: Road Safety and Simulation 2013, Rome
7-8 Nov: Australasian College of Road Safety National Conference 2013, Adelaide
11-13 Nov: 11th Australasian Injury Prevention and Safety Promotion Conference, Perth
A recent C-MARC study of crashes 2005-2009 across Western Australia resulting in death or hospitalisation (i.e., serious injury crashes) confirmed that road users are significantly more likely to be seriously injured when they crash in regional and remote areas compared with city or metropolitan areas. While the metropolitan area carries the bulk of the road injury burden due to the higher number of road users and crashes in that area, serious injury crashes in regional (9.6%) and remote (14%) Western Australia account for a significantly higher proportion of all crashes compared with the metropolitan area (4.9%). When a serious injury crash occurs in regional and remote areas, compared with the metropolitan area, it is 3 to 4.5 times more likely to result in the death of an involved road user.

A number of behavioural and environmental factors were noted to contribute to the increased risk of serious injury crashes in regional and remote Western Australia.

- Single vehicle crashes, defined as vehicles leaving the road and colliding with an object or rolling over, were the predominant crash type in regional and remote WA. Previous research has identified that single vehicle crashes on rural and remote roads account for the majority (87%) of fatalities and commonly occur in high speed zones; on curved and unsealed roads and often have more severe outcomes than multi-vehicle crashes.
- The majority of serious injury crashes in regional (46.5%) and remote (62.1%) areas occurred on roads with a posted maximum speed limit of 110km/hour
- Almost 22% of crashes in remote areas and 8% of crashes in regional areas occurred on unsealed roads, compared to less than 1% in the metropolitan area
- Crashes on curved sections of road occurred twice as often in regional (35.8%) and remote (32.4%) areas compared to the metropolitan (17.6%) area

- Drivers seriously injured in crashes in regional and remote areas are
  - more than three times more likely to be killed than in metropolitan areas
  - more likely to have recorded a higher level of Blood Alcohol Concentration;
  - more likely to be unlicensed and
  - more likely to have not used a seat belt

- Passengers in crashes are
  - more likely to be killed in regional (6.7%) and remote (7.8%) areas than in the metropolitan (2.5%) area
  - three times more likely to have not used a seat belt in remote (33.8%) areas than passengers injured in regional (10.9%) and metropolitan (8.4%) area crashes

- Pedestrians involved in serious injury crashes were more likely to be killed in regional (13.3%) and remote (17.4%) areas compared with the metropolitan area (7.4%), most likely due to the involvement of higher speed zones at the crash site in regional and remote areas.

The investigation utilised police reported data rather than linked data, which limited the ability to confirm the injury outcomes of involved road users. Police data also provided no reliable information on other behavioural factors such as fatigue and speeding and no information on vehicle crash worthiness and post-crash care. Despite these limitations the investigation concluded that a combination of road, environment, speed, and road user behaviours are likely contributing factors to the higher incidence of serious injury crashes in regional and remote WA.

A full copy of the report can be downloaded from

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**Upcoming C-MARC Seminar**

Professor Max Cameron, 23 October 2013

“Relationships linking speed and road trauma and the use of Kloeden et al’s relative risk curves to estimate crashes attributable to low and high level speeding”
C-MARC Team News

C-MARC was pleased to host a visit by Professor Murray Lampard, Independent Chair of the Road Safety Council. Professor Lampard met with staff of C-MARC and was given a demonstration of the driving simulator during his visit.

While visiting Curtin-Monash Accident Research Centre, Professor Lampard also met with Professor Garry Allison, Dean, Research & Graduate Studies of the Faculty of Health Sciences and Professor Bruce Maycock, Head of the School of Public Health.

New Research Projects

Cycling Safety
C-MARC, in collaboration with lead investigator Professor Mark Stevenson from the Monash Accident Research Centre, is about to commence a new research project examining cyclist safety. Over the last decade an increase in serious injury crashes involving cyclists has been observed. This has paralleled the period during which more people are cycling for active transport and recreational purposes. The study will use an innovative, multi-disciplinary approach to develop and test prototype infrastructure countermeasures to improve cycling environments. In-depth investigation of bicycle crashes combined with observation of naturalistic cycling will be used to develop datasets of the experiences of cyclists who have been involved in a crash and those who have not been in a crash in Western Australia and Victoria. The study is funded by an Australian Research Council Linkage Grant.

Cataracts and falls
C-MARC, in collaboration with lead investigator, Dr Lisa Keay from The George Institute for Global Health and co-investigators from the University of Sydney, University of New South Wales, Flinders University and the University of Western Australia, was recently awarded a three year NHMRC grant to examine falls before, between and after surgery for eye cataract in older people. People with cataracts are three times more likely to suffer a fall than those without cataracts. As falls impact a large proportion of older people, especially those with cataracts, it is important that fall prevention is a critical consideration in how cataracts and cataract surgery are managed. The study aims to provide the evidence for prioritisation and timing of cataract surgery and appropriately advise patients of the risk of falls and appropriate physical activity between surgeries.