

# The NSW Young Drivers' Cohort Study

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## Abstract

### *Aims*

Young drivers are over-represented in road traffic injuries. The identification of risk factors for such injuries is required to facilitate the further development of effective interventions. This presentation outlines the development of a proposal to conduct a cohort study to identify risk and protective factors for young driver injuries.

### *Methods*

A multi-disciplinary team of researchers and key organisations in NSW concerned with young driver injuries was identified. The literature on young drivers was reviewed and contacts made with researchers internationally to identify on-going and planned similar research. A draft proposal was prepared and disseminated for comment among the key stakeholders.

### *Results*

A study proposal has been developed. In addition to identifying risk factors for young driver injuries, the study may assist in the evaluation of the recently introduced NSW Graduated Licensing Scheme (GLS). Information about potential risk factors will be obtained from 20,000 young people, at the time they receive their P1 (provisional) licence. This information will then be linked prospectively to data on crash and injury involvement, collected routinely by government agencies.

### *Conclusion*

Findings from the proposed study should facilitate the development of new strategies for the prevention of young driver injuries and may contribute to refinements in the new NSW GLS.

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## Introduction

The burden of injuries on young people and young males in particular is substantial. In 1998, 70% of all deaths among young men and 57% of deaths among young women aged 15-24 years in Australia were due to injuries.<sup>1</sup> The single largest cause of injury-related fatalities, hospital admissions and emergency department presentations among this age group is transport-related incidents.<sup>2</sup> Not surprisingly then, young drivers aged between 17-25 years are statistically over-represented in road crash injuries in Australia.<sup>3</sup> For example, in 1996, while young drivers aged 17-25 years accounted for about 32.3% (n=3,442) of the road fatalities and hospitalisations due to

car crash injuries in NSW, <sup>4</sup> young people in this age group comprised only about 13.5% of the population.<sup>5</sup> Clearly there is a need to reduce this burden.

Technological advances in motor vehicle engineering and road design, and the implementation of various road safety measures, such as random breath testing, have led to an overall decline in the incidence of motor vehicle-related injuries in Australia in the past three decades. However, while there has been a parallel reduction in injuries among young drivers aged 17-25 years, their over-representation has not declined.<sup>2</sup> This suggests that the identification of factors that are specifically associated with an increased risk of motor vehicle injury among young people, must be a priority.

A recent extensive review of the literature examining risk behaviours among young people has shown that a range of factors may contribute to young drivers' increased mortality and morbidity.<sup>6</sup> These risk factors include younger age, male gender, drinking and driving, and night driving. Other studies have shown that driving with peers of the same age increases the risk of fatal crashes among young drivers aged between 16-17 years.<sup>7</sup> While suggestive, limited research evidence is available linking other potential risk factors, such as poor risk perception, participation in risky driving, and inappropriate pre-licence road exposure and training, with increased young driver mortality and morbidity. Consequently, there is a need for research to directly examine and quantify these relationships.

## **Aims**

This presentation outlines the development of a proposal to conduct a cohort study to identify risk and protective factors for young driver injuries.

## **Methods**

A multi-disciplinary team of researchers and policymakers concerned with young driver injuries was identified. The team comprises researchers from three different universities in Australia, including the University of Sydney, the University of New South Wales, and Curtin University in Western Australia. Key road safety organisations in NSW were also contacted and invited to be partners in the project. These included the Roads and Traffic Authority of NSW, and the Motor Accidents Authority of NSW.

The literature on young drivers was reviewed and in particular, a systematic review of the literature on the relationship between one major potential risk factor, namely risky driving behaviour, and car crash injury among young drivers was undertaken.<sup>11</sup> Contacts were also made with researchers internationally to identify on-going and planned research studies aimed at identifying risk factors for young driver injuries.

A draft study proposal was prepared and after consultation with various stakeholders a final proposal was prepared for submission to the RTA for approval to allow the conduct of the study and to the MAA and other organisations for consideration for funding. An outline of the finalised proposal is presented below.

## Results

A longitudinal cohort study has been proposed. In addition to identifying risk factors for young driver injuries, the study may assist in the evaluation of the recently introduced NSW Graduated Licensing Scheme (GLS).

### *Study aims*

The primary aims of the study are:

- To determine the nature and size of any associations between socio-demographic factors (including ethnic and cultural factors) and the risks of motor vehicle crash and injury
- To determine the nature and size of any associations between perceptions of the road and traffic environment as non-hazardous and the risks of motor vehicle crash and injury
- To determine the nature and size of any associations between levels of participation in risky driving behaviours and risk of motor vehicle crash and injury
- To determine the nature and size of any associations between pre-licensing driver experiences and training/education and risks of motor vehicle crash and injury

The secondary aims of the study are:

- To assess the acceptability of and responsiveness of young people to the newly introduced Graduated Licensing Scheme (GLS)
- To identify young people who progress quickly/slowly through the GLS and factors associated with progression
- To determine whether progression through the GLS is associated with risk of motor vehicle crash and injury

### *Study Population and Sample Size*

The study population will comprise young people aged 17 – 24 years who have recently received their provisional (P1) licence at a NSW RTA licensing centre. The RTA licensing statistics show that in 1999 there were 61,000 new provisional licensees aged between 17 and 18 years and an additional 20,000 aged between 19-24 years, a total of about 81,000 newly licensed young people each year.

An estimated 20,000 individuals will need to be recruited into the study, in order to be able to show, with a minimum of two years of follow-up for all study participants, 50% or greater increases in death or serious injury (as defined through the RTA databases) for those individuals who are exposed to the risk factors of interest e.g. high levels of road risk taking behaviour. This figure has been calculated, based on a study power of 80%, an alpha level of 5%, and a predicted ratio of 60:1 for non-injured to injured individuals (based on RTA licensing and injury data from previous years). The proposed sample size also takes into consideration the expected lower incidence of injuries among recruited individuals compared with the total eligible population, given that respondents are likely to be a lower risk group.

With this size study population it will be possible to examine risks for exposures that have a frequency of 10% or greater in the non-injured population. This level of exposure among the non-injured population is consistent with preliminary findings from the Western Australian Young Drivers' Cohort Study, which suggest that about 15% of non-injured young people could be classified as risk takers, based on a

measure of sensation-seeking. The estimated sample size of 20,000 should be sufficiently large to enable an examination of risk factors, stratified by age and gender.

#### *Recruitment and baseline (exposure) data collection*

Over a period of one year (2001-2002), all new P1 licensees in NSW, aged 17-24 years, will be identified monthly from the RTA licensing database, by staff of the Licensing Policy branch of the RTA. Contact names and addresses will be obtained and forwarded to an independent mailing agency, who will then send a package of materials to these individuals.

The package of materials sent to individuals will include a covering letter from the RTA inviting them to read the accompanying material. The latter will include a letter from the study investigators inviting their participation in the study, information about the study, a consent form, a standardised self-administered questionnaire and a stamped, pre-addressed envelope for return of the consent form and the questionnaire to the Institute for International Health. Identifier information from those individuals returning completed consent forms and questionnaires within three weeks of the mailout, will be provided to the RTA. This will enable RTA staff to then identify individuals who have not responded to the initial mailing. Contact names and addresses for these individuals will again be forwarded to the independent mailing agency and a second package **of materials will be sent**. To encourage participation, all individuals who return completed questionnaires will be entered into a prize draw. In order to obtain some information about non-respondents, individuals who choose not to complete the detailed questionnaire will be asked, at the time of the second mailout, to complete a one-page questionnaire. An incentive will also be provided to these individuals.

Assuming a conservative response rate of 30%, it should be feasible to recruit the required number of study participants (21,000 individuals) within one year.

The baseline questionnaires will be designed to collect basic socio-demographic data, information on road risk perceptions, risky driving behaviour, data on driver and road exposure and data on driver training/education. Where feasible, standardised, previously validated questions will be used. Additionally, information will be sought on participants' experience with and reaction to the GLS. It is anticipated that the questionnaire would be able to be completed within 15-20 minutes.

#### *One Year Resurvey*

At 18 months following the completion of the initial questionnaire, 10% (2,000) of the study participants will be followed-up by mail and asked to complete a resurvey questionnaire. The resurvey questionnaire will be almost identical to the original questionnaire. The primary purpose of the resurvey is to be able to identify exposure measurement errors and/or changes in exposure measures over time, that will be used to make corrections to the original exposures, to provide more accurate exposure measures, for use in the linkage analyses. Additional information will be sought in the questionnaires about involvement in motor vehicle crashes and injuries, since recruitment to the study, to enable assessments to be made about the accuracy of the routinely collected data on crash and injury involvement.

#### *Follow-up Outcome Data Collection*

Information on traffic violations, involvement in motor vehicle crash incident, morbidities and mortalities, will be obtained from databases maintained by the police, RTA, and the State Coroners. Personal identifier information would be used to link exposure data to the outcome data. The initial linkage would be undertaken at two years after the commencement of the study.

#### *Data Analyses*

Relationships between the exposures of interest and the outcome measures will be analysed using standard methods for analysis of cohort studies.

#### **Conclusion**

The results of the proposed study should assist in elucidating causal relationships between a range of potential risk factors and the incidence of crash injuries among young drivers. These findings should facilitate the development of new strategies for the prevention of young driver injuries and may contribute to refinements in the new NSW GLS.

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