

Motorcycle Crash Casualties and their In-hospital Management – observations from St Vincent’s Hospital, Sydney.

By Faux, SG, FAFRM (RACP) FFPMANZCA Director of Rehabilitation and Pain Medicine, St Vincent’s Hospital Sydney, Donaldson, L, University of New South Wales, and Brook, KJ, FAFRM (RACP) Staff Specialist in Rehabilitation Medicine St Vincent’s Hospital Sydney.

Introduction

Recent studies conducted at St Vincent’s Hospital, Sydney, have identified a number of shortcomings in the delivery of in hospital care and follow up, particularly for motorcyclists.

A retrospective study (Fig. 1) examined the pattern of fractures and hospital service utilization by 187 road crash casualties with fractures, over an 18 month period in 2005/06. This study found that motorcyclists, who represented 23% of the cohort, tended to leave hospital earlier, cost less and receive fewer services than other road users. Their pattern of fractures show frequent chest and upper limb fractures as well the expected high frequency of lower limb fractures.

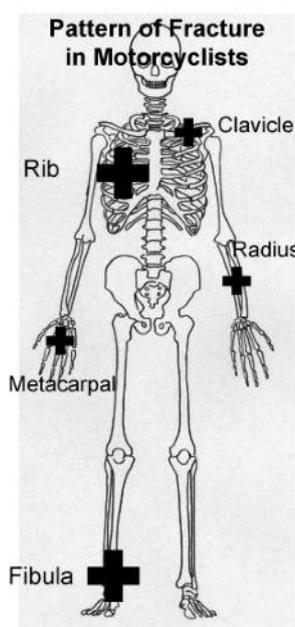


Fig. 1

For motorcyclists admitted with injuries the average length of stay was 5.7 days (SD=9.2 CI = 2.9 – 17.0), which was significantly shorter than car drivers (mean 15.7 days SD = 23.4 p=0.006). The mean cost of their admission was the lowest of all road users at \$6,914 (SD= \$6389) while the average cost of admission was \$13,336 (SD= \$27066)¹. Motorcyclists admission costs were significantly lower than those of drivers (p = 0.01 CI = \$5,556- \$40,112). In addition, there was a significant difference in the time before social workers had their first consultation with motorcyclists compared to drivers or pedestrians (p = 0.043 and p = 0.025).

A second study, the Motor Accident Acute Rehabilitation Response Study (MAARRS), was a two year, prospective cohort controlled trial of early rehabilitation interventions compared to usual care protocols for 80 road crash casualties who had sustained a fracture (2). The intervention group had a consultation with a rehabilitation physician, the control group were simply followed up and a variety of physical, psychological, vocational and quality of life outcomes were measured. This study found that motorcyclists, from both the intervention and control groups, had faster return to work rates than other road users despite having higher pain levels and an equal level of

injury. They were also less likely to accept offers of additional medical services.

As a result of these findings, and a philanthropic grant from George and Charis Schwartz in consultation with the Motorcycle Council of NSW, the Motorcycle Accident Rehabilitation Initiative (MARI) project was devised. The aim of this project was to offer social work follow-up to all motorcyclist presenting to the St Vincent’s Hospital, following a road crash. Patients were identified from the Emergency Department database and contacted either on the ward (if admitted) or by phone by a rehabilitation social worker. The social worker would explain the intervention program and complete an assessment including a screening questionnaire made up of elements of psychological screens, functional screens and pain questionnaires. Further treatment or assistance services were offered on the basis of the assessment or if requested by the patient.

Patient who were not able to be contacted after 3 phone attempts were sent a letter. Over 16 months from April 2007 until August 2009, 141 motorcyclists presented to the Emergency Department following an accident and 21 (15%) were admitted to the hospital. The majority of those presenting were male (85.4%) with an average age of 32.16 years.

Only 56 motorcyclists (40%) were successfully contacted by phone and went through a screening process with the social worker. Almost a quarter (23%, n= 13) were offered treatment. Treatments offered included consultations with social workers (n=7, 54%) doctors (n= 4, 31%) and psychologists 9 n=2, 15%). Overall 60% of motorcyclists presenting to the Emergency Department did not respond to repeated phone calls or a letter. Patients who were admitted were seen by social workers and not followed up by phone or letter as their needs were attended to by ward social worker. Ward social workers were contacted by the MARI social worker and were encouraged to see their patients earlier than planned. (3)

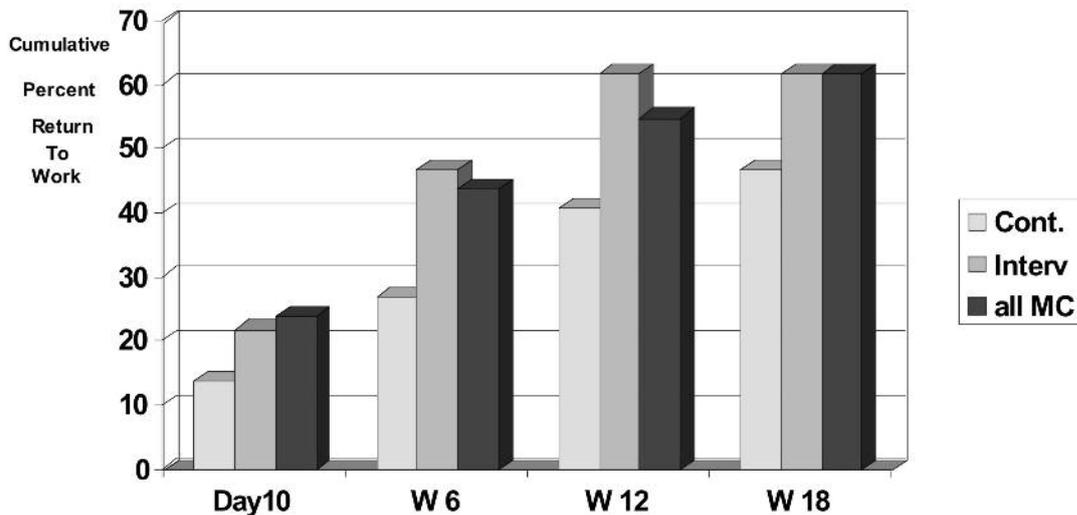
Discussion

The Haddon matrix conceptual approach (4) identifies Emergency Response and Rehabilitation as a “Post Crash/Physical Environmental” contribution to overall road safety. As such much of the work at St Vincent’s has focused on the Emergency and Rehabilitation response to road crash injury in Sydney’s CBD.

The orthopaedic injuries sustained by motorcyclists in Sydney’s

¹. All calculations were based on the NSW Department of Health pre-calculated per day hospital bed costs and do not include medical consultations, surgical prostheses, allied health interventions etc.

Graph One – Return to work rates of intervention and controls compared to all motorcyclists



CBD according to the presented studies do not result in lengthy hospital stays. This may be explained on the basis of less severe injuries and the younger age of riders (30-40) compared to car occupants (average age above 50). Indeed according to the quality assurance data of the MARI project only 15% of motorcyclists are admitted, suggesting that most accidents in the CBD result in minor injury. Minor injuries can be managed in the community (without being admitted to hospital) and do not prevent the patients from attending to their own activities of daily living such as walking, eating, dressing and toileting/grooming. The Abbreviated Injury Scale is used in the Emergency Department to scale injuries from 1 (minor)- 6 (maximum usually not compatible with life). (5) Simple fractures of the arm or leg can be managed with plaster and crutches and do not always need admission to hospital.

In quality assurance data from the phone follow-up of all motorcyclists injured and assessed at St Vincent's (MARI project (3)) fewer than 10% of those contacted by phone or letter requested or took up offers of assistance. A suggested reason for this phenomenon may be either that most motorcyclists had few medical or social needs following such minor accidents or that other reasons (such as convenience, high levels of self reliance, new transport difficulties etc) prevented them from taking up offers of assistance.

One might also speculate that motorcyclists may not be easily able to predict the impacts of health related problems until they arise at a later time, particularly the psychological and social sequelae of motor vehicle accidents as indicated by Amertunga

et al (6) and Read et al (7). One might speculate that motorcycle riders tend to be more stoic as a group and be more motivated to return to work. Finally, one might suggest that as the larger part of riders are male that existing barriers preventing or delaying men from accessing health services may also be operating in this group. (8)

It is also of interest that social workers took longer to see admitted motorcyclists following fractures. Donaldson et al (1) suggests that 47% of patients were discharged after 3 days and that social workers were not informed early enough that patients needed to be seen, as the average delay from admission to first consultation with a social worker was 2.7 days. One might also speculate that delays were contributed to by the peculiarities of the allied health referral process. In general, nurses identify patients who may need to see a social worker and it may be that nurses take longer to identify the social needs of motorcyclists. Social workers themselves may put greater priority on those patients with immediate emotional or psychological distress as opposed to administrative needs like insurance, repairs and work, although most acknowledge that assistance in both spheres are core social work roles. More disturbingly, there is no firm or consistent policy or protocol in any major teaching hospital in the South Eastern and Illawara Area Health Service as to which member of staff can assist a patient or their family with their insurance matters or indeed whether they should be helped at all. It is perplexing, that while health professionals have a moral obligation to protect patient's confidentiality, privacy issues are often cited by allied

health or nursing staff as a barrier to assistance in these matters (9). This may create an environment of avoidance with respect to medical professionals approaching motorcycle accident victims to assist them with their administrative needs.

It seems, that characteristics of the public hospital response to motorcycle accident victims, may leave many unassisted as they attempt to return to work, restore finances and their transportation. In the MAARRS study while motorcyclists with fractures did better than expected there were still 40% who had not returned to work by 5 months post accident. There is little evidence to identify who are likely to be successful and who may need further assistance. It may be beneficial to develop screening tools which may assist in the prediction of those likely to have difficulties returning to work as well as those likely to suffer persistent health related problems, so that more proactive programs like the MARI project can be offered to a targeted population of motor cycle accident victims..

Conclusion

Motorcycle accidents in the Central Business District present to St Vincent's Hospital, Sydney at a rate of 1-2 per week and result in mostly minor injuries with about 15% of cases serious enough to be admitted to hospital. There are significant shortcomings in the hospital and rehabilitation management of injured motorcyclists with less than half seeing social workers and an ambiguity about which health professionals should offer to assist patients with administrative issues to do with insurance. Improvements in the hospital and rehabilitation management of

injured motorcyclists in the CBD lie in the introduction of early proactive rehabilitation and the development of screening tools to predict late onset social and health related problems.

References

1. Donaldson L Brooke KJ, Faux SG. Orthopaedic Trauma from Road crashes: is enough being done? Aust. Health Rev. 2009; 33(1) 72-83
2. Kathryn Brooke, Steven Faux, Stephen Wilson, Winston Liauw, Malcolm Bowman Outcomes of Motor Vehicle Crashes with Fracture: Early rehabilitation benefits. Journal of Trauma, Injury, Infection and Critical Care (in submission)
3. Gilad M, Rollings R, Faux S. Motorcyclist Accident Rehabilitation Initiative project (MARI). Department of Rehabilitation Medicine St Vincent's Hospital Sydney unpublished quality assurance data collected during the offering of services April 2007 – August 2009. further details available from corresponding author.
4. Haddon W Jr 1980 Options for the prevention of motor vehicle crash injuries. Isr. J.Med. 16:45-68
5. Association for the Advancement of Automotive Medicine. The Abbreviated Injury Scale update 2001 Barrington Illinois USA
6. Ameratunga SN Norton RN Connor JL Robinson E Civil I Coverdale J Bennett D Jackson RT A population based cohort study of longer term changes in health of car drivers involved in serious crashes. Annals of Emergency Medicine 48 6 2006
7. Read KM Kufera JA Dischinger PC Kerns TJ Ho SM Burgess AR Burch CA Life altering outcomes after lower extremity injury sustained in motor vehicle crashes Journal of Trauma Injury and Infection 57 4 815-823 2004
8. Smith JA. Braunack-Mayer A. Wittert G. Warin M "It's sort of like being a detective": understanding how Australian men self-monitor their health prior to seeking help BMC Health Services Research. 8:56, 2008
9. In a straw poll conducted in 2005 different and varied systems exists in each hospital across the area. This data was presented to the Area's Neurosciences and Rehabilitation Reference Group chaired Dr W Stenning. Personal communication A/Prof S.Faux October 2009

The Motorcycle Safety Research Program at the George Institute

By A/Prof Rebecca Ivers and Liz de Rome

Research on the prevention of road traffic injuries is a primary focus of the Injury Division at the George Institute for International Health. In keeping with a public health approach to injury prevention, our work encompasses research on a range of topics from surveillance, observational and intervention studies through to program evaluation and policy. The Division has a special interest in motorcycle safety as an emerging cause of increased injury in high income countries and a major cause of injuries in low and middle-income countries.

Current work by researchers from the George Institute in motorcycle safety includes:

The Novice Rider Study was a cross sectional survey of over 1000 riders, recruited when they attended the compulsory NSW pre-provisional rider training course in 2008. The aim was to identify factors associated with the use and non-use of protective clothing by novice motorcycle riders and how and why motorcyclists make decisions about usage of protective clothing. The survey also asked about the actual riding exposure of learner

riders to validate their crash risk rate. The long-term objective was to develop an educational intervention program to increase the use of protective clothing. The analysis of results are currently under way. A paper on the extent and range of their riding practice while on the learner licence has recently been accepted for presentation at the TRB Annual Meeting in Washington, 2010. Funding: NRMA Motoring and Services, NSW.

The GEAR Study is a one year prospective cohort study of 212 motorcyclists who crashed on public roads in the ACT. The aim is to identify the associations between usage/ non-usage of motorcycle protective clothing and injury and subsequent disability. This will be the first study worldwide to distinguish between different qualities of protective clothing and to examine the role of impact protectors in preventing injury. In order to ensure a representative sample of all riders who crash, injured riders were recruited from hospitals and uninjured riders are sourced through motorcycle crash repair services. The riders were also followed-up at six weeks and six months to monitor their recovery progress and quality of life following the crash.