

## **Extended Abstract submitted for the 2012 ACRS ASM**

### **Title**

Orthopaedic injury patterns in motorcycle trauma in Victoria, Australia

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### **Abstract**

Motorcycle accidents lead to significant morbidity, mortality, and associated costs with riders having a risk of death 30 times greater, and a risk of injury eight times greater, than of people driving other vehicles. In Victoria, CrashStats reported approximately 1030 serious or fatal injuries from motorcycle accidents in 2009. If “minor” injuries are included, the number is almost doubled. While head trauma may be the most significant predictor of survival outcome, tibial fractures are the most common injury. A recently completed feasibility pilot project that involved interviewing riders about their motorcycle and safety gear showed it was possible to recruit these patients, it further showed in a random sample of Victorian motorcycle accident victims characteristics of the riders, the motorcycles involved and the use of protective apparel. The next step will be to validate the data collected from injured riders and then conduct a bigger analysis to determine the effect on injury outcome. While commentary can be found implicating motorcycle design in certain fractures, formal research is lacking in this entire area, which makes it imperative that we urgently seek those factors that can impact on reducing the number and severity of orthopaedic injuries.

### **Key words**

Motorcycle, off-road motor vehicles, ‘accidents, traffic’, ‘wounds and injuries’

### **Introduction**

Road safety statistics available through the Transport Accident Commission (a Victorian state government body providing compensation for transport accident victims) shows there are almost 1000 claims a year from motorcycle riders requiring hospitalisation after accident. The five year average mortality is approximately 45 motorcycle riders a year and this represents around 15% of the road toll, which is disproportionately high when considering motorcycles account for only 1% of vehicle kilometers travelled.

Given the significant numbers of motorcyclists presenting to major trauma hospitals, an analysis of injury pattern and 12 month outcome is imperative to guide us in improving the provision of care for this group of patients. In order to target public health campaigns, determination of motorcycle characteristics and safety devices fitted for riders sustaining serious injury is also warranted.

### **Aims**

1. To report on the:

- Injury patterns for motorcycle accident victims presenting to major trauma centers in Melbourne.
- Twelve month outcomes for motorcycle accident victims requiring hospitalisation after sustaining serious injury.

2. To determine in a subgroup of patients motorcycle and rider characteristics as well as prevalence of safety devices and use of protective apparel.

## **Method**

All patients injured in motorcycle related trauma from August 2003- May 2009 in Victoria were identified using ICD-10 AM cause codes from the Victorian Orthopaedic Trauma Outcomes Registry database. The prospectively collected data was analysed for demographics, injury type, injury pattern, AO/ASIF codes, and AIS-90 codes. Twelve month outcomes were also examined using the SF-12® Health Survey, Global Outcomes survey and Assessment of Quality of Life survey. A random sample of patients who presented to the one of the state major trauma hospitals were contacted, and motorcycle specifications (including make, model, safety features), rider details (safety gear worn, riding experience, previous accident history) and accident details (type, speed), were obtained by phone interview.

## **Results**

1767 cases were identified, 1751 with complete in hospital data. Of these 1077 had completed their 12-months post injury assessments. Average age of patients was 35.5 and 92% were male. The most common injury in order of prevalence was fracture of the tibia, forearm and then thoracic spine. 37.6% of patients sustained one or more spinal fractures, 42.2% an arm fracture or dislocation, and 47.5% a leg fracture or dislocation. At 6 months 32.6 percent were still experiencing moderate to severe pain and the average physical functioning score was around one standard deviation below the population norm. At 12 months 29.1% were still experiencing moderate to severe pain and the average functioning score was slightly improved but still well below the population norm. Of the 137 patients sampled from the selected state major trauma hospital, 109 consented to further data collection and it was found that 48.6% were not wearing full personal protective gear and 28% had 5 or less years riding experience.

## **Conclusion**

Significant morbidity and mortality occurs after motorcycle accident in Victoria and analysis of injury patterns and outcomes is vital to target the specific issues in managing large cohort of patients to optimize care. A significant percentage of our cohort, included inexperienced riders were not wearing full personal protective gear and further targeted public health campaigns are warranted.

## **Recommendations**

Resources need to be directed to establishing a dedicated registry for motorcycle injuries that includes information about the rider, vehicle, and environment to enable health agencies to direct educational campaigns and strive for best medical care.

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