

## Post crash response: Low hanging fruit or just an after thought

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### Abstract

The United Nations General Assembly adopted unanimously a resolution to declare the year 2011 to 2020 as the Decade of Action for Road Safety. The resolution calls on countries to set targets for road trauma reduction and implement road safety activities, including improving post crash response. Over the past thirty years, road safety agencies across Australia have made substantial gains in reducing road trauma by developing and implementing strategies and actions that have been focused on crash prevention and vehicle performance during the crash event. These strategies have paid off in terms of the numbers of lives saved and injuries prevented. However, as the rate of progress in reducing road trauma slows across the nation, there is interest in knowing if improved emergency response and pre-hospital emergency care could have a positive impact on road fatality and serious injury rates across Australia. This paper will initially outline the emergency medical and rescue response arrangements to road crashes in New South Wales and compare them with arrangements in other Australian States and Territories. It is also expected that some initial data will be provided on how Australian post crash response arrangements compare to those in five of the top road safety performing nations within the OECD.

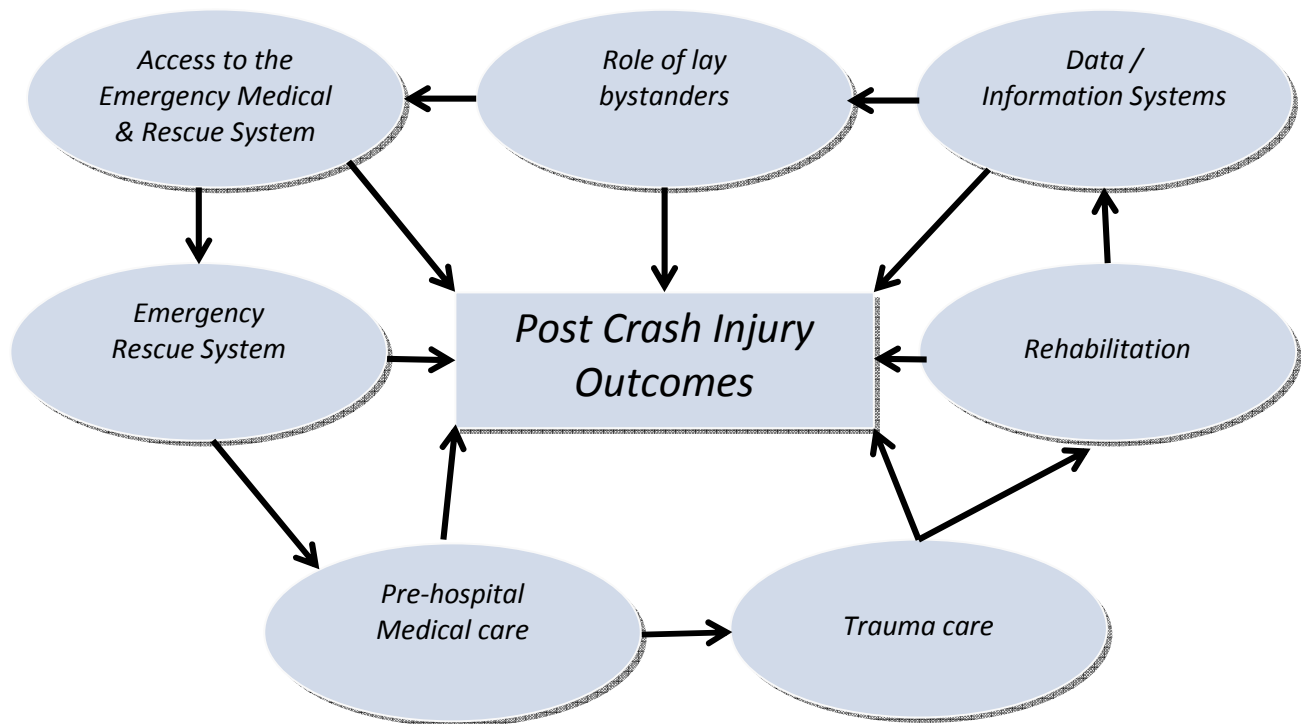
### What is post crash emergency response?

The need to consider post crash phases in the development of road trauma countermeasures was first identified by William Haddon Jr in 1970 in the *American Journal of Public Health*. The matrix classified factors associated with crashes into human, vehicle and environmental attributes against the timeline of the crash event (see Figure 1).

Phase	Human Factors	Vehicles and Equipment Factors	Environmental Factors
<b>Pre-crash</b>	Information Attitudes Impairment Police Enforcement	Roadworthiness Lighting Breaking Speed Management	Road design and road layout Speed limits Pedestrian facilities
<b>Crash</b>	Use of restraints Impairments	Occupant restraints Other safety devices Crash-protective design	Crash-protective roadside objects
<b>Post-Crash</b>	First-aid skills Access to medics	Ease of access Fire risk	Rescue facilities Congestion

**Figure 1.** A typical Haddon Matrix (source: [http://en.wikipedia.org/wiki/Haddon\\_Matrix](http://en.wikipedia.org/wiki/Haddon_Matrix))

SafetyNet (2009) identified a number of intervention opportunities to reduce post crash injury outcomes (see Figure 2).



*Figure 2: Adapted from SafetyNet (2009) – Post Crash Care Report*

Post Crash Emergency response can be defined as the sub set of activities including emergency rescue, pre-hospital medical care and transport activities conducted immediately following a road crash. In this paper, emergency response activities are considered to cease when the patient is delivered to a major or regional specialist trauma centre.

### **What are the potential road safety benefits of improving post crash emergency response?**

A review conducted across a number of OECD countries over a 26 year period from 1970 found that between 5 per cent and 25 per cent of the road fatality reductions seen over this period could be attributed to improved medical care and technology (Noland 2004). The European Traffic Safety Council (1999) estimates that around 50 per cent of road related deaths occur within minutes at the scene or in transit to hospital. For patients who die after reaching hospital around 15 per cent of the deaths occur within 1 – 4 hours after the crash but the majority occur after four hours from the crash event.

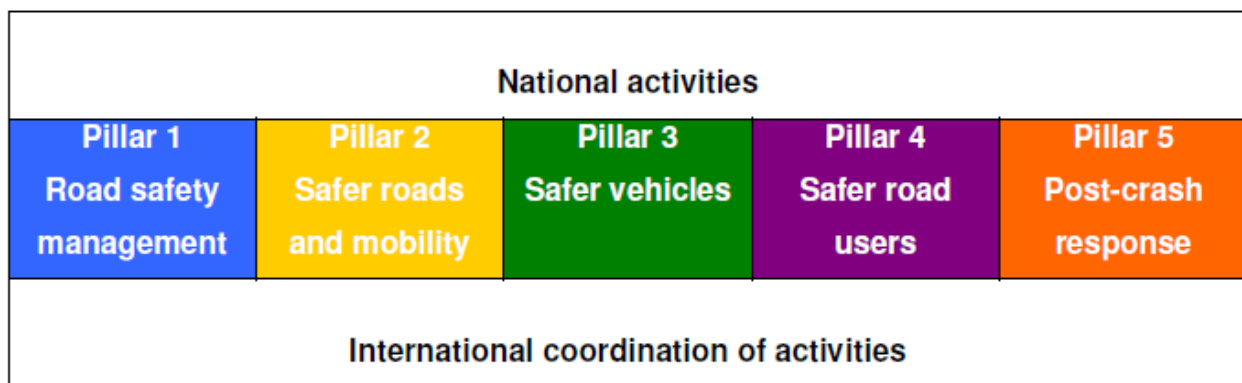
Lahousse and Fildes (2008) researching Automatic Crash Notification (ACN) estimated that these systems would provide an average crash to Emergency Medical Services (EMS) notification time of one minute, which represented a three minute reduction in the total crash-to-hospital time for urban areas, with the corresponding reduction for rural areas being six minutes. Calculations revealed that these reductions would save an estimated 104 fatalities on Australian roads per annum (41 urban and 63 rural), assuming all vehicles were fitted with ACN. This corresponds to almost 11% of all passenger vehicle occupant fatalities.

There appears to be very little data published on post crash response activity at state, territory or federal level but some insight into the number of road rescues performed per year is collected and published by the Productivity Commission. In its 2012 report on Government Services the

Commission reported that there were more than 22,140 road crash rescue events in 2009-2010 reported by Australian emergency services. This equated to 58.6 rescue extractions per 100,000 registered vehicles.

### **The identification of post crash response countermeasures in current Road Safety Strategies**

Improving post crash response is identified as one of the five pillars within the Global Plan for the Decade of Action for Road Safety produced by the World Health Organisation in 2011 (see Figure 3).



**Figure 3: The Five Pillars of Road Safety – WHO**

The European Commission understands that post impact care is now acknowledged globally as a key road safety strategy and fundamental to a Safe System approach. However, it is often neglected in national road safety plans and programmes in European countries, although Sweden plans to set a target for average time from injury to adequate rescue/medical care as one of its intermediate outcome targets. This may be because it is outside the direct responsibility of the lead agency for road safety which is typically the Ministry of Transport in European countries.

The National Road Safety Strategy 2011 – 2020 released by the Australian Transport Council in May 2011 only makes reference to post crash response in the context of its inclusion in the WHO plan for Global Action. An examination of current Australian State and Territory Road Safety Strategies and Action Plans shows almost a complete absence of activity in the area of improving post crash response. The Victoria, South Australia, Tasmania, Australian Capital Territory and Northern Territory road safety strategies and action plans do not indicate any countermeasures directed towards improving responses to road crashes.

The Western Australia *Towards Zero* Road Safety Strategy notes that the community should be responsible for undertaking first aid courses and that the Government will continue to monitor new vehicle technologies including automatic crash notification. In Queensland, the state's Road Safety Action Plan 2013-2015 commits \$4.5 million per year from the Camera Detected Offence Program to Queensland Health to support the purchase of blood and blood products used in the treatment of victims of road trauma.

The New South Wales Road Safety Strategy 2012 – 2021 has a specific section on post crash response and includes the following actions:

- Establish a whole-of-government approach to post crash care and response that identifies areas for potential improvement to minimise the impact of injuries in crashes.

- Investigate options for automatic crash notification systems, including collision detection and avoidance systems.
- Educate drivers about the added risks of crashes in remote areas.
- Provide clearer advice to road users on what to do if they breakdown or crash and on safety issues near incident sites.

## Study into Post Crash Arrangements in New South Wales

At the time of writing, a research study has commenced to document the post crash emergency response arrangements in New South Wales and compare these with arrangements in other states and territories. The study will also investigate the differences between post crash arrangements in five of the best performing road safety nations within the OECD. It is understood that this type of research has not been conducted in Australia before and may lead to recommendations that could improve our response to crashes nationally in the future.

## Conclusion

Over the past four decades, Australia has made substantial gains in reducing the number and severity of road crashes across the nation. Much of the improvement in the road toll can be traced to countermeasures that aim to prevent crashes or minimise the impact of the crash on vehicle occupants during the event. The safe systems approach developed in Sweden and adopted by most jurisdictions within Australia continues the traditional approach of aiming to prevent crashes or minimise injury through better vehicle and roadside furniture designs.

It is clear that there is potential to reduce further adverse outcomes from crash events through improving our response to crashes through emergency rescue, pre-hospital medical and transportation services. As in the majority of countries around the world, most Australian Road Safety Agencies have not included post crash response within their current road safety strategies and action plans. Including post crash response in any review of actions associated with their road safety strategies in the future has real potential to produce significant road safety benefits.

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