



# TRANSAFE WA UPDATE

## 9<sup>TH</sup> INTERNATIONAL FATIGUE MANAGEMENT CONFERENCE

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### Western Australian Research

Between 2003 and 2014, WA has seen a consistent increase in fatigue related incidents.

Research undertaken on WA long haul heavy vehicle drivers found:

- 42% of long haul drivers have sleep Obstructive Sleep Apnoea.
- Long haul heavy vehicle drivers are much more likely to have Obstructive Sleep Apnoea compared to the general population.
- Drivers with Obstructive Sleep Apnoea are three times more likely to be involved in a crash than those without Obstructive Sleep Apnoea.
- Drivers with depression were much more likely to be involved in a crash than those without depression.
- Drivers who had undertaken fatigue management training were significantly less likely to be involved in a crash.

### UK Research

- Some drowsiness alerting systems are more accurate and precise than others.
- Drowsiness alerting systems do not consistently improve alertness over long periods of time.
- There is a risk people may rely on drowsiness alerting systems to keep an them awake.

### Directions of the science and policy

- Fatigue Risk Management is possible using alternate methods of compliance.
- Improving the integration of risk assessments using technology.
- Identification of 'at risk' individuals within safe groups.
- Developing an improved understanding of the link between fatigue, complex task behavior, error and resiliency.
- Focusing on the importance of directing culture change to ensure people know they are being put before cost cutting
- Ensuring that people are not encouraged to disengage or become complacent about residual risk due to the implementation of risk management strategies.

(Based on presentations by Lynn Meuleners, Simon Tong, Drew Dawson and Adam Fletcher)

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### Key Messages

- We know people may do things which put them at risk due to fatigue impairment. That is not going to completely stop. What systems can we put in place to reduce the likelihood people will be hurt?
- Improving safety alongside productivity shouldn't be left to chance. Safety and productivity should go going hand in hand (rather than only focusing on one at the expense of the other)
- Effective Implementation is the key to any Fatigue Risk Management System.
- All systems need to be understood to be used correctly. For any Fatigue Risk Management System in place; who is using it, how it is being used, and why is it being used.
- All stakeholders involved in a process must also accept and believe why a Fatigue Risk Management System is being implemented. Numbers and logic don't always explain everything to everyone.

### Great questions to understand your companies fatigue management processes.

- What Fatigue Risk Management Systems do we have?
- What is working well and what is working less well?
- If the system failed, was misused or created complacency what is the worst case scenario?
- Who is ultimately accountable for failure? How do we help them appreciate the risks?
- Do we have any milestones, metrics, review points, contingencies and exit plans?
- What are the interdependences of our systems? If one system fails, is there a back-up?
- How can we ensure the jobs and workforce systems are safe, productive and personally satisfying?

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# Associations of Impaired Sleep and Fatigue

Update from the 9th International Fatigue Management Conference



## Brain and Behaviour

- Reduced ability to manage distractions
- Reduced attention and concentration
- Difficulty regulating performance
- Reduced speed and accuracy
- Difficulty maintaining focus
- Reduced reaction time
- Increased risk taking
- Difficulties learning
- Impaired memory



## Workplace

- Breaches of Workplace Health and Safety
- Increased accidents and fatalities
- Reduced competitive advantage
- Decrease in work performance
- Damage to brand reputation
- Increased presenteeism
- Increased absenteeism
- Reduced productivity



## Health

- Increased coronary artery disease
- Increased susceptibility to illness
- Increased erectile dysfunction
- Increased atrial fibrillation
- Increased hypertension
- Increased heart failure
- Increased mortality
- Increased stroke
- Weight gain



## Family and Domestic

- Decreased ability to regulate behaviour
- Decreased ability to regulate mood
- Impaired marital relationship
- Increased marital conflict
- Increased depression
- Increased irritability
- Reduced libido



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# CIRCADYN FATIGUE MANAGEMENT

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## WHAT IS CIRCADYN?

Circadyn analyses information collected from wearable technology to provide an alert and dashboard system. It helps individual employees to better manage their sleep and reduce their likelihood of an accident. It enables employers to better plan and schedule for their workforce and to reduce the flow-on costs of fatigue in the workplace.



## HOW DOES IT WORK?

Circadyn measures wake and sleep cycles using wearable technology. When the wearable is synced with a Bluetooth device, Circadyn is able to analyse the individual's data. It then sends an alert via SMS or email, to users if they are at risk of fatigue impairment.

Circadyn provides personalized feedback and suggestions on how to improve sleep and manage fatigue impairment. If an individual is dangerously fatigue impaired it can provide alerts to the organization. Furthermore Circadyn can provide on-site training regarding fatigue impairment if needed. Employers pay a monthly subscription fee based on the number of employees they're monitoring with Circadyn.

## WHY DOES IT WORK?

Circadyn is time sensitive. It prevents people getting into vehicles when they are likely to be fatigued and lets them know what they need to do to reduce their fatigue impairment. It is personalized, providing the right information to the right person at the right time.

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# CIRCADYN FATIGUE MANAGEMENT

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## WHY IS FATIGUE A PROBLEM IN THE TRANSPORT INDUSTRY?

20-30% of all road fatalities and crashes are caused by fatigue. These crashes directly cost the Australian economy over 1.1 billion a year <sup>(1)</sup>. The flow on effects of fatigue in workers include accidents, absenteeism, presenteeism and increased insurance premiums as well as the physical and emotional toll on employees. Based on Australian Governments Department of Infrastructure and Regional Development data, including effects, the flow on annual economic cost of fatigue related road crashes in Australia is estimated at \$8.1 billion per annum.

Injuries, accidents and fatalities within the transport industry are a serious issue. In 2011-12 the transport industry recorded the second highest number of fatalities (51 deaths) and the second highest fatality rate (9.02 deaths per 100 000 workers) of all occupational groups. Transport also recorded incident rates of more than twice the rate of all other occupations at rate of 12.2 serious claims per 1000 employees. Compounding the initial costs of an incident, a typical serious workers' compensation claim involves four weeks absence from work. Whilst, one-quarter of serious claims required 12 or more weeks off work. It is likely road accidents are reflective of the more general accident trends. This means at a minimum, one third of accidents are directly related to fatigue.

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# CIRCADYN FATIGUE MANAGEMENT

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## SCIENCE

Sleep is a biological process required by the human body to recovery, consolidate memory and even to survive. Humans can die from lack of sleep. After 16 hours awake there is a threefold increase in accident likelihood <sup>(2)</sup>. This is because a lack of sleep results in impaired reaction times and attentional capacity. Both fast reaction times and strong attentional capacity are essential skills for any professional driver to respond to unexpected or fast paced events.

After 17-19 hours without sleep a reduction in response times and accuracy in performance can be observed on measures which is equivalent or worse than that at a Blood Alcohol Content (BAC) of 0.05% or above. After longer periods of time, up to 24hrs, it reaches a level equivalent to a BAC of 0.1% or above <sup>(3)</sup>. You would never allow a worker to be intoxicated at work and yet being significantly fatigued for this period of time is the equivalent.



Interestingly fatigue is just as problematic for those who do short hauls and drive light vehicles as compared to those who undertake long hauls and drive heavy vehicles <sup>(4)</sup>. Anyone, including pilots, truck and train drivers, who need to be alert and able to respond quickly if any unexpected event occurs, need to manage their sleep and fatigue effectively.

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# CIRCADYN FATIGUE MANAGEMENT

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## LAWS AND REGULATIONS

The Work Health and Safety Act <sup>(5)</sup> which came into effect on 1 January 2012, implemented a national work health and safety standard across Australia. Any fleet managed vehicle is now defined as a workplace. As such employers have a duty of care to provide a safe workplace, including ensuring their employees are not driving whilst fatigued. If a business is found guilty of non-compliance with this duty, it may result in a \$600,000 or term of up to five years imprisonment.

The Heavy Vehicle National Law (HVNL) <sup>(6)</sup> came into effect on 10 February 2015. It states that drivers of fatigue-regulated vehicles must comply with certain maximum work limits and minimum rest limits. Everyone in the supply chain, including those who consign, pack, load or receive goods as part of their business, may be held legally liable for breaches of the Heavy Vehicle National Law. Drivers, as well as their employers, must now be aware of fatigue as a serious issue in the workplace and take due care to mitigate it.

## BUSINESS OUTCOMES OF CIRCADYN

Ensuring your employees are better enabled to manage their sleep patterns will improve their health, happiness and consequently, likely will reduce their risk of accidents. Knowing your employees are not in control of your valuable assets whilst they are fatigue impaired, and thus at three fold likelihood of having an accident, will provide you peace of mind. Circadyn will alert you to fatigue impairment issues so you are able to manage them expeditiously and ensure you are promoting a safe and effective culture in your organisation. Most importantly it will provide your organisation the data which may enable you to negotiate the reduction of your insurance premiums.

The Bureau of Infrastructure, Transport and Regional Economics estimated the estimated average cost of road crashes in NSW for an individual. The average cost for a fatality was \$3,180,598, for a serious injury \$316,869 and for an injury it was \$17,511. These costs only increase for businesses. If a single injury is prevented by using Circadyn in a single year, the Circadyn system has effectively paid for itself.

1. Australian Transport Council. (2011). National Road Safety Strategy 2011-2020.
2. Rosa. (1995) Extended work shifts and excessive fatigue. *Journal of Sleep Research*, 4 (Suppl. 2), pp. 51-56.
3. Friswell & Williamson (2013) Comparison of the fatigue experiences of short haul light and long distance heavy vehicle drivers. *Safety Science*, 57, (203-213).
4. Williamson & Feyer. (2000). Moderate sleep deprivation produces impairments in cognitive and motor performance equivalent to legally prescribed levels of alcohol intoxication. *Occupational and Environmental Medicine*, 57(10), 649-655.
5. (Work Health and Safety Bill. 2011 Assented on 07/06/2011 - Act No 10 of 2011 (GG No. 24, 17/6/2011, p.4450).
6. Heavy Vehicle (Fatigue Management) National Regulation 2013 SL No. 78.

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