

## How tired are you really?

By Narelle Schuh



### A junior doctor and AMA (NSW) member trials the Readiband™ and discovers fatigue is a bigger issue than he imagined.

*Journal of Australia (MJA)* a confidential survey of 914 junior doctors in Australia and New Zealand discovered almost half claimed their workload had been excessive with 53 per cent believing an adverse event could occur as a result and 41 per cent believing their workload compromised patient safety. A separate study, *The National Junior Medical Officer Welfare Study* surveyed 276 doctors who had completed internships in WA and NSW in 2007 and QLD in 2008 finding 65 per cent of respondents reported high levels of stress in the workplace and 47 per cent that their workload was excessive.

In October 2006 the Australian Medical Association (AMA) released the results of the *AMA 2006 Safe Hours Audit* which revealed nearly two-thirds of hospital doctors are working hours that expose them to significant risks of fatigue leading to higher risks of medical error. Most importantly it also revealed many doctors worked a similar number of hours but often had very different risk ratings. It is widely reported however that 17 hours of wakefulness can create an equivalent impairment to having a blood alcohol level of 0.05 and after 24 hours of wakefulness, an impairment equal to a blood alcohol of 0.1.

"Maintaining safe working hours for DITs is a long-standing issue. The amount of 'safe working hours' is very difficult to quantify and varies for each individual. It is a concept that means something slightly different to all the different stakeholders in health. The community would be shocked if a doctor was functioning at a blood alcohol level above the legal driving limit, however the lack of adequate sleep can result in a comparable amount of impairment," says our DIT.

*The NSW Doctor* spoke to the doctor-in-training when he first received his Readiband™ to trial. "DITs are locked in a constant battle to combine work, study and family life. I hope the Readiband™ can help quantify what are safe working hours for DITs so we can go forward and put policy in place to maintain a safe working environment for us and more importantly, our patients."

*It was recently widely reported that junior doctors are taking action against hospitals which force them to work more than 100 hours a week. Vice-president of the Federal AMA, Dr Steve Hambleton says changes to the NSW Medical Officers Award are long overdue. "If these people were airline pilots their employers would be hauled over the coals but somehow we expect doctors to be different to normal people. It's time to bring this Award into the 21st century. A junior doctor who mis-writes a drug chart because of tiredness can put someone's life at risk and their own career is over. It's just not on."*

His results speak for themselves with the processed SleepBand information placing his risk of making a serious mistake at 28.62 per cent higher than normal. He spent 64 per cent of his time with a low mental effectiveness score and 37 per cent of his time in the high risk category. "I knew I didn't get as much sleep as I should but I didn't realise the correlation of my sleep deprivation to my performance. It concerns me on a systemic level as my sleep patterns are

What would the Brisbane Broncos team players and a NSW doctor-in-training possibly have in common?

Both have trialled Honolulu-based company, Fatigue Science's Readiband™ which measures reaction times, caffeine and light levels and monitors sleep and fatigue. The Readiband™ fits on the wrist and can be incorporated into a watch, using actigraphy\* to detect and characterise sleep/wake periods.

"The Readiband™ looks and feels like a lightweight sports watch and I barely noticed wearing it during my working day. You just put it on and go about your normal business. What surprised me most though were my results," says our doctor-in-training.

We are all aware that many junior doctors meet criteria for burnout and fear their workload could compromise patient safety. According to the *Medical*

probably representative of a lot of junior doctors, resulting in a workforce that isn't at its peak as often as it should be."

"The results gave me a big wake up call. I now make sleep a priority as opposed to before when it was sort of a privilege. I still go through times when I am deprived but my awareness has improved and I make it a mission to recover my sleep debt. I am definitely going to bed earlier and have learnt some good tips for surviving night shifts."

DITs should remember that to determine whether they are at risk of fatigue the AMA has developed an online fatigue assessment tool available at <http://safehours.ama.com.au/>. Doctors who use the assessment tool will receive an online assessment of the fatigue risks of their roster and those who are assessed as being at risk are encouraged to raise this with hospital management.

"Unfortunately fatigue is probably an unavoidable reality of junior doctor life," says our doctor-in-training. "I think the first step of limiting fatigue is creating awareness about the problem and potential consequences for junior doctors and our patients. After that comes the dilemma of finding the right balance between work, study, family life and everything else we try and cram into our day."

*\* Polysomnography has long been the gold standard by which sleep is assessed. Polysomnography and a clinically-validated sleep study can be impractical for many people so actigraphy provides a highly accurate substitute. A recent study showed the Readiband™ coupled with the company's patented classification algorithms, assessed sleep virtually as well as sleep lab polysomnography and was 93 per cent accurate.*

## The Readiband™ test...

### The Readiband™ system involves:

- Data acquisition from wearing the Readiband™.
- Interpretation following the automatic data downloading.
- Reporting on sleep quality to an individual.
- Report amalgamation of data into group or management reports.
- Enhanced ability to make recommendations on company policy and structural changes to fatigue causes.

Staff are required to wear the Readiband™ continuously for seven days. The Readiband™ also functions

as a digital watch and is water and shock resistant and measures and stores wrist movements in any direction 16 times per second. It does not record GPS signals and has no microphones, sensors or cameras.

The Readiband™ provides easy-to-read reports for the test period for each individual and objectively quantified metrics on sleep quality and quantity.

Each report details:

1. Average sleep time per night.
2. Length of time to get to sleep.
3. Amount of time in bed sleeping versus awake.
4. Number of waking episodes.

## Our doctor-in-training's sleep and fatigue analysis

### Sleep

Average amount of sleep per day	5.9 hours*
Median time to fall asleep	18 minutes
Average number of wake episodes during sleep	6.5
Percentage of time in bed actually spent sleeping	76.3*

\* Of these four sleep measures, two were outside the expected range.

### Mental fatigue

Risk of having an accident or making a serious mistake rated at 28.6 per cent higher than normal (or higher than would be expected of a fully well-rested person).

	Mental effectiveness range*	Percentage of time
Normal	90-100%	21%
Reduced	80-90%	15%
	70-80%	27%
High risk	60-70%	13%
	0-60%	24%

\* If more than 10 per cent of your time is shown at an effectiveness level below 80 it indicates a need to implement some type of scientifically valid fatigue countermeasure.