Medicine, Nursing and Health Sciences

Research Day 2012
School of Psychology & Psychiatry
Sleep Health and Sleep Disorders

Team Members

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Multi-disciplinary Approach to Sleep Health and Sleep Disorders

- Chronobiologists
- Sleep Physiologists
- Experimental /Clinical Psychologists
- (Cognitive) Neuroscientists
- Mental Health Professionals
- Geneticists
- Endocrinologists
- Occupational Physicians
- etc

Circadian rhythm disruptions
- Body temperature
- Respiratory rate
- Hormonal production
- Menstrual cycle
- Urinary excretion
- Cell division

Brain effects
- Sleep loss
- REM sleep reduction
- Stage 2 sleep reduction
- Fatigue
- Reduced brain volume

Cardiovascular disorders
- 40% increased risk for: Angina pectoris
- Hypertension
- Myocardial infarction

Mental Health
- Stress
- Anxiety
- Depression
- Neuroticism
- Reduced vigilance
- ‘Burnout syndrome’

Reproductive effects
- Spontaneous abortion
- Low birth weight
- Prematurity

Gastrointestinal disorders
- Dyspepsia
- Heartburn
- Abdominal pains
- Flatulence

Increased cancer
- Breast cancer
- Colorectal cancer

Taken from Foster and Wulff Nat Rev Neurosc 2005
Impact on Australian Society

- 1.5 million Australians (8.9% of the population) had a diagnosed sleep disorder
- Total cost to health care for sleep-related disorders are estimated at $818 million
- Indirect costs to the Australian community as a result of sleep-related disorders are $4.3 billion
  - $3.1 billion in lost productivity
  - $472 million for motor vehicle accidents
  - $646 million care due to occupational accidents
- Internationally heightened awareness of sleep-related disorders.
Primary Research Directions

1. How circadian rhythms, controlled by the internal biological clock, and sleep loss interact to regulate sleep and waking function;

2. The impact of sleep and sleep disorders on cognition, behaviour, health and well-being;

3. Sleep-related occupational risk, such as drowsy driving or shift work;

4. Environmental factors that interact with and influence sleep-wake regulation (e.g. light, distractive environments);

5. Novel pharmacological and non-pharmacological treatment approaches for sleep disorders; and

6. The role of sleep in learning and memory consolidation.
Recent NHMRC/ARC Grant Awards

- Attentional mechanisms in the relationship between sleep disruption and academic outcomes in Australian school children.
  *ARC Discovery project led by Kim Cornish and colleagues*

- Melatonin for Delayed Sleep Phase Disorder.
  *NHMRC project led by Shantha Rajaratnam and colleagues*
Recent NHMRC/ARC Grant Awards

- Efficacy of blue light therapy and cognitive behavioural therapy in managing fatigue and sleep disturbance following traumatic brain injury
  
  NHMRC Project grant led by Jennie Ponsford and colleagues

- Light intervention for shift workers.
  
  NHMRC Project Grant led by Shantha Rajaratnam and colleagues
Sleep Heath and Sleep Disorders

Featured Recent Publications (last 18mth)


- **Rajaratnam SM,** Barger LK, **Lockley SW.** Sleep disorders health and safety in police officers. JAMA, 2011; 306:2567:78


- **Sletten, T.L.** Vincenzi S, Redman JR, **Lockley SW,** **Rajaratnam SM.** Timing of sleep and it’s relationship with the endogenous melatonin rhythm. Front. Neurol. 2010; 1:137.


- **Anderson C** & Platten, CR. Sleep deprivation lowers inhibition and enhances impulsivity to negative stimuli, 2011; 217(2):463-6.


Methodologies and Facilities

- Full Polysomnography
- Waking Electroencephalography
- fMRI
- Eye tracking
- Actigraphy
- Cognitive and Neurobehavioural Testing
- Driving Simulation
- Observational techniques

Centres and Groups
- Blood-Brain Interactions Group
- Monash-Epworth Rehabilitation Research Centre
- Monash Sleep Network
- National and international research and industry collaborative partners.
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