

SLEEP & THE WORKPLACE

- Psychological, Physical & Economic Costs of Poor Sleep.

Geoff Brearley

Psychologist

m: 0409 865 607

e: sleep@geoffbrearley.com

t: @sleep_friend

w: makesleepyourfriend.com



Overview

Sleep Defined

- > How We Sleep
 - > Why We Sleep
 - > Sleep Disorders
 - > Psychological Impact
 - > Physical Impact
 - >Economic Impact
- > Insomnia Treatment

** Q & A **

Sleep Defined

- **HISTORICAL:**

“The intermediate state between wakefulness and death: wakefulness being regarded as the active state of all the animal and intellectual functions, and death as that of their total suspension...”.

(Robert MacNish, The Philosophy of Sleep, 1834).

- **CURRENT:**

A simple behavioural definition: “Sleep is a *reversible* behavioral state of perceptual disengagement from, and unresponsiveness to, the environment.”

(Principles and Practice of Sleep Medicine, ch2. 2011).



...Sleep Defined

Observable (typical)

- *Behavioral quiescence.*
- *Closed eyes.*
- *Postural recumbence.*

Measurable by Polysomnography (PSG)

- *2 States of Sleep (~ 80% / 20%).*
- *NREM - low brain activity, minimal muscular activity.*
- *REM - high brain activity, muscle atonia.*

...Sleep Defined

Sleep Continuity Variables:

- *Sleep Latency:* normally 15 to 20 minutes or less.
- *Wake After Sleep Onset:* normally none to remember.

- *Total Time in Bed (TTIB):* from go to bed to time out of bed (mins).
- *Total Sleep Time (TST):* time actually asleep (mins).
- *Sleep Efficiency:* $TST / TTIB\%$, normally 90% or better.

Why We Sleep

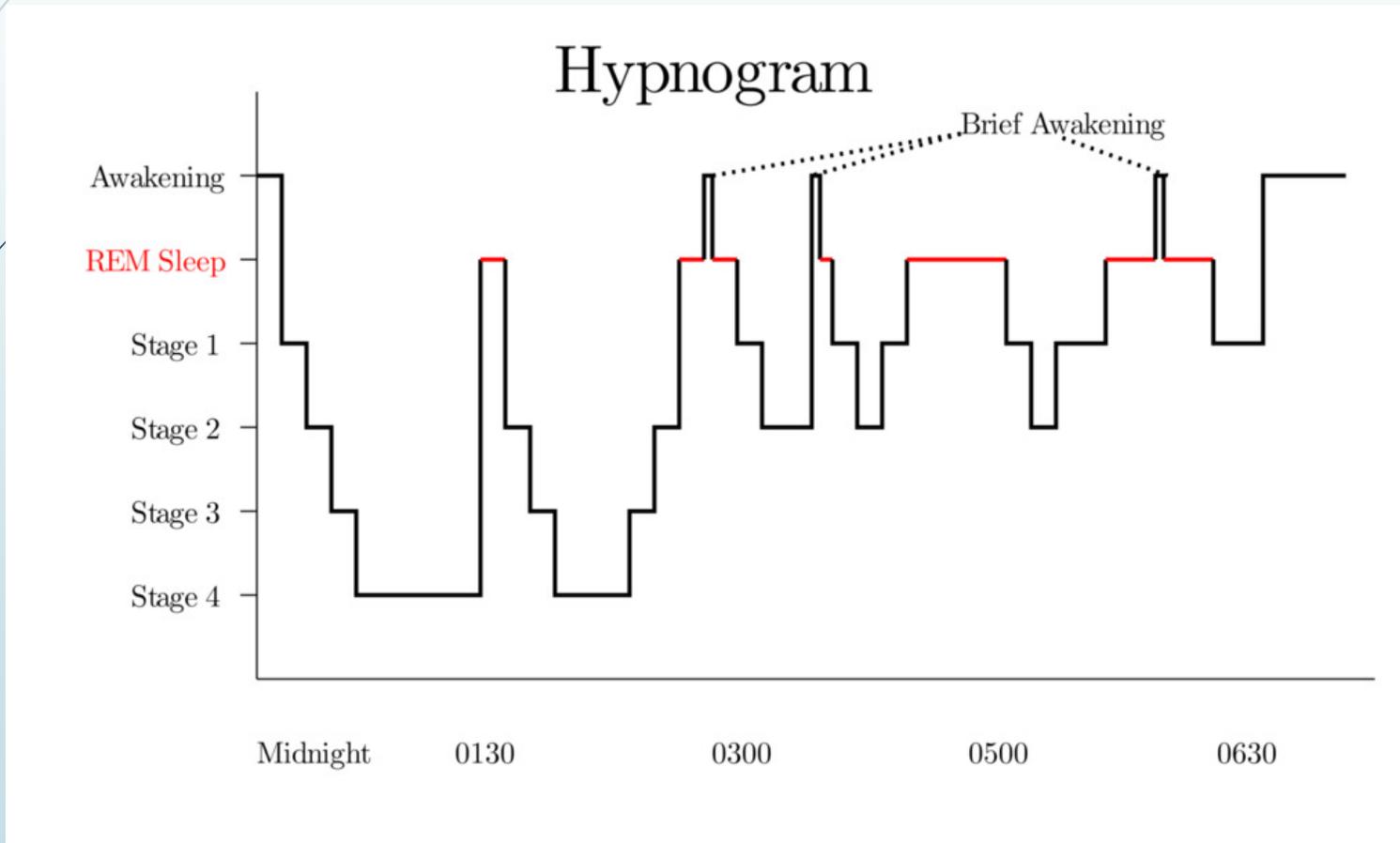
Science cannot entirely agree, but... 3 broad theories:

- *Cellular (muscle, body) restoration.*
- *Consolidation of memory, problem solving.*
- *Toxic cleansing of brain (most recent).*

Brain resources are available at night during sleep for these tasks.
Some areas of brain are more active during sleep than wakefulness.

How We Sleep

Hypnogram of sleep stages:



(L Mastin, 2017)



Sleep Disorders (from ICSD-3)

Insomnia

- *Chronic*
- *Acute*

Sleep-related Breathing Disorders

- *Obstructive Sleep Apnea (OSA)*
- *Central Sleep Apnea (CSA)*

Central Disorders of Hypersomnolence

- *Narcolepsy, Types 1 & 2*
- *Idiopathic Hypersomnia*



...Sleep Disorders

Circadian Rhythm Sleep-Wake Disorders

- *Delayed Sleep-Wake Phase Disorder (DSPD)*
- *Advanced Sleep-Wake Phase Disorder (ASPD)*
- *Irregular Sleep-Wake Phase Disorder*
- *Non-24 hour Sleep-Wake Disorder*
- *Shift Work Disorder*
- *Jetlag*



...Sleep Disorders

Parasomnias

- *Sleepwalking*
- *Sleep Terrors*
- *Sleep-related Eating Disorder*
- *REM Sleep Behavior Disorder*
- *Nightmare Disorder*

Sleep-related Movement Disorders

- *Restless Legs Disorder*
- *Periodic Limb Movement Disorder*
- *Bruxism*

So, is this you...?



Psychological Impact of Sleep Disorders

For example, Insomnia, common co-morbidity with:

- *Depression*
- *Anxiety*

Daytime Impairment due to sleep deprivation:

- *Fatigue (tired, weary, exhausted)*
- *Drowsy Driving*
- *Mood disorder, irritability*
- *Poor concentration and memory*
- *Risk-taking behaviors*
- *Increased suicidal ideation*



Physical Impact of Sleep Disorders

Can develop:

- *Obesity.*
- *Cardiovascular illness.*
- *Diabetes.*
- *Stroke.*
- *Hypertension, high blood pressure.*

Economic Impact of Sleep Disorders



Asleep on the job

COSTS OF INADEQUATE SLEEP IN AUSTRALIA



Sleep Health Foundation

Improving people's lives through better sleep

Economic Impact of Sleep Disorders

Report by Sleep Health Foundation 'Asleep on the Job': Key Findings

The Statistics 2016-17 financial year:

Four out of ten Australia adults (=7.4 million) frequently suffered from inadequate sleep, including:

- 1.1 million with sleep disorders - insomnia and sleep apneas.
- 2.5 million with health problems affecting sleep.
- *3.8 million who routinely fail to obtain enough sleep, often with side effects of sleep deprivation.*

...Economic Impact of Sleep Disorders

Report by Sleep Health Foundation 'Asleep on the Job': Key Findings
The Statistics 2016-17 financial year:

Sleep deprivation linked to 3,017 deaths in 2016-17:

- **394 deaths** falling asleep while driving a vehicle, or from industrial accidents *directly due to lack of sleep*.
- Remaining deaths due to heart disease and diabetes linked to sleep disorders.



...Economic Impact of Sleep Disorders

2016-17 financial year:

The Costs:

Total cost of *inadequate sleep* in Australia in 2016-17 estimated to be:

\$66 billion

...Economic Impact of Sleep Disorders

The Costs: \$66 billion includes \$26.2 billion made up of:

- Health system costs of \$1.8 billion
= *\$246 per person with inadequate sleep.*
- Productivity losses of \$17.9 billion
= *\$2,418 per person with inadequate sleep.*
- Informal care costs of \$0.6 billion
= *\$82 per person with inadequate sleep.*
- Other financial costs, including deadweight losses of \$5.9 billion
= *\$802 per person with inadequate sleep.*
- Loss of well-being costs of \$40.1 billion
= *\$5,420 per person with inadequate sleep.*

...Economic Impact of Sleep Disorders

Report Recommendations to increase policy efforts devoted to:

- *Raising awareness of the importance of sleep hygiene.*
- *Education about the benefits of switching away from blue light screens at night.*
- *Enhancing development and implementation of cost-effective treatments for sleep problems.*
- Continuing research into causes of primary sleep disorders.
- Continuing encouragement of prevention and early detection of sleep disorders.
- Reducing smoking, obesity and other lifestyle causes of daytime sleepiness.
- Occupational health and safety regulations that reduce circadian rhythm disruption from shift work and fatigue from excessive work hours - possibly including restrictions on driving without adequate sleep beforehand.
- Building design standards that increase natural light.

Insomnia Treatment

Cognitive Behavioral Treatment for Insomnia (CBT-I)

- *Recommended as first line of treatment for chronic insomnia in adults. (American College of Physicians, 2016; Australasian Sleep Association, 2017).*
- *Sleep Restriction Treatment. (restricted time in bed)*
- *Stimulus Control.*
- *Sleep Hygiene.*
- *Cognitive Therapy to discuss and challenge beliefs about sleep.*

...Insomnia Treatment

Cognitive Behavioral Treatment for Insomnia (CBT-I):

- *Pharmacotherapy is only effective in short-term, may have adverse side effects.*
- *CBT-I has best efficacy, maintained at least for 3 years after treatment, up to 70% of patients exhibit treatment response.*
- *Very effective co-treatment for depression, anxiety.*
- *Good clinical effects on pain tolerance.*

...Insomnia Treatment

Ideal client for Cognitive Behavioral Treatment for Insomnia (CBT-I):

- *Willing to make behavioral changes to obtain improved sleep.*
- *Medically stable, medication compliant (if applicable).*
- *Psychologically stable, medication compliant (if applicable).*
- *Preferably not on any sleep medications.*
- *Commit to 6 to 8 weeks treatment course, with 1 month & 3 month follow ups.*

In Summary: Sleep Need in General

Children:

- *As much as they can! 10 hours +*

Adolescents:

- *8 to 10 hours, preferably towards 10...!*

Normal healthy adults:

- *7 to 9 hours.*

KEY: Same time to bed and same time out of bed - every night and morning!

References

- American Academy of Sleep Medicine. (2014). *International classification of sleep disorders, 3rd edition*. Darien, IL: AASM.
- American College of Physicians. (2016). Management of chronic insomnia disorder in adults: A clinical practice guideline from the American College of Physicians. *Annals of Internal Medicine*, 165, 125-133.
- Cralle, T. & Brown, W. D. (2016). *Sleeping your way to the top*. New York, NY: Sterling.
- Kryger, M. H., Roth, T., & Dement, W. C. (2011). *Principles and Practice of Sleep Medicine, 5th edition*. St Louis, MI: Elsevier Saunders.
- Ree, M., Junge, M., & Cunnington, D. (2017). Australasian Sleep Association position statement regarding the use of psychological/behavioral treatments in the management of insomnia. *Sleep Medicine*, 36, S43-S47.
- Sleep Health Foundation. (2017). *Asleep on the job: Costs of inadequate sleep in Australia*. Blacktown NSW: SHF. Retrieved from <https://www.sleephealthfoundation.org.au/public-information/special-reports/asleep-on-the-job.html>



...or perhaps this is you?

I AM NOT AN
EARLY BIRD OR A
NIGHT OWL.
I AM SOME FORM
OF PERMANENTLY
EXHAUSTED PIGEON.



Finally - The Take-Home Messages:

Lack of sleep is only bad if
you have to drive, or think,
or talk, or move.

Dov Davidoff

A black arrow points to the right from the left edge of the slide. Below it, several thin, curved lines in shades of blue and grey sweep across the left side of the slide.

So, starting tonight and every night...

“Make Sleep Your Friend”.



Thank you! Q & A?

Geoff Brearley, Psychologist

m: 0409 865 607

e: sleep@geoffbrearley.com

t: [@sleep_friend](#)

w: makesleepyourfriend.com