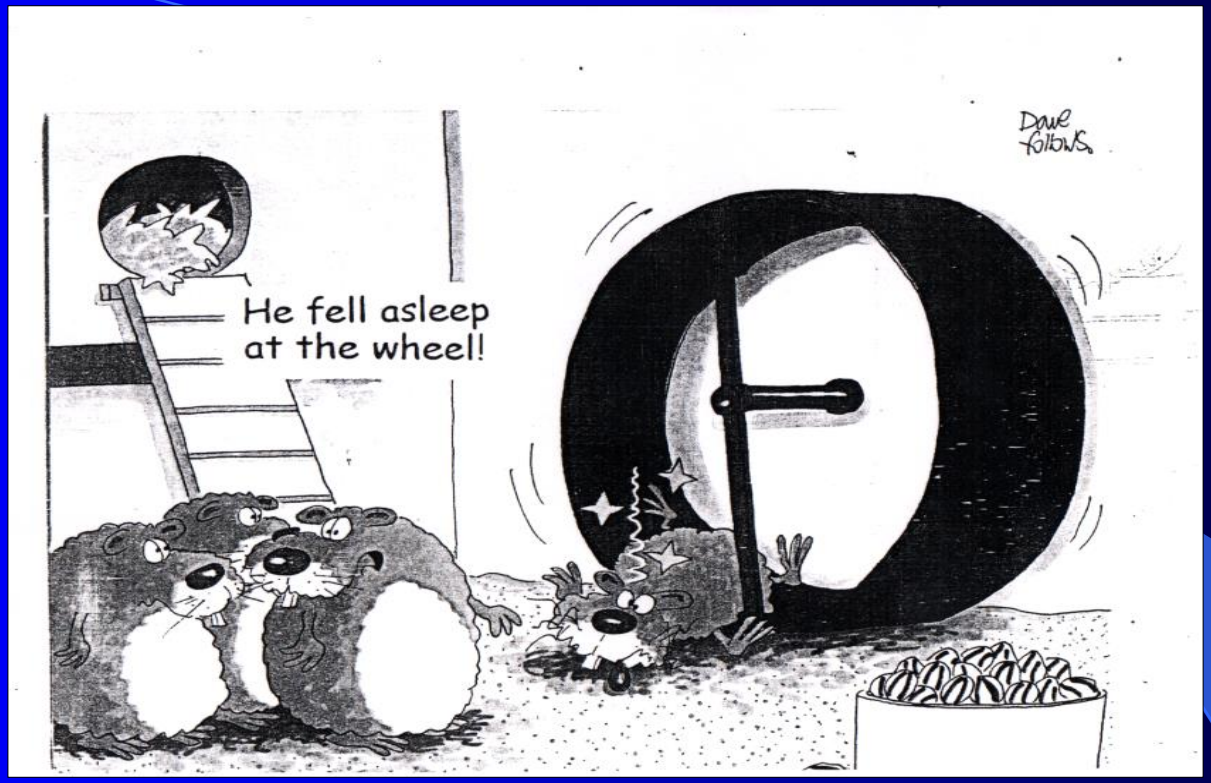



# Managing Sleep and Shiftwork

## CENNZ conference

## 2017

# Sleep & Shiftwork

The structure of sleep

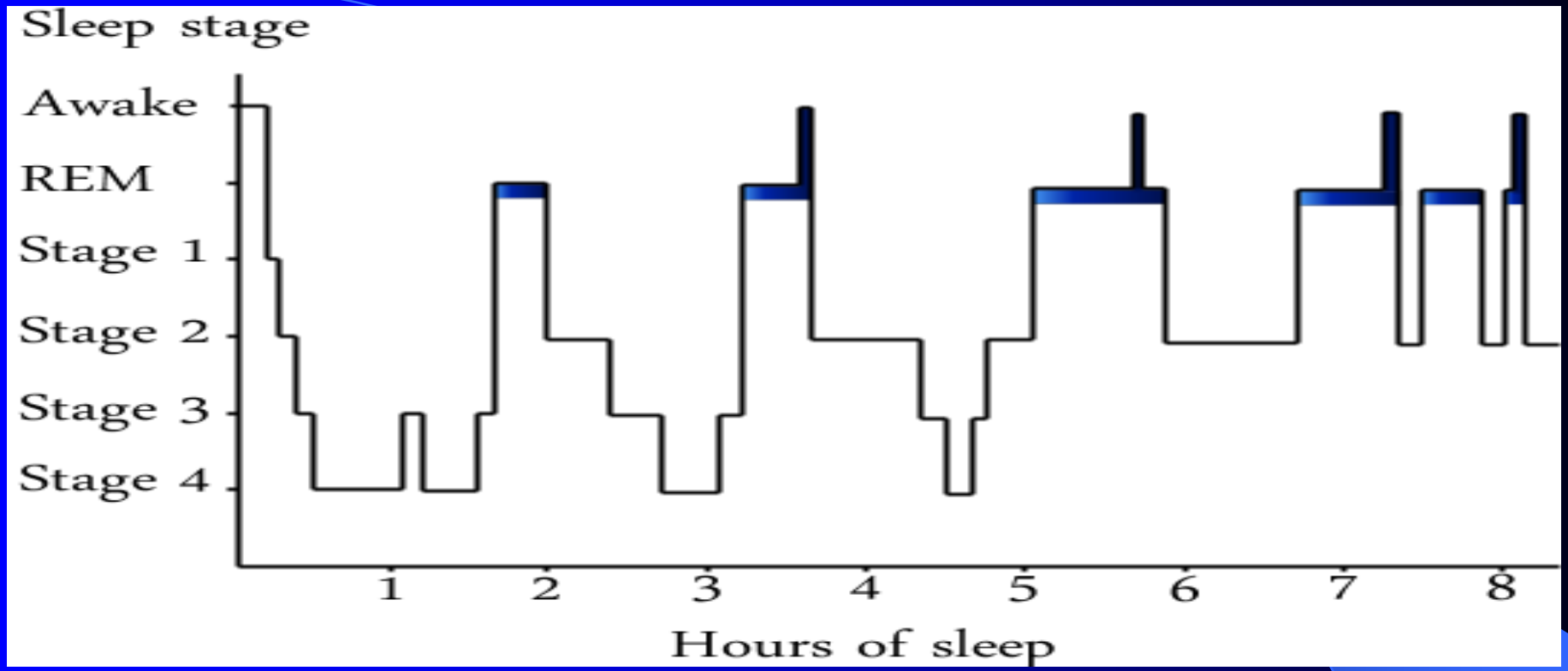
The impact of fatigue and sleep deprivation

Circadian rhythm

Insomnia

Managing sleep on Shiftwork

Conclusion




- REM - Rapid Eye Movement  NREM - Non-Rapid Eye Movement
- Stages 1 and 2 light sleep  Stages 3 and 4 deep sleep
-
- 90 -100 Minute sleep cycles.  4 – 5 cycles per night to feel refreshed
- 25% REM, 50% Stage 2 and 25% stages 3 and 4

# How much sleep do we need?

Teenagers ---------- 8 1/2 – 9hrs

Adults ---------- 7 – 8hrs

Elderly ---------- 7 – 7 1/2 hrs

Regular < 6hrs is insufficient

# FATIGUE

## Causes and Effects

No physiological markers or blood tests
Unlike alcohol

However, there are a number of factors that can result in fatigue

# FATIGUE
## Causes and Effects

Major factors:

- Time of day (12mn – 6am; esp 3am – 5am)
- Cumulative sleep debt
- Acute sleep debt (<7hrs in 24hrs)
- Continuous hours awake (>17hrs)
- Time on task (Continuous repetitive job)
- Underlying sleep/medical disorders
- Medication

# Fatigue

Psychosocial consequences

Impaired cognitive function.

- Poor concentration
- Learning and Memory difficulties
- Impaired decision making & reasoning
- Lapses in attention
- Slowed responses / reaction

# Fatigue

Psychosocial consequences

Excessive Daytime Sleepiness.( EDS)

Depression / Anxiety

- Irritability & reduced stress tolerance
- Can’t be bothered

Personality changes

Substance abuse

# Fatigue

Medical consequences :-

- Obesity
- Hypertension
- Heart Attack/Stroke
- Diabetes
- Cancer
- Gastrointestinal illness
- Women's reproductive health

# Fatigue

Workplace consequences

- Increased absenteeism
- Increased illness
- Increased accidents
  - At work (3am-5am) and to & from work
- Increased risk taking

# Fatigue

**All result in reduced Performance**

# Circadian Rhythms

Circa Dies = About a day

Controlled by

- Internal body clock - The Suprachiasmatic Nucleus (SCN)
- External environment cues – Zeitgebers (Time keepers)

# Circadian Rhythms

## Internal Body Clock

Sleep / Wake cycle

- **24 - 25 hours if left free running**
- **Controls sleep architecture**
- **Varies with age**
- **1 : 2 ratio**

# Circadian Rhythms

## External Environmental Cues

**Light.** Bright (blue/green) light stimulates. Darkness for sleep

**Exercise.** Exercise stimulates (raises core body temp)

**Temperature.** Warmth/very cold is sedative, cool stimulates

**Gut Function.** Slows down at night

# Circadian Rhythms

**Internal Circadian Controls** (Endogenous)

These have their own cycle, but can be modified

by

**External Circadian Controls** (Exogenous)

These can be manipulated

# Insomnia

# Insomnia

10-15% of adults suffer from chronic and severe insomnia
*(Complaints of insomnia with daytime consequences)*

30–40% of adults complain of insomnia symptoms only

95% experience insomnia at some time in their lives

# Insomnia

**Risk Factors:**

- Female 2:1 (?More likely to report insomnia)
- Increasing age (? Increased likelihood of medical complaints)
- Stress/Anxiety (Hyper-arousal Disorder)
- Psychiatric Illness
- Medical disorder
- Social factors (Unemployed, single, physical inactivity)
- Environmental factors (noisy environment, latitude-SAD)

# Insomnia Treatments

**CHEMICAL**

- Herbal
- Allopathic

**BEHAVIOURAL**

- Cognitive/behavioral therapy for Insomnia

**CBTi**

# INSOMNIA

## Cognitive Behavioural Therapy for Insomnia (CBTi)

- Sleep Hygiene
- Stimulus Control
- Bed Restriction Therapy

# Sleep Hygiene

To Provide information about lifestyle, and environment that might interfere with sleep, or promote better sleep.

These strategies are important as a baseline, and should be combined with the other treatments.

As a sole therapy, it is not effective for the more severe insomnia, but should be addressed in therapy.

# Sleep Hygiene

- **Avoid stimulants**
  - Caffeine (5-8 hour half life)
  - Cigarettes
  - Alcohol (initially sedative, later stimulant)
  - Psychoactive Drugs
- **Exercise regularly -** Morning or late afternoon
- **Allow at least 1 hr relaxation time to unwind before bedtime**
- **Bedroom environment should be quiet, dark and comfortable and ~ 16 - 18 ˚C**
- **Maintain a regular sleep/wake schedule**
- **Avoid clock watching**

# Stimulus Control

***for those with insomnia***

***Stimulus Control*** **is based on classical** ***conditioned response*** **to certain stimuli.**

**This involves *strengthening* the relationship between *bed* and *sleep*, and *breaking* the negative relationship between *bed* and *anxiety* and *wakefulness***

**Important and Effective**

# STIMULUS CONTROL THERAPY

Go to bed when sleepy

Don’t watch TV, read, eat or worry while in bed

Avoid napping during the day

Set regular wake up/get up time – including weekends

Get out of bed if unable to fall asleep in 15 – 20 minutes or anxious

Undertake some quiet pursuit and return to bed after 15 - 20 minutes. Repeat as often as necessary

# Bed Restriction Therapy

***Bed restriction*** **therapy is designed to improve** ***sleep consolidation*** **and** ***sleep efficiency*****.**

**This is achieved by initially** ***increasing*** **the** ***homeostatic drive*** **to sleep.**
**Sleep efficiency is improved.**
**Time in bed can then be increased**

**Very effective**

# BED RESTRICTION THERAPY

Average the amount of time asleep over 2 weeks

Restrict time in bed to that amount of time (never less than 5hr sleep opportunity)

Increase time in bed slowly when sleeping is consolidated to 85% - 90%

# Sleep and Learning/Memory

## Effect of Napping

- < 10 mins – little effect

- 10-20 mins, maximum effect (~3hrs)

- > 20 mins – sleep inertia (waking groggy)

- 1½ hrs is ideal

# SHIFTWORK

## How to Remain Alert at Night

- Avoid sleep debt before starting work.
- Understand the body clock. The Circadian cycle
- Light. White light or blue enhanced light
- Nutrition and stimulants. Caffeine only early in the shift

# SHIFTWORK

## How to Remain Alert at Night (cont)

- Introduce interest. Vary the work if possible
- Maintain muscular activity. Get up and walk around
- Temperature. Cooler better than warmer.
- Noise. A constant, low intensity noise will put you to sleep

# SHIFTWORK

## How to Improve Sleep after Nightshift

- Sleep as soon as possible after shift
- Avoid morning light. ?sunglasses on the way home
- Try to have one block of sleep only. Two is common
- Keep dark. Use black-out curtaining, eye shades, ear plugs .
- Disconnect phone. Use an answer machine .

# SHIFTWORK

## How to Improve Sleep after Nightshift (cont)

- Avoid stimulants at work and sedatives at home
- Try to anticipate shift changes. Especially after a break
- Inform neighbours and friends. Wishful thinking!
- Discuss with family. Shiftwork affects the whole family

# SHIFTWORK

**Healthy Sleep**

**Investigate specific sleep disorders**

**OSAS (Sleep Apnoea): 9% Male  4% Female**

**Insomnia: 10-15%**

**RLS/PLM's: 10%**

**SWSD: 10 – 30% of Shift workers**

# SHIFTWORK

## Conclusion

- The 24hr society is here to stay

- Work outside normal biological circadian rhythms & attendant sleep loss leads to increasing health & safety risks.

- Shiftwork affects societies, organisations & individuals environmentally, economically and in health & well-being

# Thank You

Dr Alex Bartle
The SLEEP  WELL Clinics
Throughout New Zealand

SLEEP WELL
CLINIC