The Case of the Sleeping Policeman
- Sleep Disorders

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Aims

- Overview of physiology of sleep
- Sleep disorders

The case of the Sleeping Policeman

PRIORY

- AM
- 29 year old policeman
- Married with 3 children
- No previous psychiatric history
- No previous medical history
- Charged with trespassing on railway lines and obstructing an engine or carriage
- AM claims he has no recollection of the event

The case of the Sleeping Policeman -background

- In the week prior to the incident children were unwell with chest infections and weren't sleeping well.
- The night prior to the incident, he got to sleep at about 1am and had to get up for work at 2am
- Felt tired during that day but finished work at 3pm
- Went to the pub with colleague and drank six pints of beer over four hours and had a meal.
- Went to the Train Station, bought a ticket and got on the train.
- He remembers sitting down on the train and he then fell asleep.

The case of the Sleeping Policeman -background

- Next memory is of being outside the Station looking for a bus and texting a friend to him that he had missed his stop
- Unable to find a taxi or bus, he went back into the station and fell asleep in the waiting room.
- He then recalls being woken by a British Transport Police Officer who told him that he had been on the tracks and it had been recorded on CCTV
- He had no recollection of walking on the tracks

The case of the Sleeping Policeman -witness statement

PRIORY

"I approached the male and said "excuse me, sir, we are at the station now. You need to leave the train." He did not respond to me so I repeated "Hello," to try and get his attention. The male looked in my direction, stood up, and walked off the train. I then noticed that he had left his bag behind, I picked up the bag and stepped onto the platform and saw the male walking in the wrong direction. He was walking away from the station and towards the end of the platform. I called after him, saying "Hello, excuse me sir, you have left your bag" but I got no response.

The case of the Sleeping Policeman -witness statement

He continued to walk towards the wrong end of the platform so I continued shouting "you're going the wrong way, sir, you need to come this way". He ignored this again, he didn't turn around or show any signs of acknowledgement….the guard called to AM "excuse me sir, this way, you need to turn around" but he continued to ignore this and carried on walking….when he got to the edge [of the platform] he continued to step off the platform where there was an approximately 4 foot drop on to the tracks. The male did not jump or sit on the edge of the platform first, he purely just stepped off the edge at if it was on purpose. He did not topple forwards or backwards."

The case of the Sleeping Policeman -Defense?

PRIORY

The case of the Sleeping Policeman -History of sleep walking

PRIORY

- Number of previous episodes of sleep-walking.
- He has never sought any medical attention for the sleep walking because it has never caused any problems and he has seen these episodes as "comical".
- First episode of sleeping occurring at the age of 14
- He remembers waking up in his boxer shorts in the communal area outside his parents' flat.
- He had no idea how he got there and he had to knock on the door to get them to allow him back in.
- He was unable to explain how he got there.

The case of the Sleeping Policeman -History of sleep walking

PRIORY

- Partner has told him of several episodes of him sleep-walking and other unusual sleep behaviours.
- Partner reports that he is often restless in his sleep and often makes noises in his sleep which wake his partner.
- At times, he will sit up in bed and talk nonsense, at other times, he will sit on the end of the bed but he usually lies back down and goes back to sleep.

The case of the Sleeping Policeman -History of sleep walking

- He has got out of bed and walked around the house
- He goes to the bathroom and sits on top of the toilet seat
- He goes downstairs and sits on the sofa.

The case of the Sleeping Policeman -History of sleep walking

PRIORY

- An incident when he came home from work and fell asleep on the sofa.
- He let the plumber into the house when the plumber
- Didn’t speak to the plumber but opened the door and let him in, went back to the living room and lay back down on the sofa.
- The plumber tried to rouse him but he was speaking incomprehensively.
- The plumber left and came back the next day to fix the boiler
- He has no recollection of letting the plumber in the house.

The case of the Sleeping Policeman -History of sleep walking

- When staying at a colleague's house
- Woke up in the communal area wearing his jeans and one sock
- He did not remember leaving the flat and, on waking, he had to knock on the door to get her to allow him back in.

The case of the Sleeping Policeman -History of sleep walking

PRIORY

- Never sought any help for his sleep-walking because he has never had reason to
- He has never acted aggressively during the sleep-walking
- He has never done anything very risky

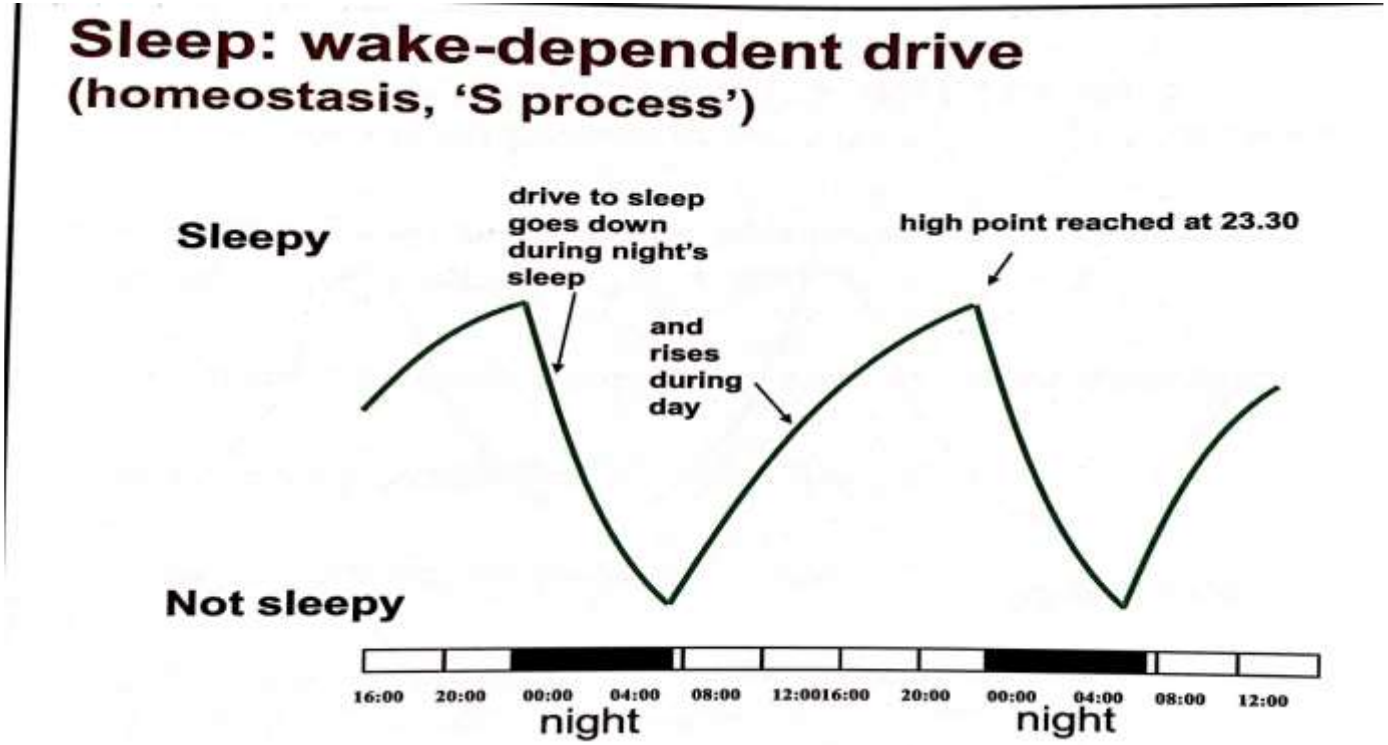
Normal Sleep

- How much sleep do we need?
  - Variable from person to person but 7-8 hrs is common
  - Less than 5 hrs causes problems with performance
  - More than 10 hrs sometimes causes sleep drunkenness
  - Many people prefer 2 sleep periods (siesta)
  - Some people use naps to catch up
  - Many people have shorter sleep on weekdays and make up the sleep debt at weekends

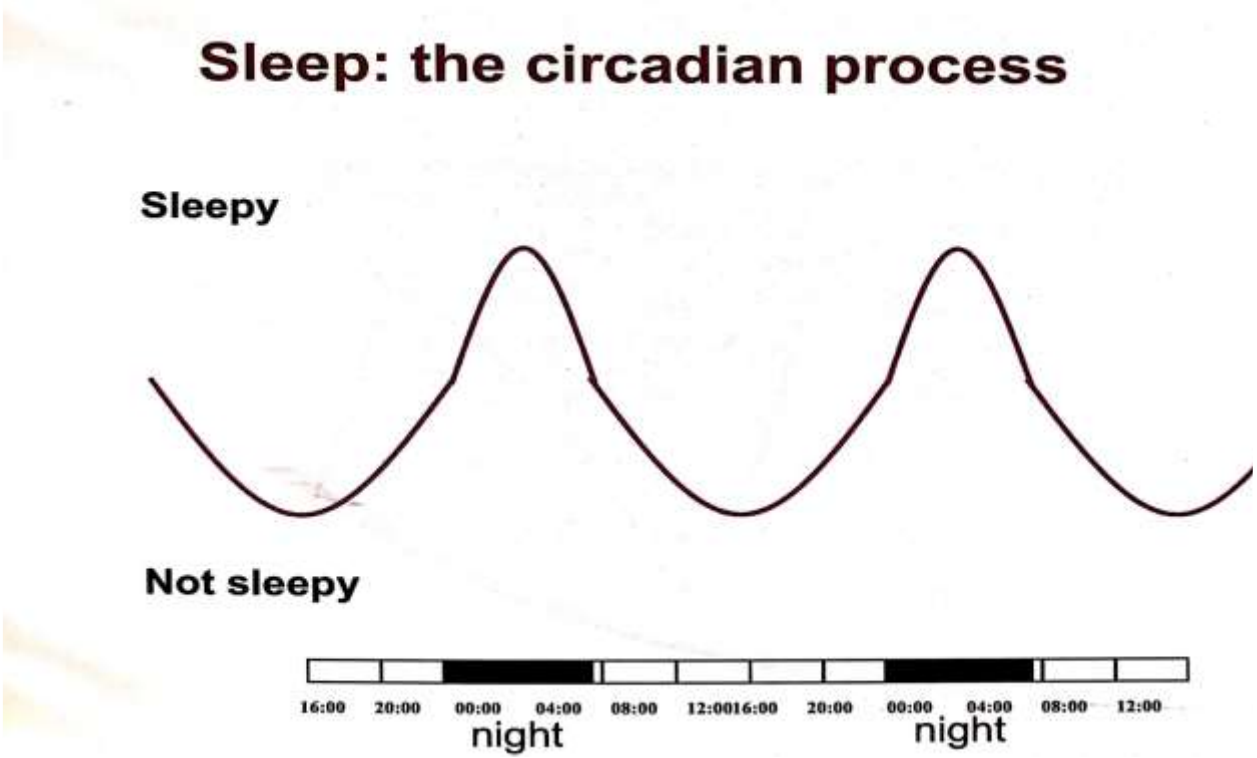
Why do we sleep when we do?

- Supra chiasmatic nucleus in the hypothalamus controls the circadian process (body clock)
- Time since last slept (wake-dependent drive)
- Low arousal (winding down)
- Drive to be awake vs Drive to be asleep vs autonomic arousal

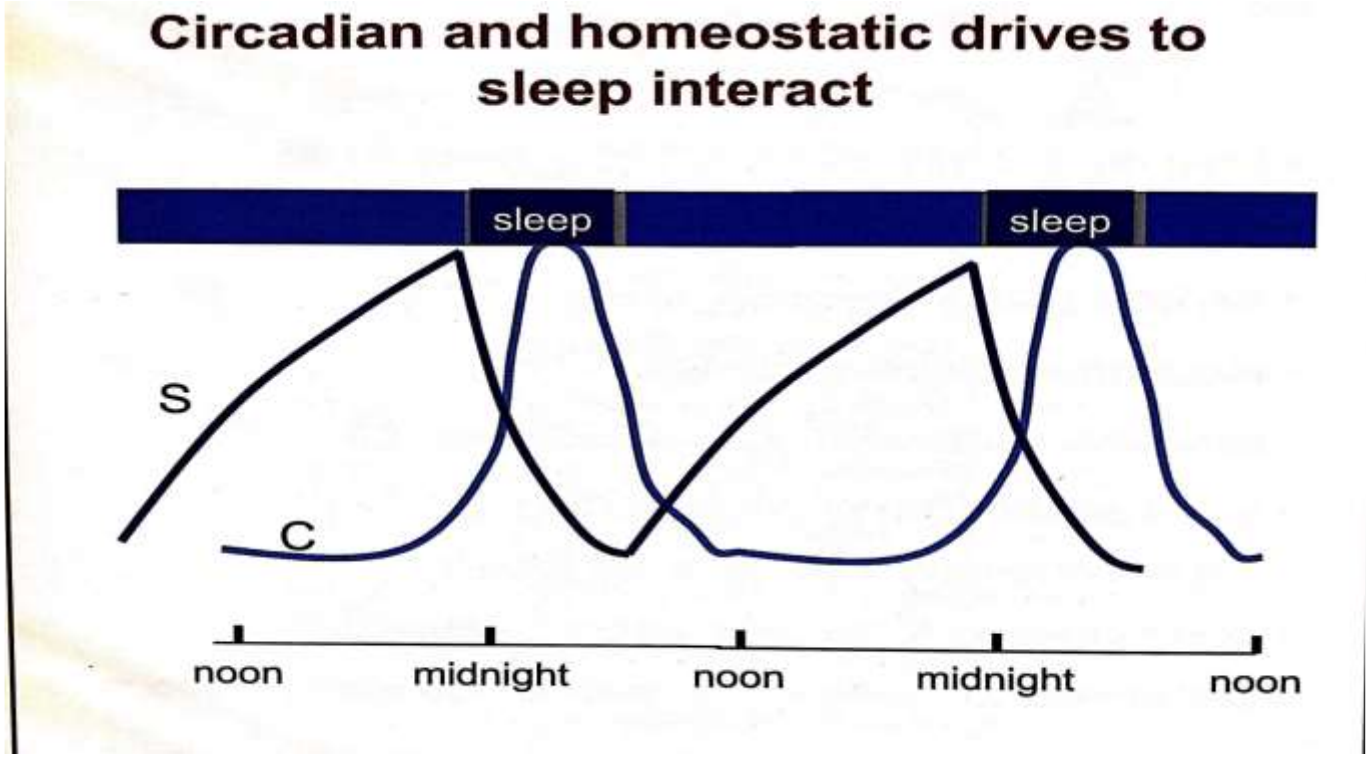
Drive to sleep



Drive to be awake



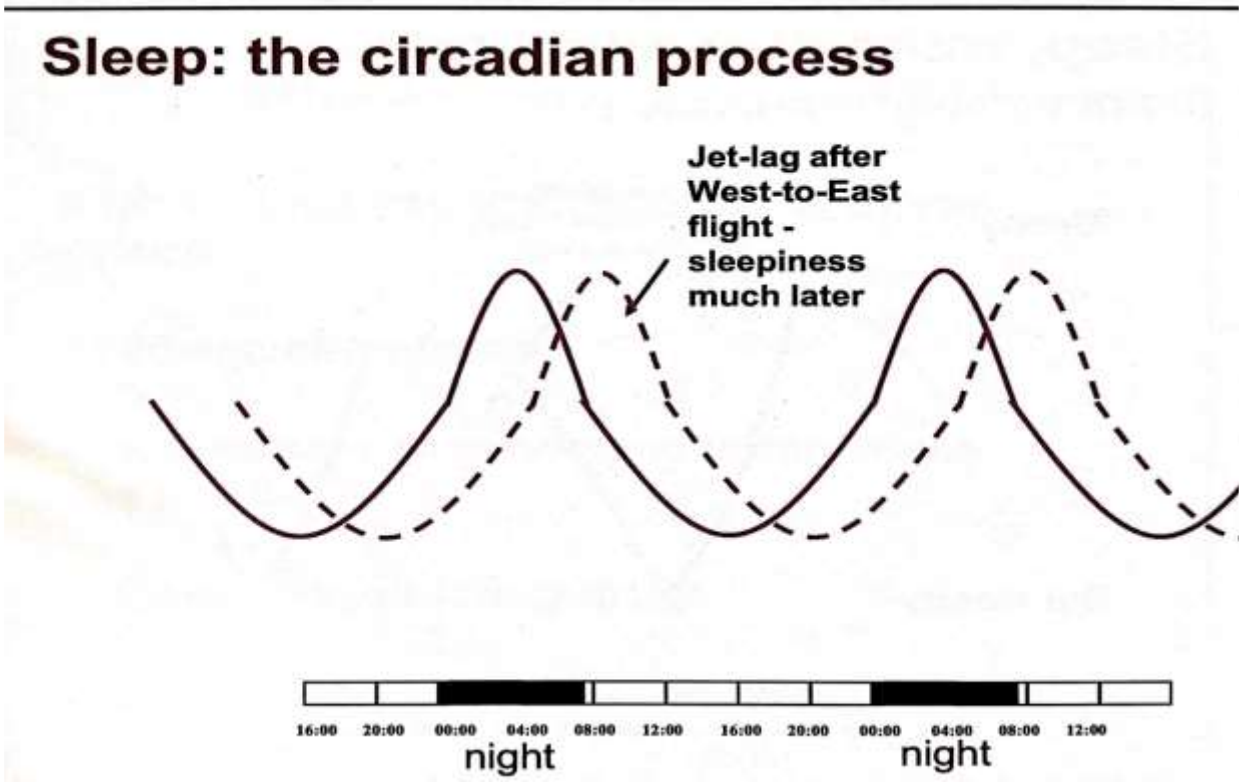
Sleep cycle


Circadian and homeostatic drives to sleep interact
sleep
sleep
S
C
noon
midnight
noon
midnight
noon

Sleep cycle set by:

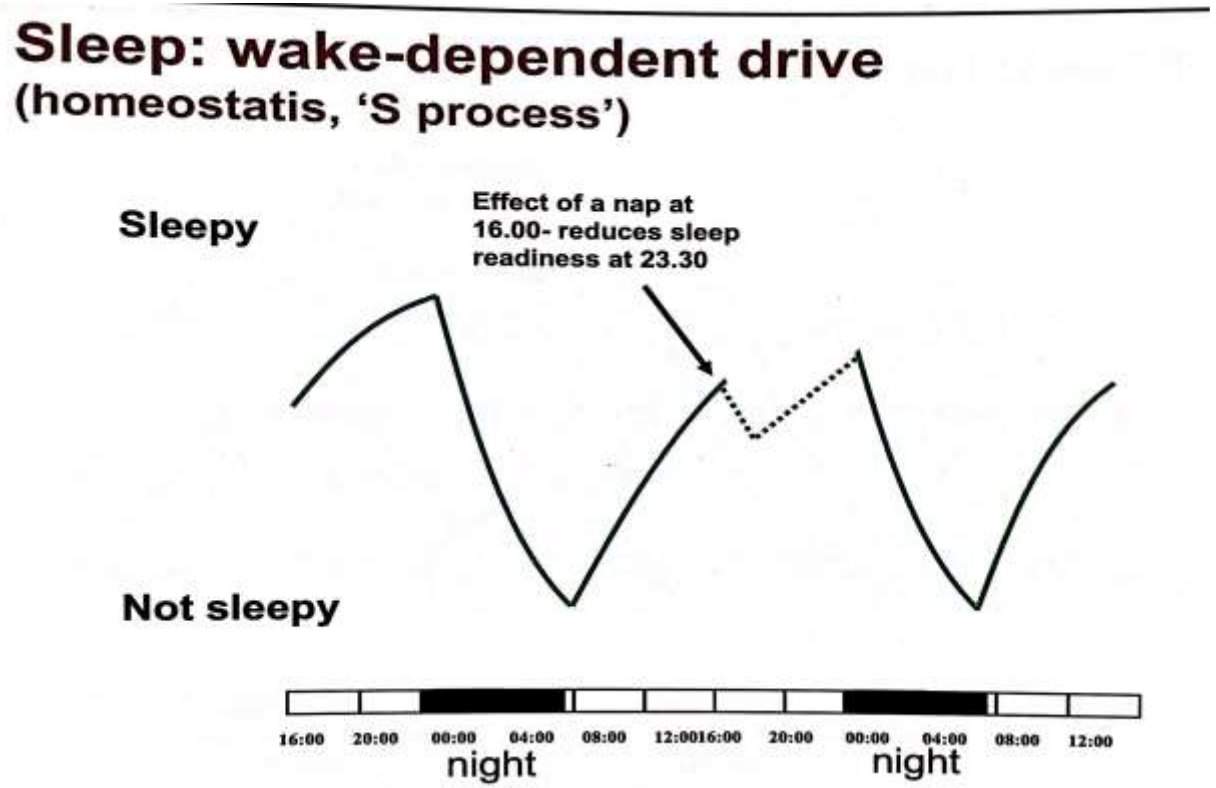
- Time going to sleep
- Time waking up
- Exposure to sunlight

Jetlag:



Effect of napping:

PRIORY



Sleep and arousal levels:

- High arousal counteracts the drive to sleep
  - Worry
  - Stimulants
- Low arousal overcomes drives to be awake
  - Boredom
  - Sedating drugs

Sleep Hygiene

PRIORY

- Regular bedtime and rising time
- Reduce day time napping
- Morning exposure to sunlight
- Good wind down routine
- Avoid staying in bed if unable to sleep
- Avoid stimulants, alcohol and cigarettes
- Ambient temperature to sleep

Normal Sleep architecture

PRIORY

- Stage 1
  - Drowsy, not perceived as fully asleep
  - Sound seems far away
  - Eyes rolling from side to side
- Stage 2
  - Light sleep (about 50% of the night)
  - Breathing and heart rate slower, muscles relaxed
  - Falling sensation and sleep jerks
  - Some imagery

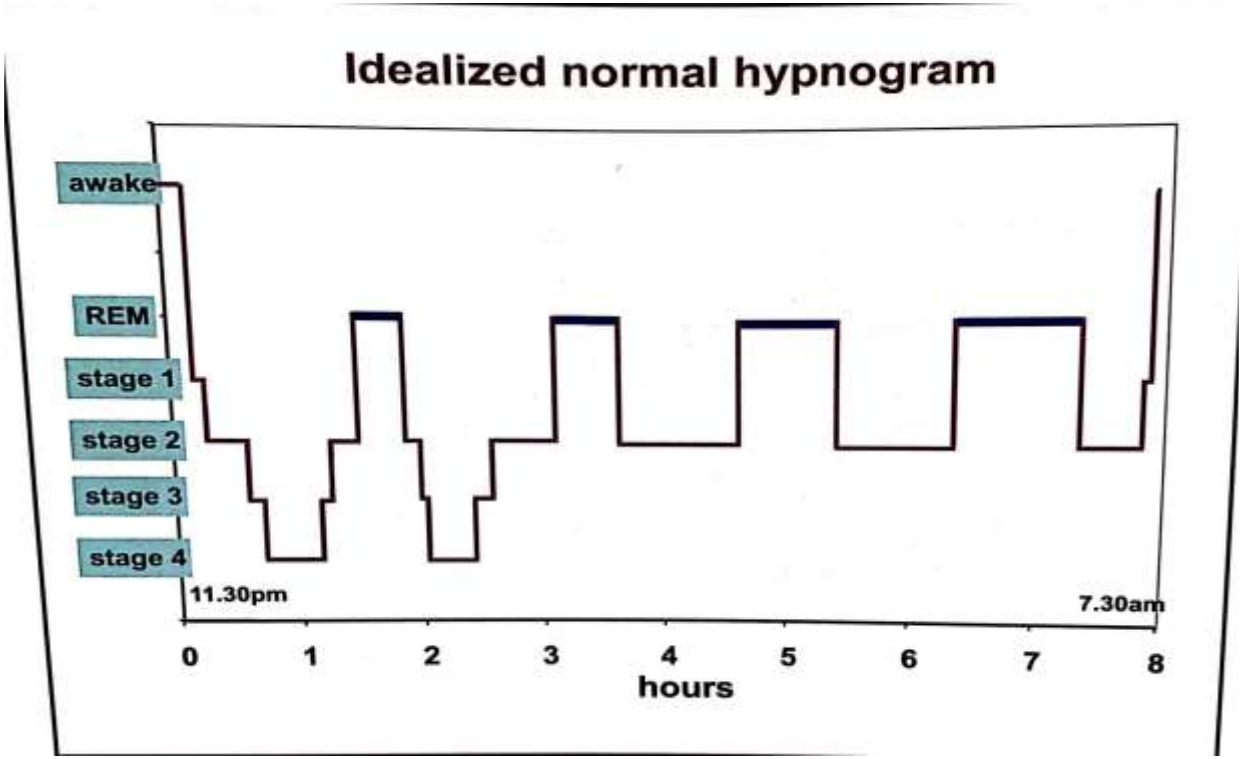
Normal Sleep architecture

- Stage 3 & 4 (slow wave sleep)
  - Deep sleep
  - Restorative
  - If sleep deprived it it will be made up first
  - 20% of night
  - Slower heart rate and breathing, muscles relaxed
  - Confused on waking directly from this stage
  - Some imagery

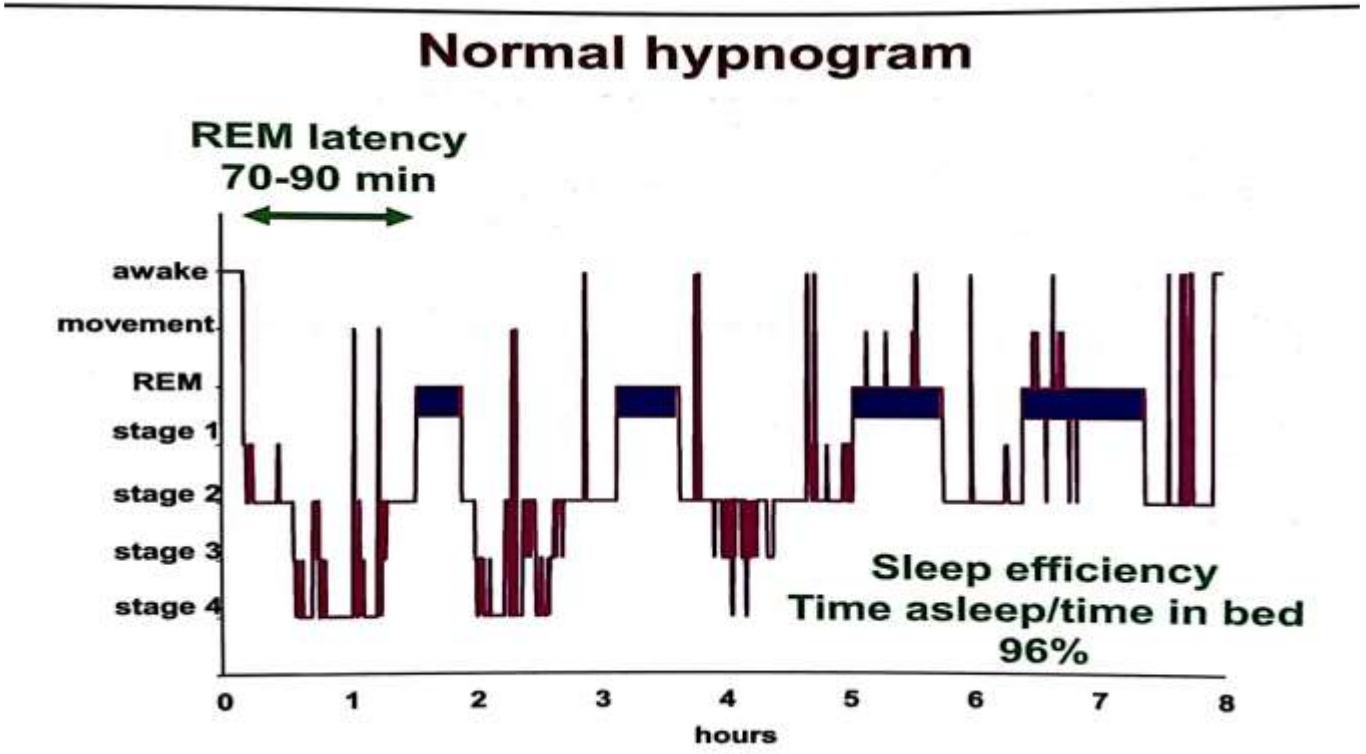
REM

- Rapid Eye Movement
  - Cortex is active
  - Muscles paralysed
  - Eyes move rapidly from side to side
  - Heart rate and breathing and autonomic function as if awake
  - Most dreaming (bizarre to storylike)

Idealized hypnograph



Normal hypnograph



Sleep disorders

- Hypersomnia
- Insomnia
- Parasomnia

Daytime sleepiness

- Difference between sleepiness and fatigue
  - Sleepiness meaning likely to fall asleep
- Epworth Sleepiness Scale
  - Subjective test
  - How likely are you to dose off or fall asleep in the following situations
  - 0 to 3, no chance to high chance
  - Sitting and reading
  - Wathcing TV
  - Sitting inactive in public space (theatre or meeting)
  - As a passenger in a car for 1 hour with no break
  - Lying down in the afternoon
  - Sitting and talking to someone
  - After lunch (no alcohol)
  - In a car while stopped in traffic

Hypersomnia

PRIORY

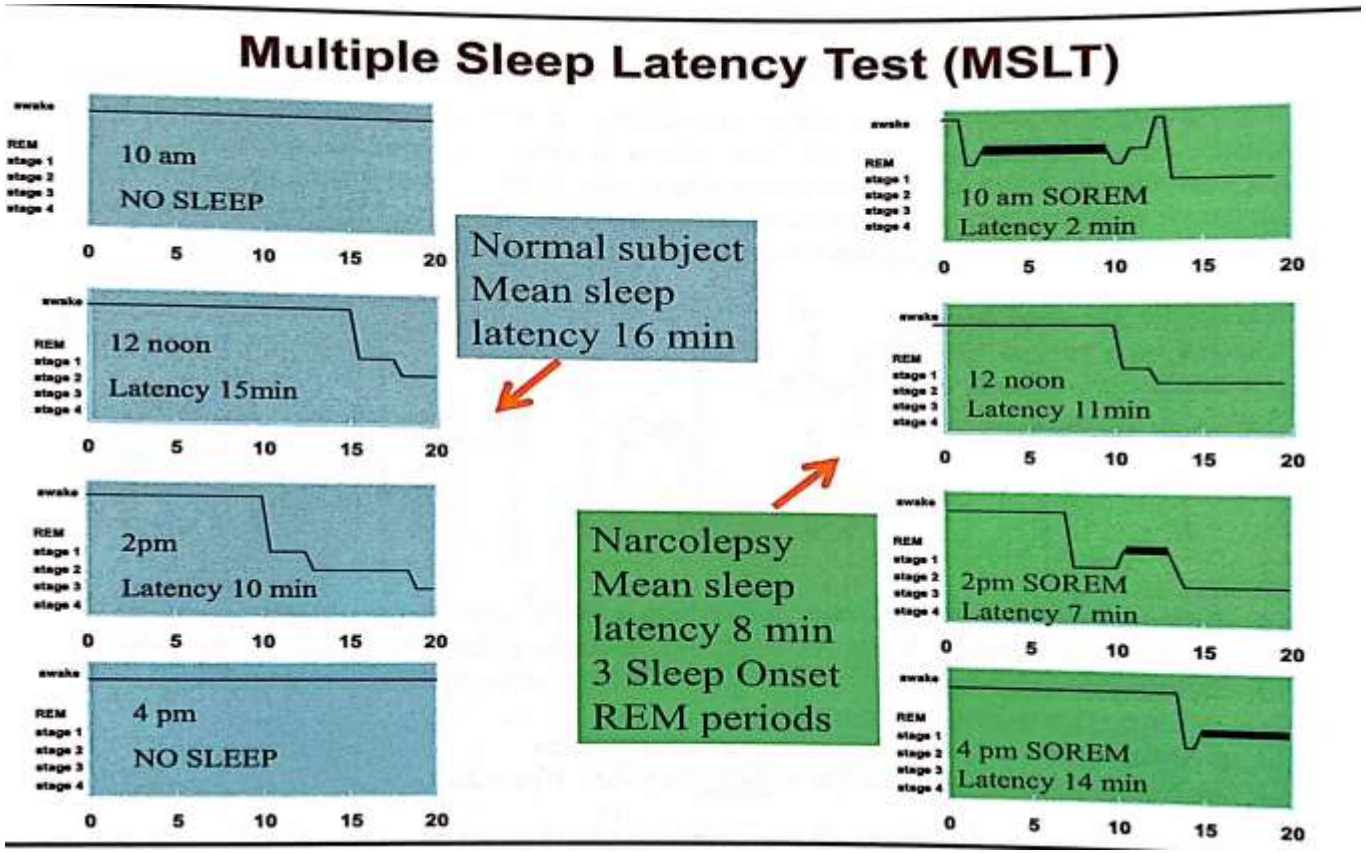
- Most commonly caused by obstructive sleep apnoa
  - Neck size >17
  - Repetitive episodes of upper airway obstruction during sleep
  - Loud snoring
  - Associated reduction in oxygen saturations
  - Frequent associated arousals
  - Excessive daytime sleepiness

Narcolepsy

PRIORY

- Excessive daytime sleepiness
- Associated cataplexy
- Other REM sleep phenomena
  - Sleep paralysis
  - Hypnagogic hallucinations
- Poor night time sleep
- Onset in second decade
- Diagnosed by Multiple Sleep Latency Test (MSLT)

Multiple Sleep Latency Test (MSLT)



Treatments

- Sleep apnoe
  - CPAP
  - Oral appliances
- Narcolepsy
  - Modafinil
    - Moderately restores alertness
    - Reduces cortical GABA, increases histamine and extracellular glutamate

Insomnia

- Affects 7-20% adults
- Causes impairment to quality of life
- Affects
  - Employment
  - Social functioning
  - Mental health
- Economics
  - Absenteeism
  - Reduced productivity
  - Increased accidents
  - Increased visits to GPs

Insomnia

PRIORY

- Long term problem
  - Many patients have a history of >20 years
- Increases risk of future psychiatric disorders
  - Anxiety
  - Depression
- Very prevalent in psychiatric population
  - 77% of depressed patients have insomnia
  - if untreated is a risk factor for relapse

Insomnia

- Complaint of poor sleep
  - Not enough
  - Interrupted
  - Poor quality
- AND daytime consequences
  - Fatigue
  - Impaired cognitive function
    - Concentration, memory, mood
  - Very Seldom daytime sleepiness

Causes of insomnia

PRIORY

- Psychiatric
  - Depression
  - Anxiety
  - Psychosis
  - Dementia
  - Substance misuse (or withdrawal)
- Physical
  - Pain
  - Pregancy
  - Illness
  - Cardiac/ respiratory
  - urinary

Causes of insomnia

- Psychological
  - Stress/ worry
  - Bereavement
  - Increased arousal
    - Listening for a sick relative
    - Being on call
    - Noise
    - Children
- Sleep-wake cycle
  - Jet-lag
  - Shift work
  - Irregular routine

Case Vignette

PRIORY

- 59 year old man, married
- No previous psychiatric history.
- Recent stroke affected the right side of his face and his speech.
- After the stroke dose of atorvastatin was doubled
- After a few weeks, complained that his night vision was been impaired and he complained of cloudy vision
- His mood deteriorated, and he was very anxious about sleeping in the bedroom where the stroke occurred
- He developed insomnia

Case Vignette

- Describes initial insomnia only getting a couple of hours sleep

- Tried amitriptyline 20mg OD
- Tried zopiclone 7.5mg OD
- Tried couple of joints of cannabis

- Recently been started on temazepam 10mg OD.

- Had thoughts of jumping in the river as things were so bad

Case Vignette

- Prior to the stroke, history of daytime sleepiness
- He could fall asleep watching television
- Never fallen asleep whist driving
- Never fallen asleep on public transport
- Never falled asleep at the dinner table
- Terrible snorer
- Partner reports that she has never heard him stop breathing at night time

Case Vignette

- Past Medical History
  - Hypertension
  - Hypercholesterolaemia
- Current Medication
  - Furosemide 40mg OD
  - Apixaban 2.5mg OD
  - Lisinopril 10mg OD
  - Sotalol 40mg TDS

Diagnosis?

Diagnosis?

- Sleep apnoea
- Anxiety
- Post stoke
- Pharmacological

Treatment?

Treatment?

- SSRI
- Mirtazepine
- CBT
- Temazepam?
- Other sleeping medication?

Sleep and psychiatric disorders

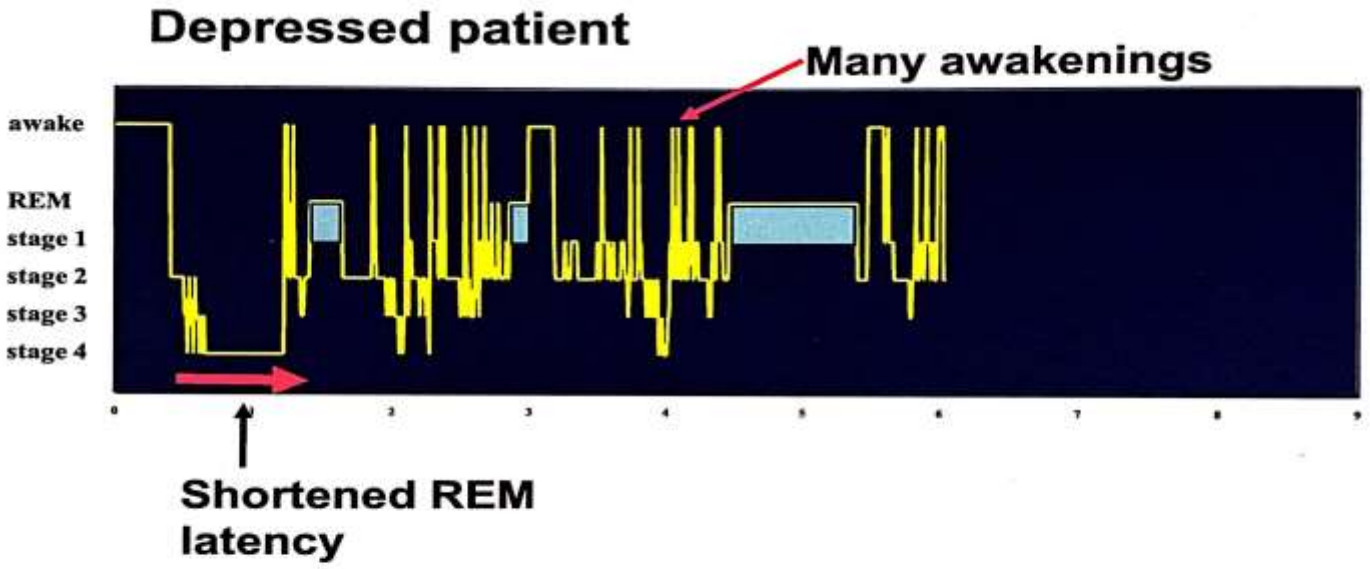
PRIORY

- Depression
  - Almost 90% have insomnia
  - Insomnia improves as mood lifts
  - 5-10% experience hypersomnia
- Generalised anxiety
  - 20-30% have insomnia
- Schizophrenia
  - Initial and middle insomnia
  - Scheduling disorder (free running)

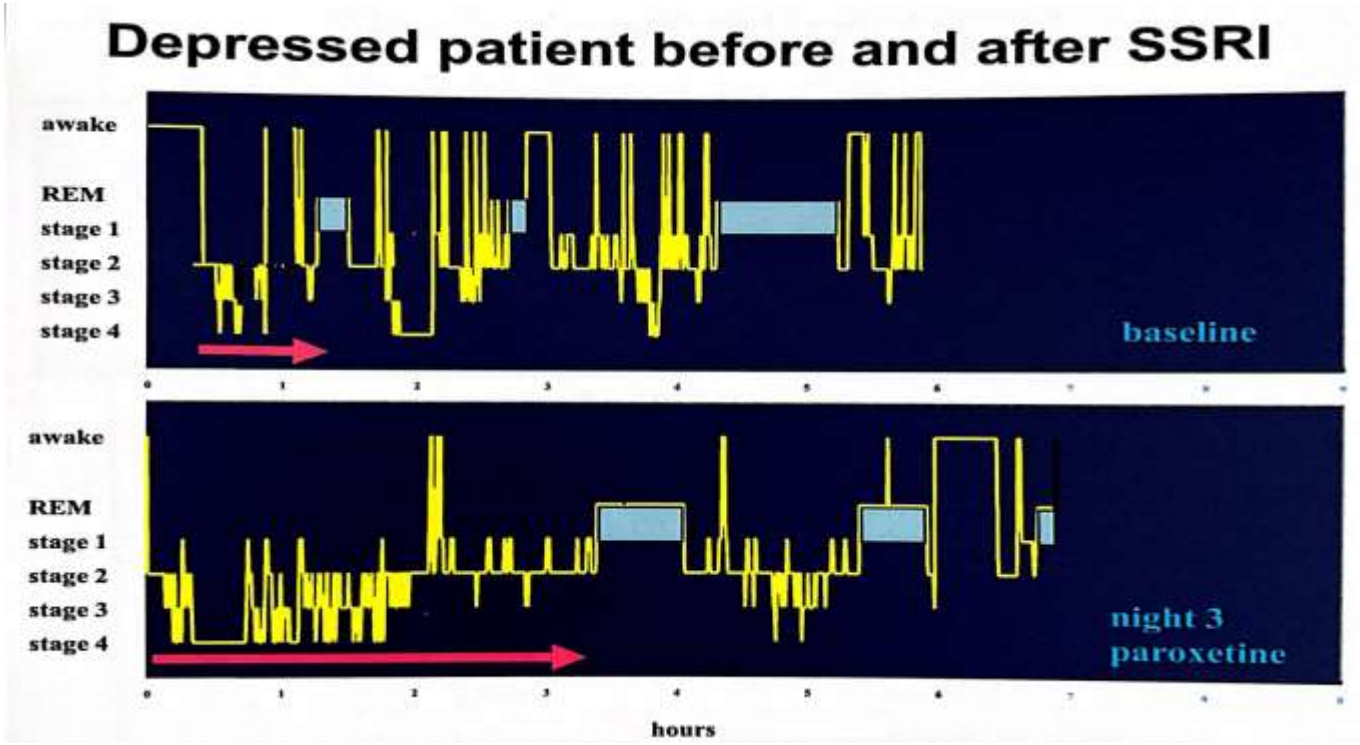
Strong link between depression and sleep

- Insomnia is often the presenting complaint
- Over 90% have sleep disturbance
- Sleep disturbance prediucts outcome
- Poor sleep is linked to suicide risk
- Relapse is more likely if there is poor sleep
- Sleep manipulation alters mood
- Sleep architerture is abnormal in depression
  - REM sleep latency is shortened
- Antidepressants change sleep architecture and lengthen REM latency

Shortened REM latency in depressed patient



Treatment with SSRI restores normal REM sleep



Triple Chronotherapy
-Rapid acting treatment for depression

PRIORY

- Standard anti-depressant medication or a psychological therapy usually takes 3 to 6 weeks to see any benefit
- Wake Therapy combined with Light Therapy can result in a rapid response within 1 week, and often within a few days.
- About 60% of patients get better

Triple Chronotherapy - How does it work?

PRIORY

- Melatonin, is released at night by the pineal gland in the brain to regulate both sleep and other hormones.

- Some people with depression release melatonin at the wrong time of the day and this may contribute to the development of depression in vulnerable individuals.

- The theory is that if we can reset the melatonin to be released at the right time of the evening then this can help control symptoms of depression.

Triple Chronotherapy - What does it involve?

PRIORY

- 5 day program to "reboot" the system
- Day 1
  - Stay awake with no naps
- Day 2
  - Bright Light Therapy for 30 minutes in your room sometime between 5.45am and 9am
  - Stay awake during the day. Try not to have any naps
  - Go to bed at 5pm, wake by 1am (i.e. 8 hours sleep).
  - At 2pm (3 hrs before bedtime), wear amber glasses, which block out blue light and create virtual darkness in your brain. The amber glasses help the production of melatonin, and aid going to sleep at 5pm

Triple Chronotherapy - What does it involve?

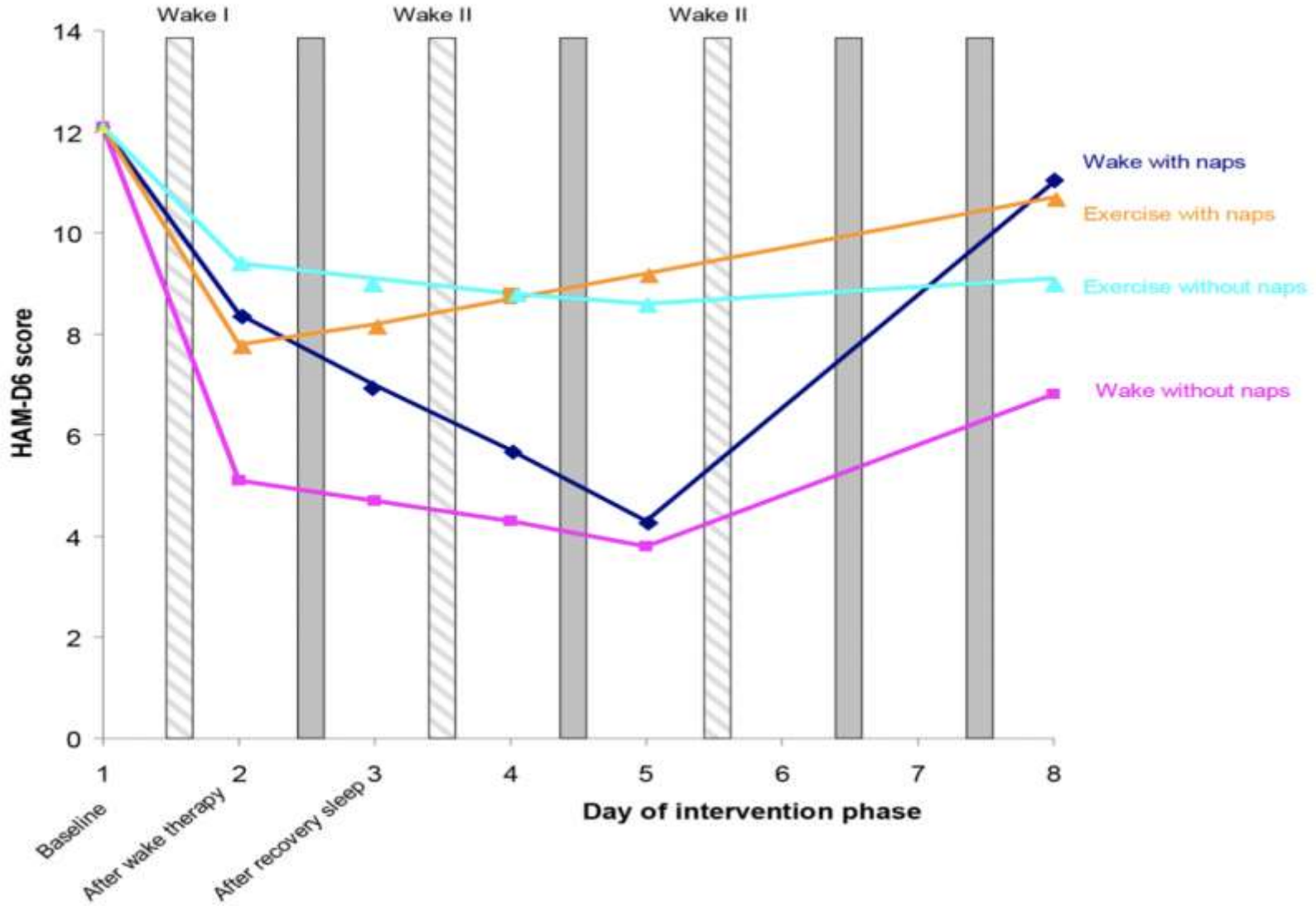
PRIORY

- Day 3
  - Stay awake during the day
  - Bright Light Therapy as day 2
  - Go to bed at 7pm and wake by 3am
  - Amber glasses from 4pm until bedtime
- Day 4
  - Stay awake during the day
  - Bright Light Therapy as day 2
  - Go to bed at 9pm and wake by 5am
  - Amber glasses from 6pm until bedtime
- Day 5
  - Stay awake during the day plusb Bright Light Therapy Bed at a normal time by 11pm and wake by 7am.
  - Amber glasses from 8pm for the last time

Triple Chronotherapy - Does it work?

- Danish study
- 75 patients with depression on anti-depressant.
- Randomly allocated to Wake/Light Therapy or to exercise.
- Wake/Light Therapy did better than the exercise group
- Those who took naps didn’t do as well

Triple Chronotherapy - Does it work?

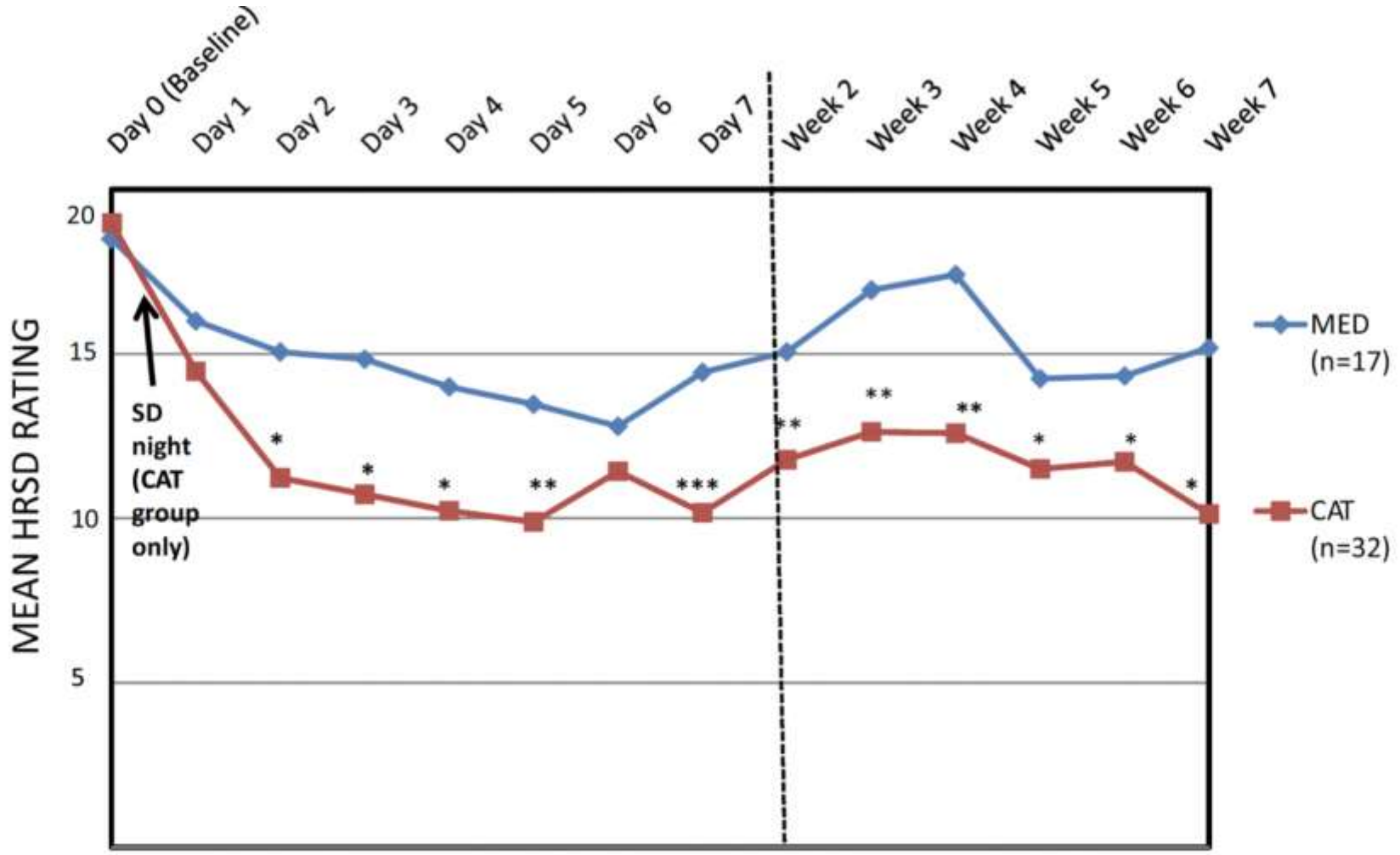


Triple Chronotherapy - Does it work?

- 49 bipolar patients randomized to either triple chronotherapy and medication or medication only.
- The triple chronotherapy (labelled CAT) did significantly better than the medication group within 48 hours and this was sustained over 7 weeks.

Triple Chronotherapy - Does it work?

PRIORY



Triple Chronotherapy - Does it work for everyone?

PRIORY

- Exclusions
  - Epilepsy
  - Severe eye disease
  - Working night shifts
  - Mania or rapid cycling
  - Photosensitive medications

Parasomnias

- Non-REM sleep
  - Night terrors
  - Sleepwalking
  - Confusional arousals
  - Bruxism
  - Enuresis
  - Sleep starts
  - Sleep talking
  - Head banging

Parasomnias

- REM sleep
  - Nightmares
  - REM sleep behavioral disorder
  - Sleep paralysis

Night terrors

- Recurrent episodes of abrupt waking
- Usually first third of the night
- Intense fear and autonomic arousal
- Unresponsive to comforting
- No detailed recall
- Cause significant distress
- Not due to medications or physical condition

Night terrors

- 3% children, <1% adults
- Peak age 3-5
- Can recur in mid 20’s onwards
- M=F
- Often familial
- High association with sleepwalking

Sleepwalking

- Incidence unknown, probably 15-20%
- Rarely present for treatment
- Unresponsive to surroundings and other people
- Commonly walking around
- Can include other behaviours which are more complex and usually familiar to the subject, such as washing, dressing, making tea, or arranging possessions
- Reported cases of subjects finding themselves in near-death experiences with no recollection of how they have got there.
- One report of a patient waking from sleep walking and finding himself on a high cliff edge and needing to be rescued by helicopter.

Sleepwalking

- Incomplete arousal from slow-wave sleep, during which the cognitive function is "switched off", allowing the manifestation of behaviour that is driven from sub-cortical arousal and anxiety centres.

- Pockets of high prevalence have been found in certain populations, which suggests a genetic factor.

- Alcohol increases the risk of night-terrors and sleep-walking because it deepens slow-wave sleep, especially at the beginning of the night

- Danger in unfamiliar environments

Treatment

- Benzodiazepines
- Paroxetine

REM behavior disorder

PRIORY

- M>F
- Older age group
- Strong association with current or future Parkinson's disease, Lewy body dementia or other degenerative disease
- Violent complex behavior at night
- Subject can wake up
- Remembers vivid, active and violent dreams
- Abnormalities
  - Lack of atonia in REM
  - Increased vividness and horror of dreams

REM behavior disorder

- Clonazepam may help
- Antidepressants make it worse

Other parasomnias

PRIORY

- Confusional arousals
  - Behaviours which are unresponsive to external cues
  - May be accompanied by semi-purposeful movements such as searching for or handling objects.
  - Episode occurs without the person getting out of bed
  - Part of the spectrum of disorders of night terrors and sleep walking

- Sleep starts and sleep talking
  - Jerky movements that usually occur in light sleep, mostly in the first part of the night.
  - Sleep talking very common in light sleep.
  - It can sometimes disturb the sleep of the partner

Other parasomnias

- Sleep-bruxism
  - Grinding of the teeth in the night
- Head-banging
  - during sleep or rhythmic rocking movements
- Sleep-paralysis
  - Waking but being unable to move ones body, often accompanied by an awareness of a presence

Thank you

Any Questions?