Poor sleep/sleepiness in teenagers

- what causes it
- how to assess it
- what can be done to help

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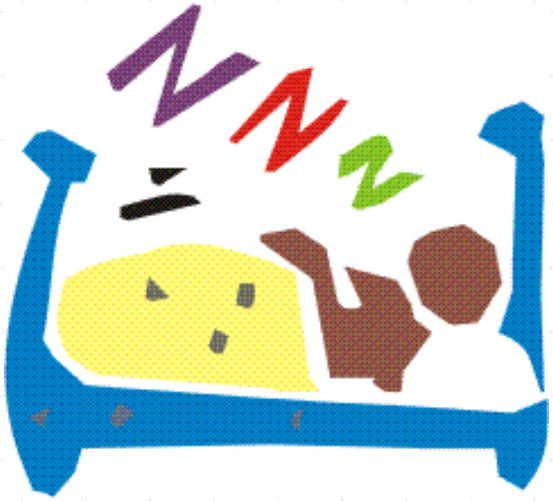
My aim today ....



Help you

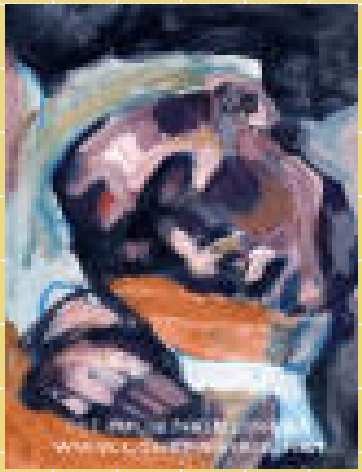
- know what to ask
- make differential assessments
- find sleep solutions

Monica: Psychosocial context

–increasing self care literacy

Key questions/problems about sleep that you want information on?

Overview



1. General aspects of sleep and teenage sleep
2. Unusual behaviours during sleep
3. Daytime sleepiness
4. Sleep timing
5. Sleep deprivation and its consequences
6. Trouble getting to sleep or staying asleep

1. General aspects of sleep and teenage sleep

Two age groups especially at risk for poor sleep

Adolescents

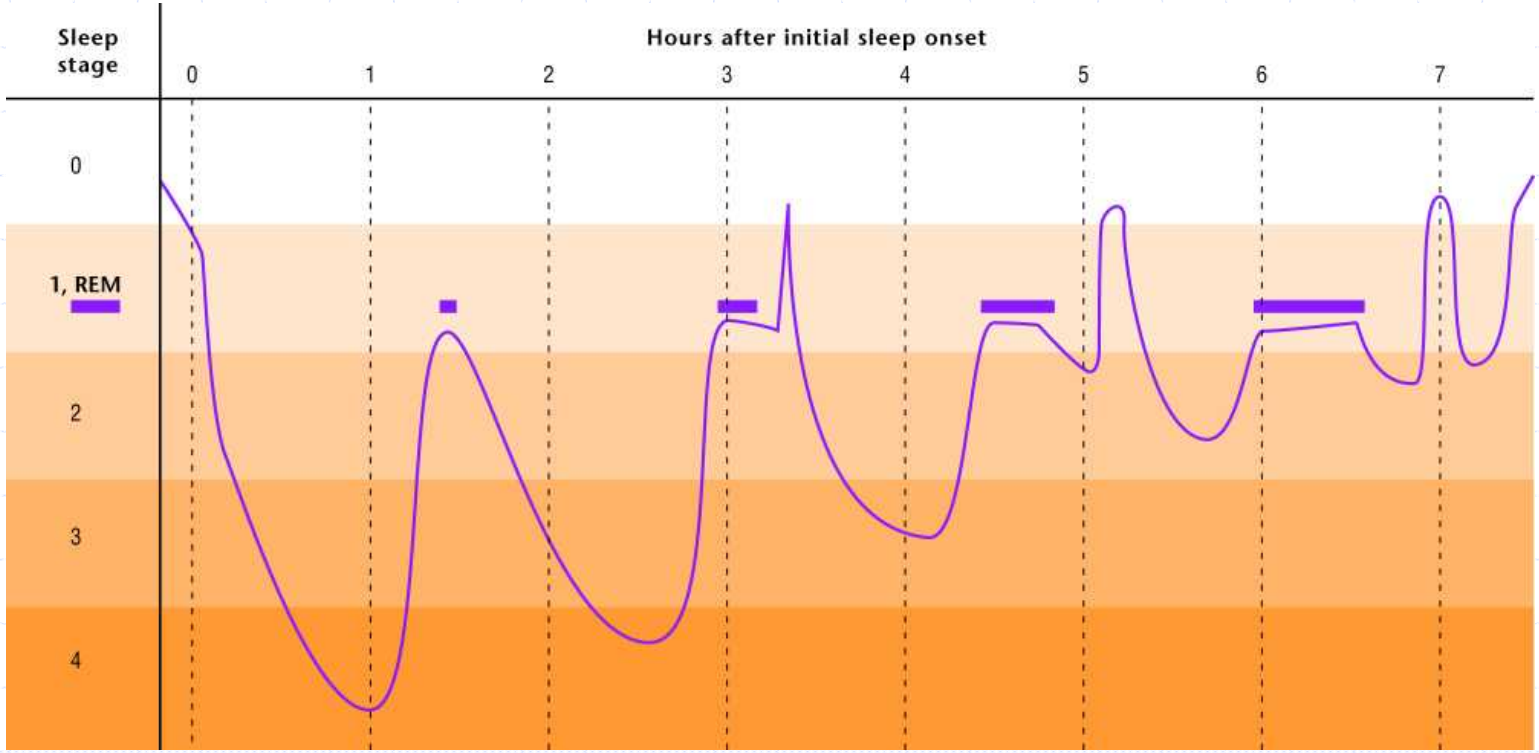
- poor sleep habits
- daytime sleepiness
- parasomnias

Older adults

- sleep onset
- fragmented sleep
- daytime sleepiness

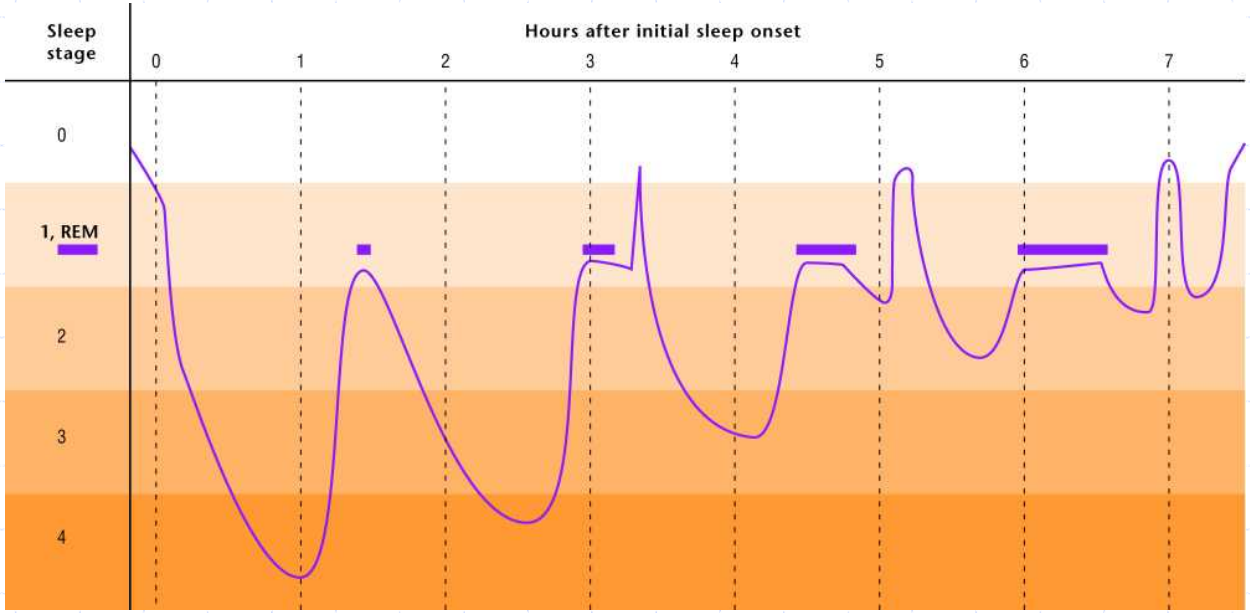
Sleep is an active state

- 90 minute cycles
- More deep sleep (slow wave sleep, stages 3 & 4) in first half
- Waking several times a night is normal



REM sleep

- dreaming, body paralysis
- “active mind in an inactive body”
- BUT we have dream-like thoughts throughout all sleep



Sleep functions

- Growth hormone ...deep sleep
- Deep sleep helps physical tiredness and body restoration
- REM sleep helps clean up the brain
- REM sleep helps consolidate learning
- Sleep helps the immune system

Teenage sleep

- ¼ of all teenagers have a problem with night time sleep
- ½ of all teenagers say they are often sleepy during the day
- over ¾ report unusual behaviours during sleep
- most need about **9¼ hours** sleep to function best
- most do not get enough sleep — one study found only 15% reported sleeping 8½ hours on school nights.

Girls report slightly more problems then boys

	% Boys	% Girls
Early morning awakening	21%	25%
Trouble falling asleep	20%	22%
Report being a 'poor sleeper'	17%	21%
Waking up many times	8%	11.5%
Long night awakenings	4%	7%
Using substances to help sleep (16 yr olds)	2%	5.8%

2. Unusual behaviours during sleep

- 80% of all teenagers report unusual behaviours during sleep
- Mostly incomplete transition between wake and sleep (parasomnias)

Sleep behaviours most prevalent during the teenage years.

- Sleep walking
- Sleep talking
- Sleep eating
- Sleep onset jerks#
- Sleep paralysis
- Sleep drunkedness/ confusional arousals#
- Restless legs#
- Periodic limb movements in sleep#
- Epilepsy#

Those marked # continue into adulthood with equal prevalence

Sleep paralysis

- body is still in a dream but you are awake
- part of the paralysis from REM sleep
- experienced by up to half of all teenagers
- can be terrifying

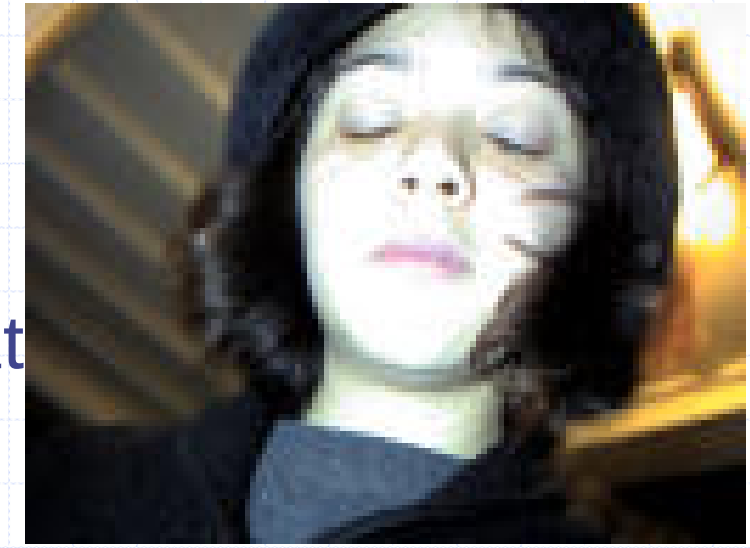
- avoid sleep deprivation
- provide reassurance
- pre-sleep rehearsal with aim of relaxation and returning to sleep state

Middle of the night snacking

- If not remembered may be sleep walking
- 4% of all older teenagers- usually females
- Connect bells to doors/fridge to wake them up

Sleep walking

- habitually in 8% of high school students
- Brain is partially asleep and partially awake
- Causes:
  - Run in families
  - Some medications
  - Stress/sleep deprivat
  - No apparent reason



Sleep walking (cont)

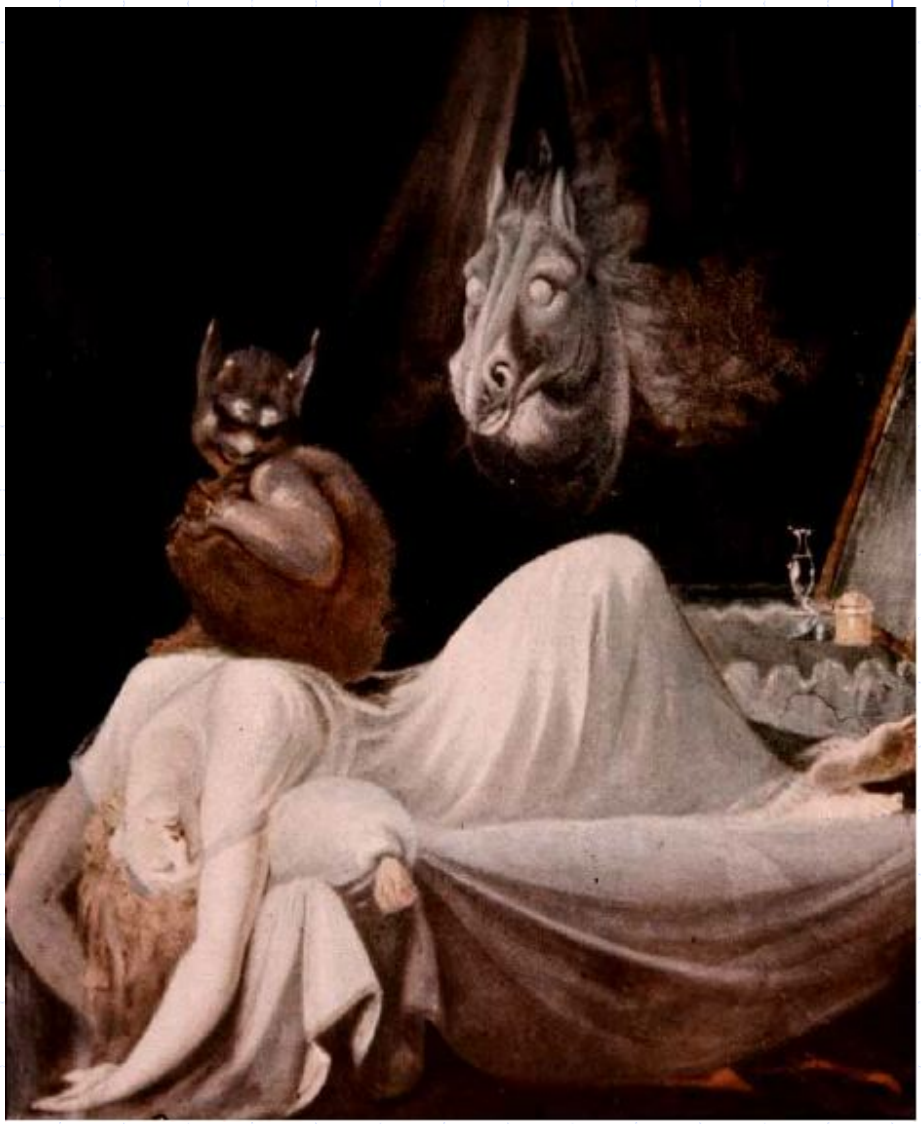
- If calm guide to bed
- If resist direction, ensure danger minimised
- Bedroom door bell
- Lock external doors and windows
- Baby monitor to parent’s room

Restless legs before sleep and/or periodic limb movements during sleep

- Can present as insomnia
- Sleep fragmented
- Unaware of repetitive jerking
- Need good diet (especially iron and magnesium) and regular sleep
- If serious seek medical help

Nightmares

- Occur during REM sleep and involve a dream
- Only remembered if wake up
- Frequency increases from 12-21 years
- Usually no particular reason
- Sometimes medications/drugs or withdrawal
- Can run in families



Nightmares (cont)

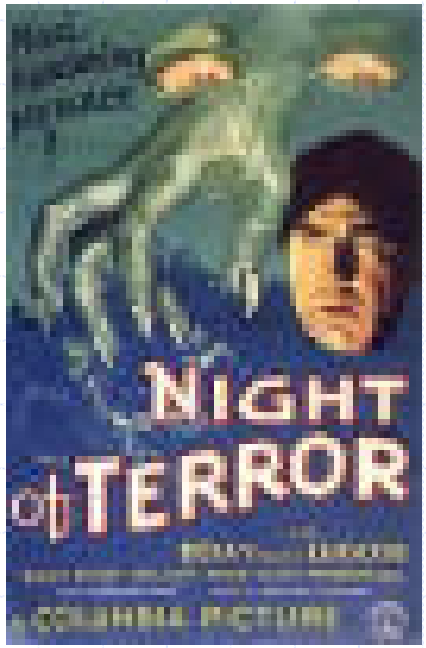
- If nightmares follow a traumatic experience / stress seek counselling
- Avoid sleep deprivation
- Retelling can be therapeutic
- Pre-sleep rehearsal with a different ending
- Reassurance

Hallucinations

- Dream part of REM intrudin
- Avoid sleep deprivation
- Seek medical attention only if person also showing inappropriate emotions / behaviours

Typically pre-puberty

Sleep terrors



- Happen periodically in > 3% of 4-12 year olds
- Wake suddenly, terrified, single horrifying thought
- Followed by confusion or return to sleep
- No memory in the morning

Handling sleep terrors

- No significance
- Prevent injury during episode
- Ensure regular sleep times, no caffeine, alcohol or stimulants
- If triggered by sudden noises try ear plugs

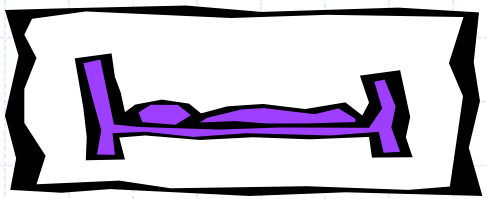
Typically pre-puberty

Night fears

- 1/3 of all grade 6 children report night fears
- most are intense
- more by girls but high in both sexes
- reduce/disappear as get older
- Usually clear, specific fears
- 3 possible reasons:
  - Runs in families
  - Stress
  - High anxiety state

Helping night fears

- Reassurance, patience
- Night light/intercom
- Prior rehearsal of self help strategies:
  - Muscle relaxation
  - Self control /confidence boosting sentences



3. **Daytime sleepiness**

Daytime sleepiness

- Lifestyle patterns most usual cause
- Increases with puberty
- In girls - menstrual period
- For some winter is problematic

Sleep disorders that cause daytime sleepiness

1. Narcolepsy

- excessive sleepiness and sleep attacks
- median onset age of =17
- prevalence is 4:10,000
- often years to be diagnosed
- may run in families
- may be hard to differentiate from Idiopathic Hypersomnolence

Narcolepsy

- Other possible symptoms:
  - Cataplexy (triggered)
  - Sleep paralysis
  - Hallucinations

A narcoleptic teen waits for cataplexy to pass.

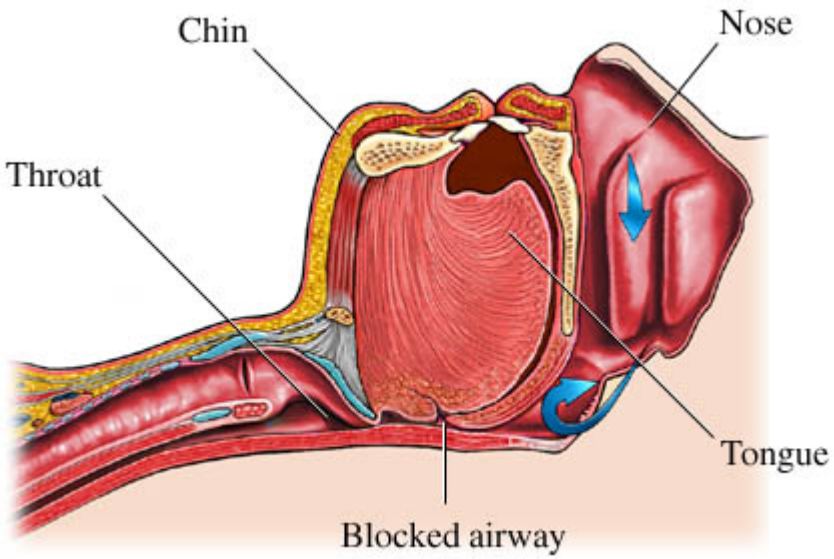
- Disorder of REM sleep
- Sleep Onset REM periods... diagnosis
- If ongoing/ unexplained/ severe refer to GP for possible referral to a sleep clinic (need to eliminate other medical causes)

Sleep disorders that cause daytime sleepiness

2. Sleep apnea

- Noisy sleepers/ heavy snorers/poor sleep/daytime sleepiness and/or morning headache
- 20% - 30% of heavy snorers likely to have sleep apnea
- Risk factors
  - male
  - overweight
  - large neck circumference,
  - certain jaw/facial characteristics,
  - large tonsils or adenoids
  - alcohol/sleeping tablets

Sleep apnea



- More common in children and adults than teenagers
- May be associated with hyperactivity in children and/or complaint of insomnia
- Serious risk for heart disease
- Also causes concentration problems, emotional lability and possibly depression symptoms
- If suspect sleep disordered breathing refer to GP to refer to sleep clinic

Is napping a good idea?

- May be a major help for some
- Keep naps to *no more than 20 minutes*
- Don’t nap if have sleep onset trouble
- Napping lying down restorative than sitting

The need to nap may arise from sleep timing problems

4. **Sleep timing**

When we sleep determined by:

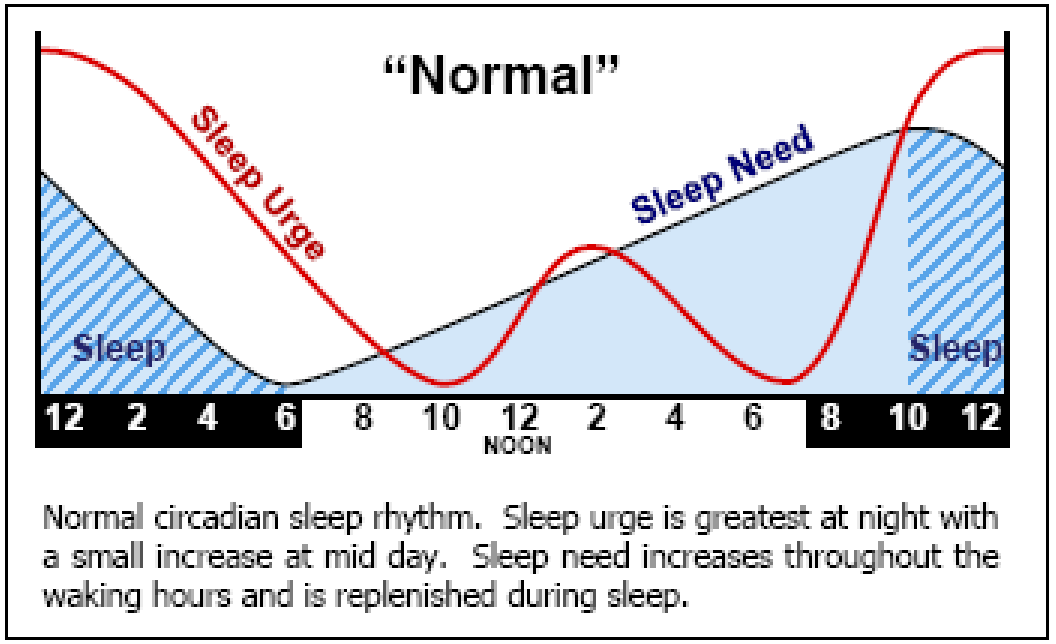
- Body rhythm (NB: afternoon dip)
- Sleep pressure /deprivation

Also:

- Individual differences
- Age
- Environment
- Arousal/stress

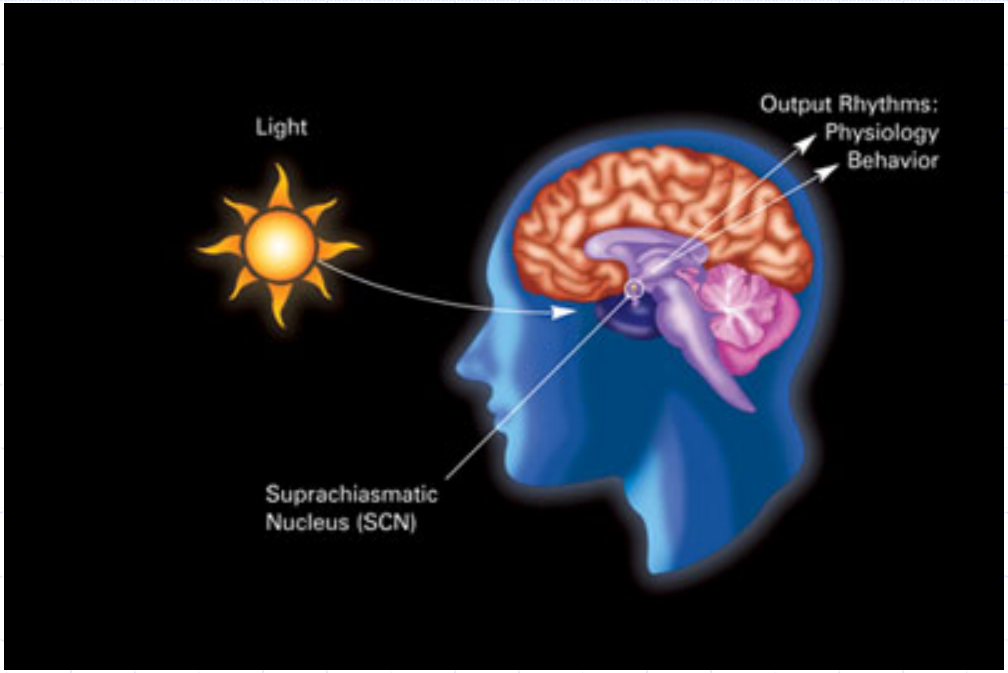
Theoretical model of sleep timing

1. “Sleep urge” AKA our body clock [endogenous circadian rhythm]
2. “ Sleep need” AKA sleep pressure [builds with being awake]



Normal circadian sleep rhythm. Sleep urge is greatest at night with a small increase at mid day. Sleep need increases throughout the waking hours and is replenished during sleep.

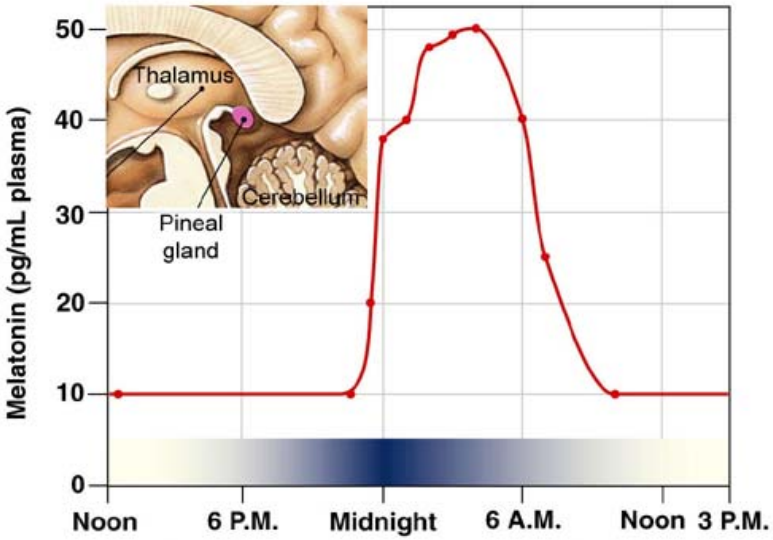
The body clock



We have a body clock (SCN) located in the hypothalamus. Thus body rhythms are **endogenous.**

Melatonin controls the body clock

- Rises in the late evening and makes us sleepy
- Secretion profile changes with puberty
- Suppressed by light



Melatonin is the "darkness hormone," secreted at night as we sleep. It is the chemical messenger that transmits information about light-dark cycles to the brain center that governs the body's biological clock.

(Adapted from J. Arendt, *Clin. Endocrinol.* 29: 205–229, 1988.)

Figure 7.22

Delayed melatonin with puberty

- With puberty, melatonin rise is later
- also in adolescent monkeys
- From age 20 yrs - adult sleep timing - end of adolescence?
- Older adolescents less sensitive to effects of sleep pressure

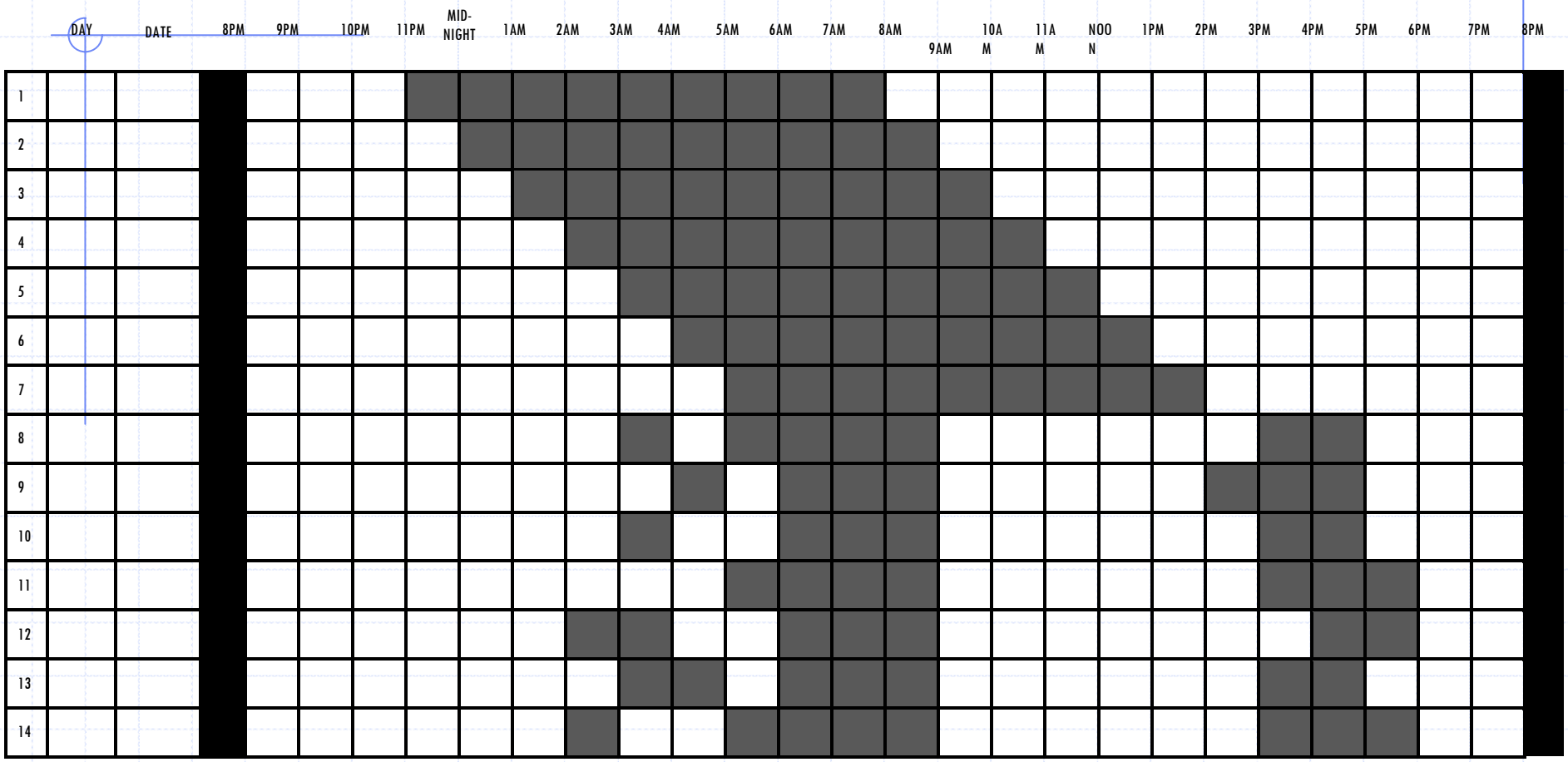
NB: Blue light from computers delays melatonin secretion

Body clock free runs at longer than 24 hours

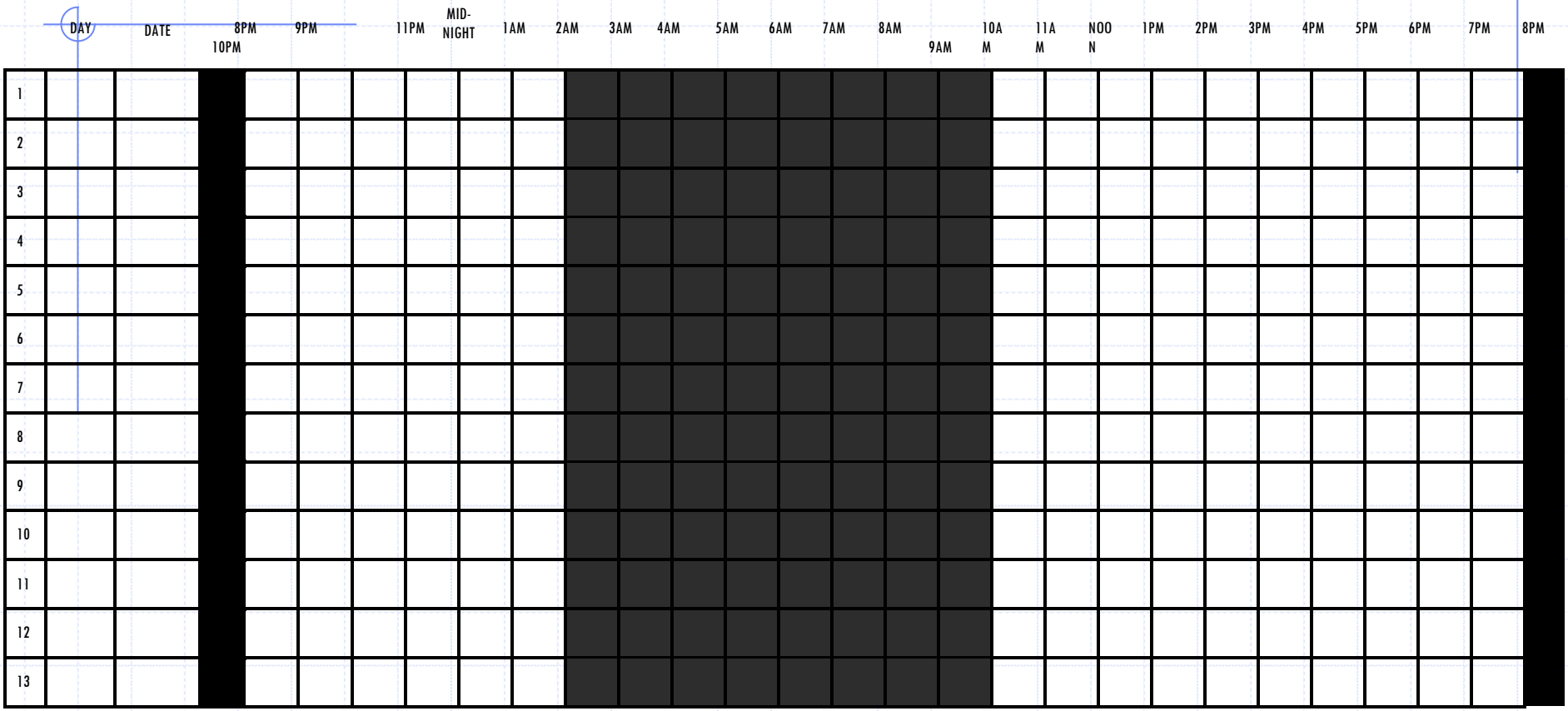
- Prefer to go to bed a bit later each night (NB: Monday morning blues)
- Time cues normally keep us on a 24 hour schedule
- Lifestyle or individual factors make some people's body clock "free run"
- Teenagers especially prone to this

First 7 days freerunning, then keeping constant wake up time

trying to keep constant 8am getting up time.



Body clock may get stuck at the wrong time. Problem when need to get up earlier.

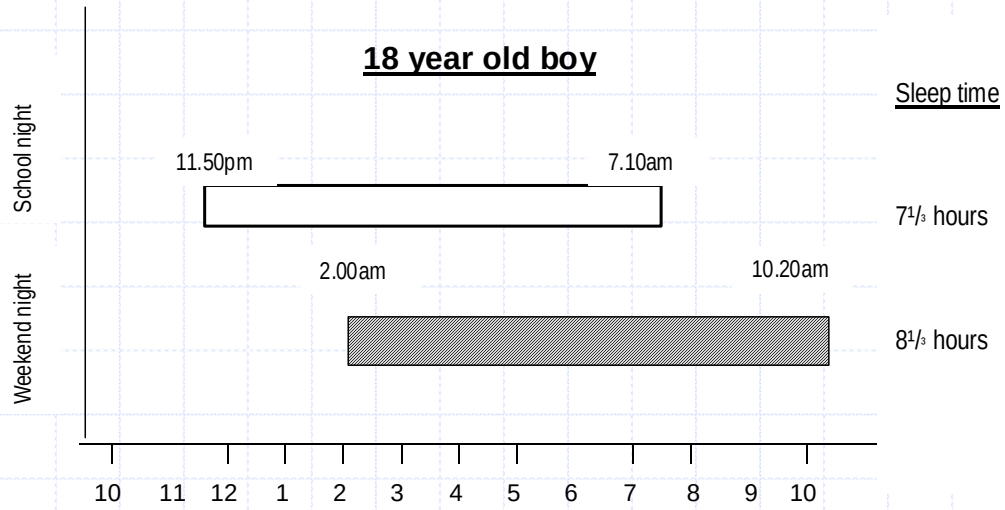


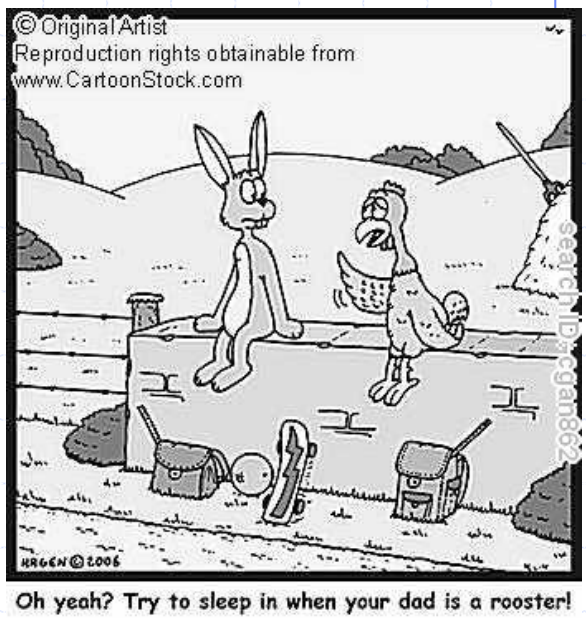
Known as “delayed sleep phase insomnia”

Typical teenager's sleep pattern

- Weekdays:
  - Delayed body clock + need to rise early = sleep deprivation

- Weekends:
  - Delayed body clock + evening activities + opportunity to sleep in = body clock shift





Oh yeah? Try to sleep in when your dad is a rooster!

Typical sleep patterns on weekdays and weekends in teenagers.[1]

[1] Data from a sample of 6,632 Italian high school children.

Consequences of body rhythm problems

- Sleep onset insomnia
- Inability to wake up in the morning
- Less deep sleep
- Daytime sleepiness
- Need to nap
- Constant “jet lag” feeling
- Irregular sleep/wake hours
- Parasomnias
- Emotional lability
- Poorer health

Early morning school starts are especially a problem for older teenagers

"The students may be in school but their brains are at home on their pillows."

Helping with body clock problems

- Outdoor light resets the body clock
- Morning light most important
- Keep waking up time constant
- Avoid naps

- Body clock thrives on regular sunshine, meals and sleep - also day activity

A 7 day sleep diary may help differentiate this from “normal” insomnia

5. Sleep deprivation and its consequences

Total sleep deprivation

In 1964 Randy Gardner stayed awake for 260 hours (almost 11 days).

The effects changed with time.
In order of appearance:

- trouble focussing the eyes;
- moody, irritable and uncooperative behaviour;
- seeing images and hallucinations ;
- speech difficulties;
- short memory lapses;
- incoherent speech and thoughts;
- blurred vision;
- major memory problems

Partial sleep deprivation

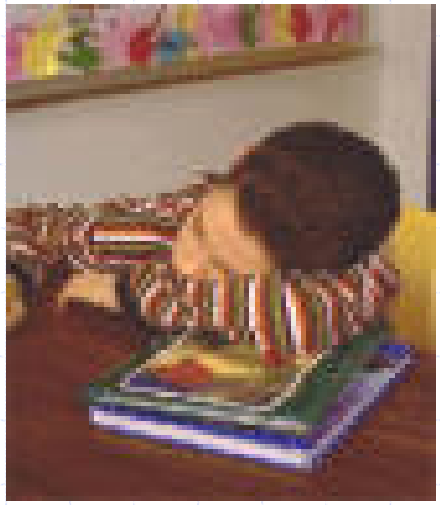
- Major effects on ability to **think, concentrate and learn**,
  - Complex problem solving
  - Memory tasks
  - Visual and spatial abilities
  - Creative activities

+ More physical injuries in sport

Partial sleep deprivation

- Emotional wellbeing reduced
  - More mood swings
  - Prone to depression
  - Easily irritated
  - More quickly aggressive
  - Temporary bizarre psychotic like behaviour (disorientated, hallucinations, paranoia)

Partial sleep deprivation



- Physical health at risk
  - Probably reduces immunity
  - Link with becoming overweight
- Driving
  - Young people especially poor at recognising impairment due to sleepiness

6. Trouble getting to sleep or staying asleep

Trouble getting to sleep or staying asleep- **Why?**

- Terminology
  - "Insomnia"= symptom, not a disorder
  - Must prevent good daytime functioning
- Problem solving approach

Poor sleep as a habit

- May start for an identifiable reason but then continues
- It can take on a life of its own

Differentiating sleep from wake

- Hard
- Overestimate time awake
- Overestimate time taken to get to sleep
- Mind remains active even when physiologically asleep - keep “thinking”
- Especially anxious people
- Anxiety makes time slow down

The anxious cat...?

Poor sleep is often more a result of what happens when **awake** than when trying to sleep

Caffeine

Number of units in different caffeine containing drinks and foods

	Units
1 small cup instant coffee (150 ml)	3 - 4
1 small cup tea	1 - 2
1 small cup brewed / percolated coffee	5 - 8
1 small cup cocoa	1
1 small bar chocolate (100g)	2
1 small can Cola soft drink (330 ml)	2 - 3
1 ‘Energy’ soft drink with caffeine (330 ml)	3 - 8

More than 20 units a day will disrupt your sleep

No caffeine after 4pm for poor sleepers

Alcohol

- Increase awakenings in the second half of the night,
- More intense dreams
- Being drunk can disrupt sleep for a week
- Diuretic
- Increases breathing problems during sleep (sleep apnea)
- More limb twitching

Tobacco

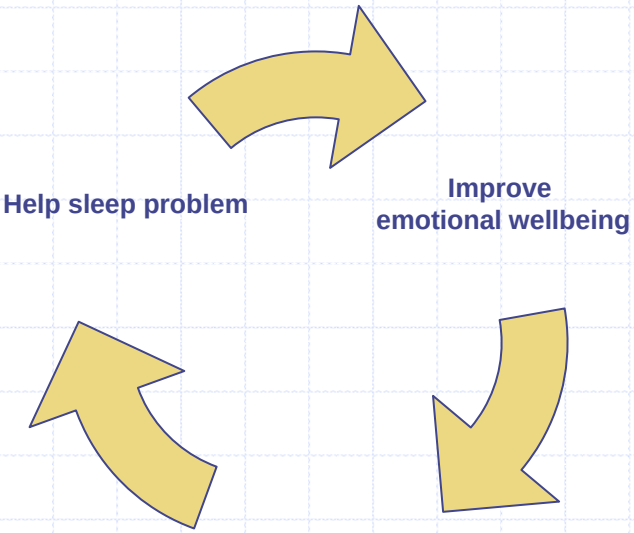
- Stimulant – harder to get to sleep
- May have nicotine withdrawal effects during the night

Substance intake (“illegal”)

- Withdrawal from THC (in marijuana) .. disrupted sleep … possibly anxiety
- THC increases total sleep time / lethargy
- Amphetamines, cocaine and ecstasy are stimulants and reduce REM
- Young people ...poor sleep /more illegal drugs link

Sleep & emotions – a chicken & egg problem?

- Poor emotional wellbeing can cause poor sleep
- Poor sleep can cause mood changes, irritability, less able to cope



Depression/anxiety and sleeping problems

1. In **adults** sleeping problems common in depression:
   - Early morning awakening, or
   - Prolonged bedtime (escape)

- BUT sleep problems in depression are less a problem in teenagers than adults

2. At all ages sleep problems may alert us to clinically significant depression and/or anxiety.

Misdiagnosis

- As poor sleep affects emotional wellbeing it is not unusual for ‘real’ sleep problems (eg sleep apnea, narcolepsy, periodic limb movements) to be misdiagnosed as depression.

Trouble getting to sleep or staying asleep- **What helps ?**

Cognitive-behavioural therapy

- as effective as hypnotics in the short term
- more effective in the longer term.

Overcoming insomnia- a CBT approach. JD Edinger and CC Carney. 2008. Oxford Univ Press

When children don't sleep well. Interventions for Pediatric sleep disorders. VM Durand. 2008. Oxford Univ Press

(Both have therapist guides and workbooks)

CBT approach

Assess and remedy **behavioural** factors that may be causing poor sleep

- Monica will present checklist for bedroom, daytime, evening, bedtime and in bed

Address faulty **beliefs and attitudes** about sleep

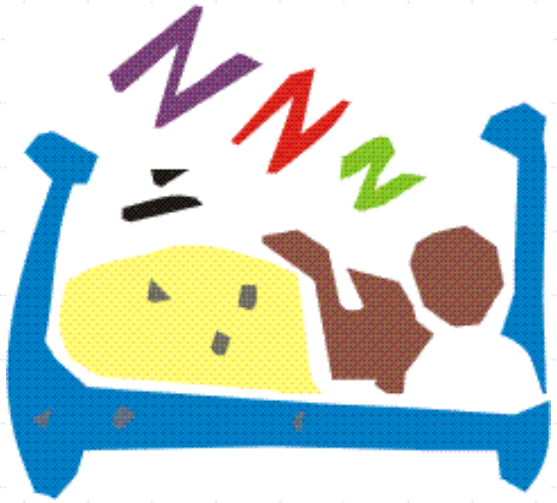
- reassurance
- education

Provide **support** and strategies *re* stress/depressed mood/high anxiety

.....and finally

Important for you to

- listen,
- **assess carefully** (e.g. sleep diary),
- reassure,
- reduce anxiety about sleep,
- **educate,**
- provide choice,
- tailor solutions,
- be flexible,
- monitor,
- praise any progress,
- reduce expectations for perfection,
- **encourage perseverance**,
- listen...



•Help the adolescent **invest** in the strategies for improving sleep

•Investment must be for the **medium to long** term

Thanks.
Questions?

www.vu.edu.au/teenagesleep