

## Adolescent Sleep-Problems & Solutions

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## Are sleep, learning & mental health problems linked?

- Below are the 3 of the biggest health problems in adolescence
- Teen sleep deprivation has doubled in the last 15 years from 35% to 70%
- Teen mental health problems increasing @ 27% per year = a tripling since 2008
- Meanwhile learning outcomes are heading south. PISA data-learning outcomes in our 15 yr olds dropped from top 10, to 39<sup>th</sup> of 42 high/middle income countries
- Teens in my sleep clinic are tired, AND most have mood &/or learning issues BUT is there a linkage?
- Well yes, because when I optimise their sleep patterns & treat their sleep disorder, their moods improve as does their ability to learn. So some of their medical labels, like Anxiety Disorder, Depression, ADHD, ODD, Processing disorder magically disappear
- So this MUST mean that sleep, learning & moods are all linked to each other in adolescence. So it is not altogether surprising that, as sleep deprivation increases, so too to mood & learning problems
- BUT, in the medical world, sleep is often a forgotten issue when teens are assessed for mental health or learning problems
- AND so this is the key reason I have come to speak to you today to, hopefully increase your awareness of sleep health (& show how you can help)

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## Talk outline

- General points about sleep deprivation-to show you that it is real, it is impairing health, & it is BIG (& growing)
- How sleepy are our teens?
- Why are they increasingly sleep deprived?
- How electronic screens sabotage sleep
- Effects of sleep deprivation on learning & moods
- Explanation of specific sleep problems (not just a lack of sleep)
- Practical treatment strategies for all of you
- What to do with failures-what I do !



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## Myths, Misconceptions & Gimmicks.

- Drugs, & other "magic bullets" for sleep (except melatonin in selected cases)
- Blue light/low light screen filters
- Sleep "whisperers" & instant experts & instant fixes
- Fitbits/sleep trackers claiming to measure deep vs light sleep.
- Apple to develop Apps to help digital screen over indulgence !! (Unlikely given Apple spends \$\$\$\$s on brain hacking to get teens hooked)
- Face slapping & Runaway alarm clocks



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## The "3 pillars" of good teen health

- Good sleep
- Regular exercise
- Good nutrition
- These together protect mental & physical health, and reduce the chance of a crisis at times of elevated stress

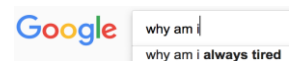


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## The most googled personal question worldwide is...

- We are all tired (& getting tired)
- Teens are tired of all



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## How sleepy are Oz teens & at what cost?

- 70% are chronically sleep deprived on school days-more than double any other age group
- Doubled in last 15 years
- Australia is 3rd worst globally
- The "cost" of missed learning opportunities is incalculable



## Multiple factors conspire to sabotage teen sleep-the "perfect storm"



- ✓ Social connectedness & FOMO (a powerful addiction)
- ✓ Exams & Daylight Saving
- ✓ Late body clocks & non flexible school starting times
- ✓ Part time jobs
- ✓ Homework & extra curricular activities-over scheduling-too busy to sleep
- ✓ Ambition, pressure, stress & high expectations of our teens
- Our 1<sup>st</sup> world 24hr, electronically connected society
- The gap between social norms & scientific data
- Competition of wakefulness ("sleep is for wimps")
- Sleep is no longer precious, so has low priority
- ✓ Reduced parental control

## Effects go way beyond tiredness & academic failure

- Altered body image
- Screen addiction
- Poor food choices & obesity
- High cortisol (stress hormone)
- More infections & slower recovery
- School lateness & absenteeism
- Cyber & non cyber bullying
- Depression (1.5 fold)
- Anxiety
- Impaired ethical & moral judgement
- Suicide- 1 hour lost sleep=58% increase in teen suicide
- Motor vehicle accidents=27% drop with late school start times
- Lower self esteem
- Drug use risk elevation
- Self harming
- Teen pregnancy
- Poor stress coping
- Family relationship breakdown
- Emotional
- Loss of sense of humour

## "All petrol no brakes"-the nocturnal teen brain-a strange organ!!

- Limbic system, the brain's emotional regulator, "fires up" at night, causing overly emotional responses to often trivial issues
- The pre frontal cortex, the "rational brain", shuts down when tired & is relatively under developed in teens
- Teens make emotional & risky decisions, driven by the limbic system, when tired & the pre frontal cortex fails to input any rational thoughts
- Increased cyber bullying, car accidents, anxiety, suicidal thoughts, drug use at night



## A Tsunami of teen Sleep Data US Nat Sleep Foundation 30,000 teens across 50 states

- 96% screen use in the hour before bedtime
- Active screen activity(phones, games) worse than passive (TV, DVDs)
- Only 8% turn phone off at night
- 34 texts per night average. No real school night weekend difference (insight lacking)
- 77% report sleep difficulties &/or morning tiredness
- 35% have 2 or more energy drinks per day-surrogate marker of sleep deprivation
- 25% of final school year students use a stimulant drug or so called "smart drug" as a "study aid" in order to stay awake in order to complete homework or study



## The 4 ways screens sabotage dreams in "screenagers"

- Screen time delays bed time
- It's exciting, fun & highly addictive. Dopamine & Adrenalin surges. High cortisol. These are awake-promoting chemicals
- Portability means less on desk & more on bed. This blurs the boundary between awake, non bed activities & sleep. Brain gets "mixed messages" resulting in "conditioned arousal"



### Conditioned Insomnia-training to be awake in bed

- Screen use in bed trains the brain that bed is a place of exciting wakeful activity. This is called "conditioned arousal"
- Then, "Conditioned Insomnia" follows, which is the inability to get to sleep, because of this wakeful training
- Gaming & electronic messaging cause the highest levels of conditioned arousal. Infomania is the excited state of waiting for a reply from an electronic message



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### The 4<sup>th</sup> effect of screens on sleep

- Blue screen light lowers melatonin & signals the brain to "wake up"
- Smaller screens are worst as light intensity is highest & screen held closer to face
- Electronic devices best "sleep" away from the bedroom



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### Learning to remember & learning to forget-missed learning opportunities

- Learning has 2 steps
- To acquire short term memory, good quality sleep on the night PRIOR is required. New learning initially enters the brain's short term memory banks. "Cognitive shutdown" occurs when a tired brain blocks out new learning. "In one ear & out the other".
- A well rested brain, which processes new classroom learning into short term memory, then needs consolidated REM sleep on the subsequent night to file this learning into long term memory banks

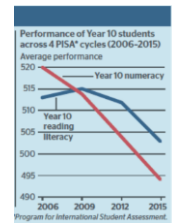


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### The spiral of cognitive slowing & futile learning at night

- A tired at night teen brain slows down & becomes more easily distracted & less attentive
- So homework & study completion takes longer
- So bedtime is delayed
- So sleep time is reduced
- So the day's & that evening's learning is not consolidated into long term memory & is thus forgotten
- The next day same again & so on.
- Late night learning which compromises sleep time is called "futile learning", ie it is totally wasted learning



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### So here we are, from top 12 to 39<sup>th</sup> of 41 Countries

- A 16 year decline in maths, science & reading in 15 yr olds. This parallels the increase in teen sleep deprivation
- \$28 billion of "Gonski 2" & extra \$2.2 billion in NSW 2017 budget may not work if kids stay tired!
- Pssst.....Mr Gonski.....why not invest some of these \$s in sleep health
- Maybe sleep education should be part of every school's curriculum, rather than just in the medical curriculum



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### An educator, from Finland, who understands sleep

#### 'Schools need to react quickly': Education expert urges smartphone ban

Smartphones should be banned at primary level and high schools should "act quickly" to teach tech and discipline to curb the damage they are causing children's learning, warns world-renowned Finnish education expert Pasi Sahlberg.

Sahlberg, who will join the University of New South Wales as professor of education this year, said smartphones were distracting students from reading, school-related work, physical activity, and high-quality sleep.



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## "Sleep Matters" @ Brisbane Boys Grammar

- Initial sleep health program for athletes, then integrated to Student Wellbeing Curriculum
- Teaching the benefits of good sleep
- Partnership between school, students & parents
- Recognition of impact of "over scheduling" on sleep
- Balancing homework & sleep needs
- Undertaking a trial of late school start times to fit with teen body clocks
- Reasonable limiting of screens at night



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## The relationship between sleep & psychological symptoms is bidirectional

- "I'm anxious therefore I can't sleep"...or "I can't sleep & this makes me anxious"
- Sleep & Mood disorders frequently co-exist
- Sleep problems mostly get forgotten when a mood problem co-exists
- Treating a mood disorder often fails in a sleep deprived teen



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## Resilience in the face of stress

- Assessed US students at a stressful time (college entrance).
- Measured sleep time, genetic risk of Depression, & Mood (CES-D)
- Those with inadequate sleep & genetic depression risk, became clinically depressed at college entry time
- Those with genetic risk of depression & adequate sleep did NOT become depressed



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## A toxic mix

- Sleep deprivation + genetic tendency to depression or anxiety + stress = disaster/crisis
- Stress + genetics are unavoidable
- BUT, sleep can be trained/fixed
- THEN, good sleep provides resilience & mood protection in the face of stress



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## So what are the sleep problems ? The "won't sleepers" & the "can't sleepers"

- Voluntary sleep restriction...can get to sleep but don't
- Delayed Sleep Phase Disorder-late body clock ... "can't sleep" at normal bed time. Can sleep if they go to bed late. Get great benefit from late school start times
- Conditioned Insomnia-screens & other non sleep activities "train" the brain to be awake in bed
- Psychological insomnia...sleep onset is delayed by anxiety, low moods & so on



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## The disconnect between science & society

- Real life drop off from 9-7.5 hours
- Science says sleep need is constant at around 9 hours from 12-18 years of age
- This is a "hard sell" to teens. "What, you mean at 16 I should go to sleep at the same time as my 13 yr old brother-you must be dreaming!"
- Educationalists fit with the social norm, not the scientific norm, by increasing study & homework thru high school years which then reduces sleep opportunity



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### Late body clocks & social jet lag

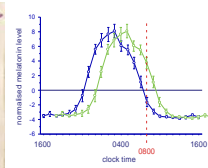
- Inverted sleepiness-Social jetlag
- Full of beans, wide awake & "wired" late at night. So they CAN'T sleep at a normal bed time. Because they are so awake, they are more likely to use screens, which further delays their already late body clocks via the blue light effect
- Lethargic & cranky first thing in the mornings. Can't get out of bed. Slow to dress & breakfast. May be late for school. This morning lethargy is called "sleep inertia"
- So the teen body clock is misaligned with school scheduling. Late school starting times, as legislated in many US states
- So this is how we all feel with bad jet lag, except in late body clock kids it is chronic- so called social jetlag



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### Lots of owls not many larks



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### Treatment-1" step-detection-the 2 "red flag" questions

- Sometimes tired body language is obvious.
- Big weekend sleep ins. This is "catch up" sleep which is proportionate to weeknight insufficient sleep or the so called "sleep debt"
- Very difficult or "impossible" to get out of bed on school mornings. Leads to family disputes and school lateness. Slow to get moving
- Be proactive. These are "must ask" questions of all teenagers, but especially those presenting with low moods, anxiety or learning problems.



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### Barriers to treatment-"Selling Sleep" to teens is tricky

- Sleep is not viewed as something precious needing protection, but more as an inconvenient interruption to their busy days
- Thus sleep is not usually prioritised
- Awake activities are much more fun
- There is "no time" to sleep for busy-bee teens
- Sleep deprivation is "normalised", so most tired teens don't think it is a problem
- Sleep is not sexy or cool
- "Selling" healthy sleep to parents is easier.



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### Specific treatment strategies for you to employ

- When? The earlier the better. It only gets worse. Do not "wait & see". In upper high school it becomes really difficult!
- Teens usually won't manage their own sleep. They need support from you, & their parents. Parents need to be "empowered" by you. This means you are the "director" or "advisor" and parents are the conduit. Say you are concerned about tiredness/learning/moods etc
- Have a family meeting where parents put their cards on the table. "We think you are sleep deprived. We want to help you fix your sleep. This will make you smarter & happier"
- Ask the teen for their suggestions. "What are you willing to change?" "Name one thing"
- At this point assess whether there is motivation to change & insight to understand. Are you getting some traction or hitting a brick wall?



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### Family treatment strategies

- Encourage parents to think of evening efficiencies & organisational strategies that help avoid bed time delays. Boys particularly are often hopeless evening organisers, so things happen slowly. May be a timetable to avoid bedtime delay
- Use the bed for sleep only (avoid conditioned arousal).
- Bedtime=lights out/reasonable time. Compromise often needed (8 hours rather than 9 hours)
- Electronic "clean out" 1 hour b4 bed. This will be a very unpopular suggestion. May need a compromise & progress slowly to overcome FOMO & addictions.



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### How to best manage nocturnal screen use

- Parents often disempowered ie they know what should be done but can't do it. They may get "stuck" at this point in the "best friend" vs "best interest" vs "teen need for independence" conundrum
- Parents need to be good digital role models
- Ideally teen screens should stop at least 1 hr before lights out
- All electronic devices removed from bedroom at night. Phones should be charged overnight elsewhere in the house at a designated "landing strip"
- If above cannot be achieved, by mutual agreement, the next step is parent determined electronic control.
- Family Zone places limits on timing & type of electronic activities. Sometimes the threat of a screen limiting device is enough to change nocturnal screen behaviour



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### Reasons for treatment "failures"-what to do then?

- Low motivation to change
- Poor insight
- Chaotic, disorganised families
- Parental disempowerment
- Significantly delayed body clock
- Overwhelming psychological issues
- Then consider SleepShack (no multidisciplinary adolescent sleep clinic in Melbourne) or, in Melbourne, Dr Frank Cahill @ sleepwithconfidence.com.au

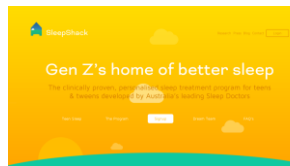


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### Online diagnosis & treatment via SleepShack-10-18 years

- Replicates face to face consultation, diagnosis & treatment in the online environment. An alternative to interdisciplinary Wotatook Sleep Clinic in Sydney. Some assessment & treatment but delivered electronically
- Educational-research, media, FAQs, Facebook & Blogs
- Multidisciplinary treatment needed as there are multiple contributing factors
- Circadian-body clock
- Behavioural
- Environmental
- Psychological
- Drug free
- All this is explained in detail on site-have a look @ sleepshack.com.au



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### Resources

- Online Sleep Treatment (10-18 years) (sleepshack.com.au)
- In School Sleep Health Seminars & Workshops Australia wide (thesleepconnection.com.au)
- Screen management tool (familyzone.com.au)
- "Nurturing Young Minds"-Chapter 1-"Understanding Teen Sleep & Drowsy Kids"
- Further questions or patient direction advice-email Chris via SleepShack (sleepshack.com.au)



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### Some key "take home" points

- The most chronically sleep deprived group on the planet are teenagers. Yet it is poorly recognised as a health problem
- Many sleep deprived teens are labeled as depressed, or mood disordered, or lazy, or even normal
- Worsening learning outcomes & increasing psychological problems in teens are linked to increasing levels of sleep deprivation because tired kids don't learn well, & they are prone to sub optimal moods
- Teenagers are generally trustworthy, but don't trust teens to manage their own sleep. The temptations not to sleep are too great !!
- Sleep health should be taught in all high schools
- Teens are sleepy either because they choose not to sleep or they can't sleep (or both)
- You can make a big difference, but you need to be proactive.
- Stress & sleep deprivation are a toxic combination, & together may trigger mental health problems
- Building resilient sleep protects teens from mental health problems, particularly at times of stress, & optimises learning
- When you see a unhappy, grumpy, lazy, moody teen who has no engagement whatsoever in learning, you can (almost) bet your bottom dollar they are sleep deprived !

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