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Streaming, Dreaming & Teening – Sleep Problems & Solutions

- o Dr Chris Seton-Paediatric & Adolescent Sleep Physician
- o Staff Specialist Children's Hospital Westmead
- o SAN Paediatric Sleep Unit Wahroonga
- o Woolcock Institute of Medical Research-Sydney University-Multi disciplinary Clinic
- o SleepShack-where I hang out in cyber space



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Talk outline

- o Global & general info
- o Teen sleep concepts
- o Screenagers & their screens
- o Learning & sleep
- o Sleep deprivation-moods-stress relationship
- o Types of sleep problems
- o Solution pathways for you
- o What to do with "failures"



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The "3 pillars" of good teen health

- o Good sleep
- o Regular exercise
- o Good nutrition
- o These together protect mental & physical health
- o Form a triangular relationship, both positive & negative



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Topics of "non discussion"

- o Blue light blocking glasses
- o Sleep drugs, herbs & spices
- o Sleep Trackers
- o Apps to reduce screen light
- o Other "instant" fixes & gimmickry like this face-slapping alarm clock



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The most googled personal question worldwide is...



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Sleeping aids on the subway



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OK sleep deprivation is real, but how bad can it get ?

Bank intern Moritz Erhardt found dead after working '72 hours straight'



- 21 & healthy
- London banker
- Worked thru the night 8 times over 2 weeks including 3 consecutive nights
- Went home & collapsed in the shower & died

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Doctors too are sleep deprived from long work hours

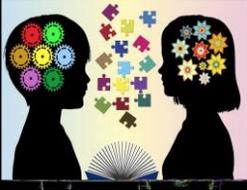
- Fall asleep car accidents
- Inconsolable crying
- Panic attacks
- Medical errors
- Spate of suicides
- Fear of failure

Falling asleep at the wheel after a day as a junior doctor



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



- Non flexible school starting times
- Social connectedness & FOMO (a powerful addiction)
- Exams & Daylight Saving
- Late body clocks
- Part time jobs
- Homework & extra curricular activities-over scheduling
- Ambition, pressure, stress
- Electronic stuff & the 24hr society
- Rapidly changing hormones & emotions
- Competition of wakefulness ("sleep is for wimps")
- Sleep has low priority
- Reduced parental control

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- 70% are chronically tired on school days-this is fixable
- Doubled in last 12 years
- 3rd worst globally
- Close link to a nation's rate, & speed of uptake of new screen technology

2 OUT OF 3 teenagers don't get enough sleep



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Teen sleep facts & opinions to ponder

- Yet this big "elephant in the room" is little talked about nor recognised
- Tired kids can't learn
- Tired kids develop mental health problems
- Tired kids decompensate in the face of stress
- Teens are mostly not lazy, they are tired
- Sleep deprivation & stress are a toxic mix



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Way beyond tiredness & academic failure

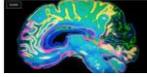
- Altered body image
- Screen addiction
- Poor food choices & obesity
- High cortisol (stress hormone)
- More infections
- School lateness & absenteeism
- Cyber & non cyber bullying
- Depression (15 fold)
- Anxiety
- Impaired ethical & moral judgement
- Suicide- 1 hour lost sleep=58% increase in teen suicide
- Motor vehicle accidents=27% drop with late school start times
- Lower self esteem
- Drug use
- Teen pregnancy
- Poor stress coping
- Family relationship breakdown
- Emotionality
- Loss of sense of humour

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What about later effects?

- Teen sleep deprivation increases suicide risk in mid 20s to 6x average
- One night of sleep deprivation elevates amyloid beta
- Then a night of good sleep restores normal levels

Brain plaque: researchers find Alzheimer's link to a poor night's sleep



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"Selling Sleep" to teens & tweens is tricky

- Not valued
- Not protected or prioritised
- Awake activities are much more fun
- There is "no time" to sleep for busy-bee teens
- Sleep deprivation is "normalised"
- Sleep is not sexy or cool
- So teens are generally hopeless sleep managers
- "Selling" sleep to parents is easier



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39th of 41-Maybe it's not about money!

- A 16 year decline in maths, science & reading in 15 yr olds
- \$28 billion of "Gonski 2" & extra \$2.2 billion in NSW budget may not work!
- Late school starting times do work & are cheaper!
- Maybe sleep education should be part of every school's curriculum

UN agency ranks Australia 39 out of 41 countries for quality education



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"Sleep Matters" @ Brisbane Boys Grammar

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



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

- Limbic system, "fires up" at night, causing heightened emotions
- The pre frontal cortex, the "rational brain", shuts down when tired & is relatively under developed in teens
- Teens make emotional & risky decisions, rather than rational ones, when tired
- Increased cyber bullying, car accidents, anxiety, suicidal thoughts, drug use at night



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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



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Why so much at night?

- 75% of online gaming between 10pm & 6 am
- Fun
- Highly addictive-both physically via Dopamine & psychologically via FOMO
- Well marketed to young people
- Cheap & portable
- Maintains 24 hour social connectivity
- Out of parents' sight & control



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The 4 ways screens sabotage dreams

- Screen time delays bed time
- It's exciting. Dopamine & Adrenalin surges. 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"



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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"
- "Conditioned Insomnia" is the inability to get to sleep, because of this wakeful training
- Gaming & electronic messaging cause the highest levels of conditioned arousal. The latter results in "Infomania"



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The 4th 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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Transient Smartphone Blindness




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Sleep-Screen Synergies & bidirectional relationships

- Kids who choose to use screens late at night become sleep deprived
- Kids who "choose" not to sleep, & those who "can't" sleep are more likely to undertake late night screen time, as they have more "awake opportunity"
- Sleep deprivation elevates addiction risk (alcohol, drugs, screens etc), which results in more screen use
- Treatment of screen addicted teen is unlikely to be successful if they are sleep deprived, because sleep deprivation lowers motivation, insight, & reduces understanding the concept of consequences



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2 consecutive nights of good sleep to learn & retain

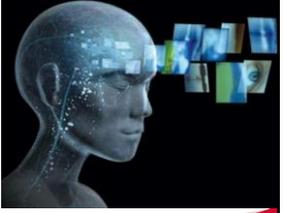
- Learning requires short & long term memory
- "Cognitive shutdown" occurs when a tired brain is unable to access short term memory. "In one ear & out the other".
- A well rested brain, which processes new classroom learning into short term memory, then needs consolidated REM sleep on the subsequent night to file this learning into long term memory banks



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The spiral of cognitive slowing & futile learning at night

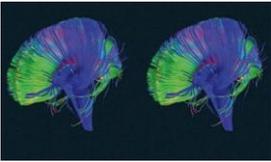
- A tired at night teen brain slows down
- So homework & study completion takes longer (I get 5 hours of homework)
- So bedtime is delayed
- So sleep time is reduced
- So the day's & that evening's learning is not consolidated into long term memory & is thus forgotten
- The next day same again & so on
- This is "futile learning"



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Brain gardening-interesting & new

Micro glial cells are the brain's gardeners. They undertake "synaptic pruning" only during sleep, getting rid of inefficient neural pathways, & creating space for new efficient pathways to grow. This creates more "storage space" to accommodate more long term memory



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- Group 1
- Taught a gibberish language for 2 hours a day for 10 days. Bedtime as per normal
- Group 2
- Taught the same gibberish language for 4 hours a day for 10 days. The final hour of gibberish teaching, delayed bed time by one hour
- Then there was a gibberish exam, which was incentivised with prizes
- Which group won ?
- Good sleep is needed for learning to be effective



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The relationship between sleep & psychological symptoms is bidirectional

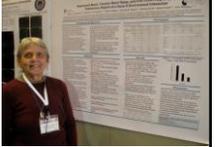
- "I'm anxious therefore I can't sleep"...or "I can't sleep & this makes me anxious"
- Sleep & Mood disorders frequently co-exist
- Sleep problems mostly get forgotten when a mood problem co-exists
- Treating a mood disorder often fails in a sleep deprived teen



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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
- Sleep deprivation plus stress results in sub optimal moods in those that are genetically pre disposed



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A toxic mix

- o Sleep deprivation + genetic tendency to depression or anxiety + stress = disaster
- o Stress + genetics are unavoidable
- o BUT, sleep can be fixed
- o 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"

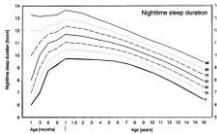
- o Voluntary sleep restriction...can get to sleep but don't...the group that can be helped by you
- o Delayed Sleep Phase Syndrome-late body clock ..."can't sleep" at normal bed time. Can sleep if they go to bed late. Get great benefit from late school start times
- o Conditioned Insomnia-screens train the brain to be awake in bed
- o Psychological insomnia...sleep onset is delayed by anxiety, low moods etc



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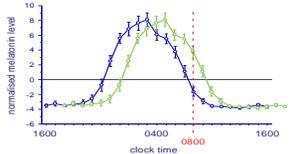
Scientific research vs real life

- o Real life drop off from 9-7.5 hours
- o Science says sleep need is constant at 9 hours from 12-18 years of age
- o This is a "hard sell" to teens



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Lots of owls not many larks

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Late body clocks & social jet lag

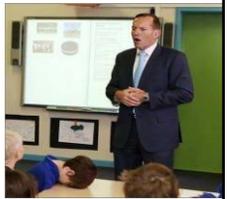
- o Inverted sleepiness
- o Full of beans, wide awake & "wired" late at night when melatonin is low. So they CAN'T sleep at a normal bed time. Because they are so awake, they are very likely to use screens, which further delays their already late body clocks
- o Lethargic & cranky first thing in the mornings when melatonin is high. Can't get out of bed. Slow to dress & breakfast. May be late for school. This morning lethargy is called "sleep inertia"
- o So the teen body clock becomes misaligned with school scheduling
- o So this is how we all feel with bad jet lag, except in late body clock kids it is chronic



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Detecting Sleepiness-1st suspect it

- o Tired body language-yawning, poor engagement, distractibility, frequent blinking
- o Learning below expectation-poor concentration, low task completion, "in one ear & out the other"
- o Moody
- o Late for school etc



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Let's get practical-but how do I know there is a problem?

- o Very difficult or "impossible" to get out of bed on school mornings. Leads to family disputes and school lateness
- o Big weekend sleep ins. This is "catch up" sleep which is proportionate to weeknight insufficient sleep or the so called "sleep debt"
- o (No need to ask "how much sleep" as this is likely to be inaccurate-over reporting of sleep time is common in teens)



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I have detected it-what do I do about it-the starting points

- o When? The earlier the better. It only gets worse. Do not "wait & see". From Year 9 on it gets really hard!
- o Parents need to know. Teens won't manage their own sleep. They need support
- o Have a family meeting (not late at night). Put your cards on the table
- o Ask for their suggestions. "What are you willing to change?" "Name one thing"
- o Outline upsides of good sleep. Sleep is precious & needs protection. Know that education alone is not enough
- o Sleep is a hard sell, try to find their "currency" (sport, career plans, weight control, \$30,000 school fees)
- o At this point assess whether there is motivation to change & insight to understand



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Parent-driven treatments-part 2

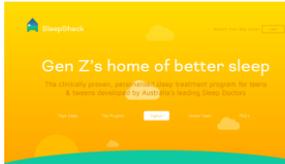
- o Think of evening efficiencies & organisational strategies that help avoid bed time delays. Boys particularly are often hopeless evening organisers. Maybe a timetable?
- o Use the bed for sleep only (avoid conditioned arousal).
- o Bedtime-lights out=reasonable time. Compromise often needed (8 hours rather than 9 hours)
- o Electronic clean out 1 hour b4 bed. This will be a very unpopular suggestion. May need a compromise & progress slowly to overcome FOMO & addictions
- o Next step, talk about imposed screen limitation. Family Zone. Sometimes discussion is enough to achieve an agreed "digital contract"
- o Then, if needed, install Family Zone. Some parents need you to empower them for this step



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Online diagnosis & treatment via SleepShack-10-18 years

- o Replicates face to face consultation, diagnosis & treatment in the online environment. An alternative to Woolcock Sleep Clinic. Same assessment & treatment but delivered electronically
- o Educational-research, media, FAQs, Facebook & Blogs
- o Multidisciplinary treatment
- o Circadian-body clock
- o Behavioural
- o Environmental
- o Psychological
- o Drug free
- o All this is explained in detail on site-have a look



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Why online ?

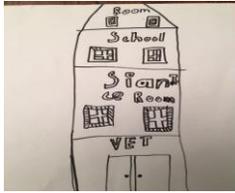
- o Avoids the feeling of being a "therapeutic prisoner" in a doctors consulting room
- o Overcomes clinic waiting times, so less "in crisis"
- o No time out of school & work
- o Appealing format for teens (108/110)
- o Email alerts to parent & teen, if not complying
- o Attracts younger clients & thus more successful treatment



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Some take home points

- o Suspect sleep deprivation if a teen is moody &/or has poor learning
- o Appreciate that teen sleep is precious & should be protected
- o Optimising sleep protects mental & physical health, & results in resilience, particularly in the face of stress
- o Try to empower parents to actively address their teen's sleep deprivation



Resources

- Online Sleep Treatment (10-18 years)
sleepshack.com.au
- Adolescent Sleep Clinic
woolcock.org.au
- In School Sleep Health Seminars & Workshops
thesleepconnection.com.au
- Screen management tool
familyzone.com.au



Questions & thanks for listening

