Putting Insomnia to Bed

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Outline

- Sleep Basics
- Impact and evolution of Insomnia
- Stepwise approach to assessing Insomnia in Clinic
- CBT-i (in a "nutshell")
- Resources & References

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Sleep Basics

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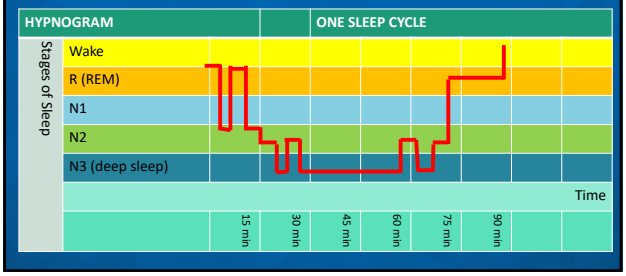
The Sleep Cycle

Alternating states and stages of sleep that occur over an 8-hour time period:

- NREM: Non-Rapid Eye Movement; Stages 1-4; 75% of the night
- REM: Rapid Eye Movement; Dreams occur; 25% of the night



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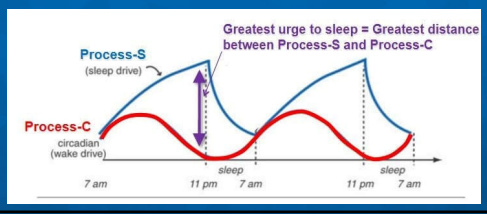
2-Process Model of Sleep

- Homeostatic Sleep: Process S (SLEEP DRIVE)
  - Sleep debt accumulated during wakefulness
    - *How long you have been awake?*
- Circadian Sleep: Process C (WAKE DRIVE)
  - Endogenous Pacemaker
    - *Internal Clock*



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Wreaking Havoc to this Model?

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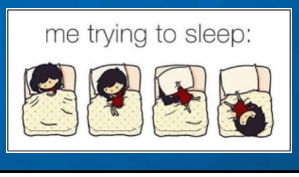
Insomnia

- **DSM-V definition:**
  "A predominant complaint of dissatisfaction with sleep quantity or quality"
  1. **≥ 1 of following symptoms for ≥ 3 nights/week for >3 months:**
     - **a. Difficulty with sleep onset**
     - **b. Night awakenings, inability to return to sleep**
     - **c. Early morning awakenings**
  2. **Difficulty sleeping despite age-appropriate time & opportunity for sleep**
  3. **Causes daytime impairment or stress for child +/- family**
  4. **Unattributable to another disorder or condition.**



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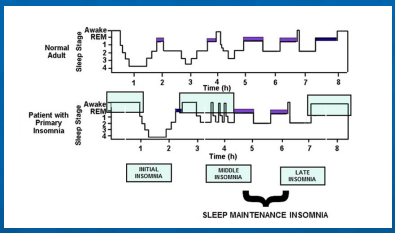
Insomnia

- **Types of Insomnia:**
  - **Initial Insomnia: trouble falling asleep**
  - **Middle Insomnia: trouble remaining asleep through night**
  - **Late Insomnia: waking up too early**



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Insomnia

- Insomnia is NOT defined by a specific hours of sleep a person gets or how long it takes to fall asleep. Individuals vary in their need for and satisfaction with sleep.


Testing the "I could do this job in my sleep" theory.

- Key feature of insomnia: poor sleep causes distress and/or impairments for individuals or family

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Consequences of Insomnia

- Worsens psychiatric disorders
- Prolongs medical illnesses
- Reduced quality of life
- Higher absenteeism
- Increased accident risk
- Higher health care costs
- Cognitive impairment

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Insomnia Impact

- Estimated prevalence of:
  - 10-30% in pediatric populations
  - 60%-86% of co-morbid insomnia in children diagnosed with autistic spectrum disorder (2-3X higher than in typically developing youth)
- Low rate of diagnosis in pediatrics:
  - One study showing only 3.7% of pediatric patients diagnosed with sleep disorder at their well-child visits.
  - A recently published 15-year longitudinal study found that among children with insomnia, the persistence of symptoms (43.3%) into adulthood was the most common developmental trajectory

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Insomnia Varies By Age

- Infants and young toddlers:
  - Night awakenings & sleep-onset associations
    - ~ 25%-50% for 6-12 months of age,
    - ~ 30% of 1-year-olds,
    - ~ 15% to 20% for 1-3 years of age.
- Toddlers & preschoolers:
  - Refusal to sleep
  - Night Awakenings
  - Bedtime stalling & resistance (10%-30% of children)
  - sleep-onset associations such as sucking thumbs, nursing, rocking, or driving in the car to induce sleep

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Insomnia by Age

- Adolescents:
  - ↑ rate of insomnia between 13.6% to 23.6%.
  - sleep deprivation (higher compared to toddlers/adults)
    - ↓ amounts of adequate sleep, ↑ sleep-onset latency.
  - Of a sample of >10,000 adolescents, ~ 2/3 reported a sleep-onset latency >30 minutes & sleep deficiency of 2 hours.
    - This results in:
      - daytime attentiveness is suffering
      - lower grade point averages & standardized test scores
      - ↑ automobile accidents
      - increased risky behavior
      - higher rates of anxiety and depression

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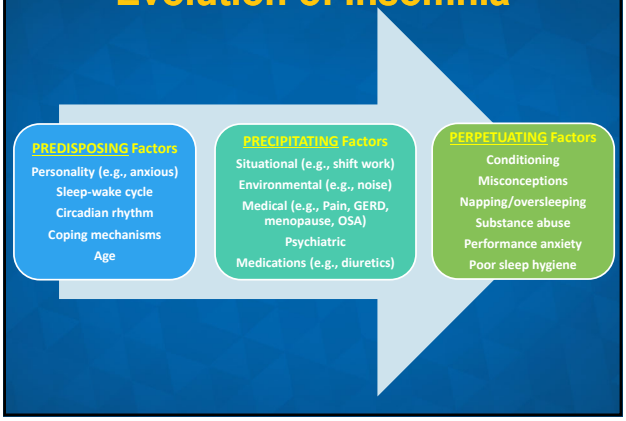
Evolution of Insomnia



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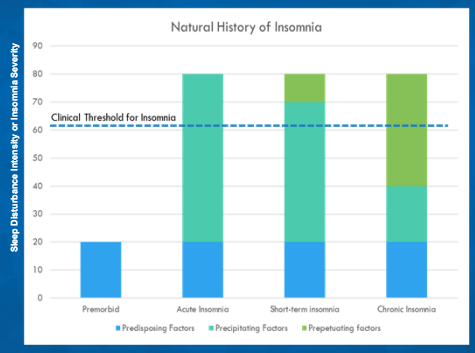
Spielman's 3 Factor Model of Insomnia



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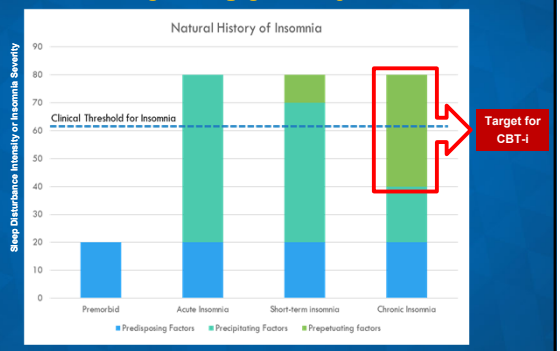

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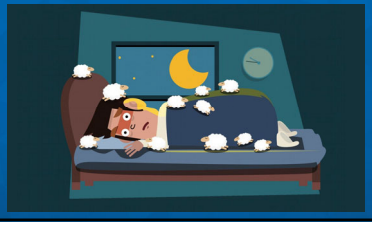
Where do we start?

- Sleep History
- Assess Risk Factors & Comorbid Conditions
- Sleep Diary



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Step 1: Sleep History

Current Sleep Habits	Sleep Environment
Symptoms for Psychiatric Disorder	Symptoms for Potential Sleep Disorders

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Sleep History: Subjective

- The ***subjective*** **experience of inadequate or poor-quality sleep**

"I'M UP"

- ***I*** **-** **difficulty *I*nitiating sleep**
- ***M*** **-** **difficulty *M*aintaining sleep**
- ***U*** **-** ***U*nrefreshing sleep**
- ***P*** **-** ***P*remature awakening**

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Sleep History: Screening

- **LOTS of surveys → varying validity, psychometric measurements**
- **"BEARS":**
  - **5 domains of common sleep irregularities**
  - **Difficulties in ≥2 domains → Further assessment and treatment advised.**
  - **Shown to double the likelihood PCPs will identify sleep problems.**

"BEARS" Parameter	Preschool Age (2–5 y)	School Age (6–12 y)	Adolescent (13–18 y)
Bedtime problems	Does your child have any problems going to bed or falling asleep?	Does your child have any problems at bedtime? (Parent) Do you have problems going to bed? (Child)	Do you have any problems falling asleep at bedtime? (Child)
Excessive daytime sleepiness	Does your child seem overtired or sleepy a lot during the day? Does he/she still take naps?	Does your child have difficulty waking in the morning, seem sleepy during the day, or take naps? (Parent) Do you feel tired a lot? (Child)	Do you feel sleepy a lot during the day in school or while driving? (Child)
Awakenings during the night	Does your child wake up a lot at night?	Does your child seem to wake up a lot at night? Does he/she have any sleepwalking or nightmares? (Parent) Do you wake up a lot at night or have trouble getting back to sleep? (Child)	Do you wake up a lot at night? Do you have trouble getting back to sleep? (Child)
Regularity and duration of sleep	Does your child have a regular bedtime and wake time? What are they?	When does your child go to bed and get up on school days and weekends? Do you think he/she is getting enough sleep? (Parent)	What time do you usually go to bed on school nights and weekends? How much sleep do you usually get? (Child)
Sleep-disordered breathing	Does your child snore a lot or have difficulty breathing at night?	Does your child have loud or nightly snoring or any breathing difficulties at night? (Parent)	Does your teenager snore loudly or nightly? (Parent)

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Step 1: Sleep History

Current Sleep Habits –

- Bedtime: when does patient physically go to bed
- Anything done in bed besides sleep: watch TV, eat, listen to music, read, homework, etc.
- Sleep latency: how long it takes to fall asleep
- Sleep position: avoiding supine? Multiple pillows?
- # of awakenings: choking/gasping? Urinate? Unknown?
- Time to fall back asleep: "few minutes versus long time"
- Rise/Wake time: weekdays versus weekend mornings
- Total sleep time: rough estimate
- Wakes up feeling: refreshed versus groggy
- # of Naps during the day: When? How long are they?
- Caffeine intake: What types? When? How much?

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Step 1: Sleep History

Sleep Environment –

- Bedroom light: dark or light (light source/color?)
- Sound: Noisy or Silent
- Temperature: Warm or Cold
- Clock at bed that you watch or see?
- Own bed, Own room: or sharing with siblings/parents?
- Any pets that sleep with patient?

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Step 1: Sleep History

Symptoms for Psychiatric Disorder –

- Depressed/Loss of Interest: Y/N
- Anxiety: Y/N
- Stressor: Y/N
- Past traumas, recent changes at home/school, recent life events: Y/N

  - Any of these playing a role in nightmares, fears, bedtime associations, etc.?
  - Any medications? If so, when were they started and what time of the day are they taking it?

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Step 1: Sleep History

Symptoms for Potential Sleep Disorders –

- Epworth Sleepiness Scale (ESS): ≥10 red flag
- Snoring: Y/N; if yes → what positions worse? obesity?
- Choking/Gasping/Witnessed Apneas: Y/N
- RLS (restless leg syndrome) symptoms: Y/N
  Parasomnias: night terrors, nightmares, sleep-walking, sleep-talking, head-banging, sleep-eating, etc.
- RBD (REM sleep behavior disorder): violent or unusual movements, dream enactment, very vocal, vivid dreaming/recall
- Narcolepsy/cataplexy symptoms: ESS high; hallucinations, sleep paralysis, temporary muscle weakness with strong emotions

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Step 2: Assess Risk Factors for Insomnia

- Prior episode/history of insomnia difficulties
- Neurodevelopmental Disorders (autism, ADHD, Asperger's, Rett's Syndrome, etc.)
- Concurrent medical problems (GERD, thyroid disorders, medications, OSA, etc.)
- PTSD, Anxiety, Depression (which came first?)
- Family & Environmental Factors
- Lower socioeconomic status and/or Vulnerable populations
- For Adults: Age >65 (1.5x), Female (1.3x), Divorce/Separation/ Widowhood

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Step 3: Sleep Diary

- Usually kept daily for at least ≥2 weeks
- Delineates variability in sleep from day-to-day
- May identify contributing factors and maladaptive patterns (e.g. napping, social jet lag)
- May help patient more accurately *perceive* sleep!

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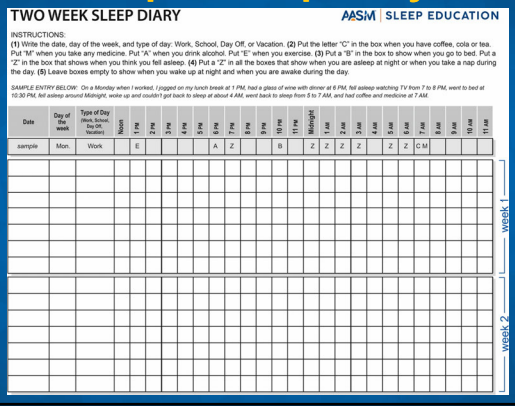
Step 3: Sleep Diary


TWO WEEK SLEEP DIARY

AASM | SLEEP EDUCATION

INSTRUCTIONS:

(1) Write the date, day of the week, and type of day: Work, School, Day Off, or Vacation. **(2)** Put the letter "C" in the box when you have coffee, cola or tea. Put "M" when you take any medicine. Put "A" when you drink alcohol. Put "E" when you exercise. **(3)** Put a "B" in the box to show when you go to bed. Put a "Z" in the box that shows when you think you fell asleep. **(4)** Put a "Z" in all the boxes that show when you are asleep at night or when you take a nap during the day. **(5)** Leave boxes empty to show when you wake up at night and when you are awake during the day.

SAMPLE ENTRY BELOW: On a Monday when I worked, I jogged on my lunch break at 1 PM, had a glass of wine with dinner at 6 PM, fell asleep watching TV from 7 to 8 PM, went to bed at 10:30 PM, fell asleep around Midnight, woke up and couldn't get back to sleep at about 4 AM, went back to sleep from 5 to 7 AM, and had coffee and medicine at 7 AM.

Date	Day of the week	Type of Day (Work, School, Day Off, Vacation)	Noon	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Midnight	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM
sample	Mon.	Work		E					A	Z			B		Z	Z	Z	Z		Z	Z	C M				

week 1

week 2

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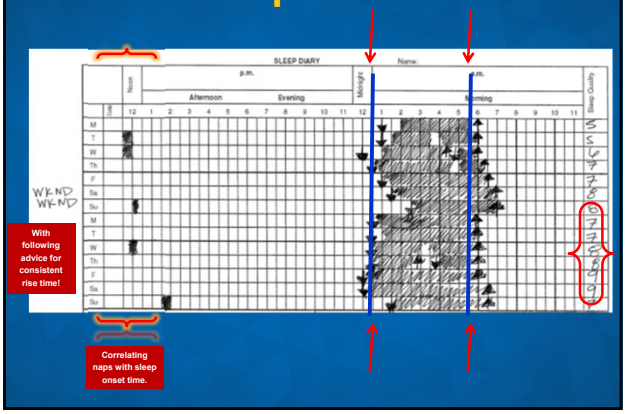
Sleep Diaries



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So now what?

- Behavioral Modifications
- Cognitive Behavioral Therapy (CBT-i)
- Medications
- Referral

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Why CBT-i

- Works to replace maladaptive sleep behaviors/thoughts with behavioral techniques and positive sleep thoughts!
- Initial treatment recommendations per American College of Physicians (ACP), American Academy of Pediatrics (AAP), and for primary chronic insomnia disorder
- Efficacy is equivalent to sleep medications BUT is longer lasting for maintenance effects (no medication resistance/titration issues, no medication side effects, no residual concerns if medication stopped, etc.)
- If organic cause known (OSA, RLS, etc.) → then CBT-i not fully effective/appropriate and need supervision and treatment support with certified sleep physician +/- sleep psychologist

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5 Core Components of CBT-i

Sleep Hygiene | Cognitive Therapy | Stimulus Control

Sleep Restriction | Relaxation Therapy

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5 Core Components of CBT-i

Sleep Hygiene

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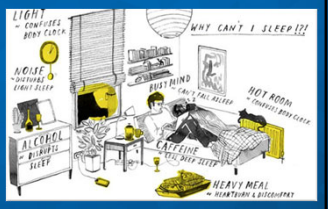
Sleep Hygiene

Basic foundational habits of good sleep: Necessary but NOT sufficient to improve sleep on their own!

- Bedroom environment optimized (quiet, very dark, cool, and comfortable)
- Physical activity/exercise (no less than 2-3 hours prior to bedtime)
- Limit noise distractions (ear plugs PRN)
- Avoid caffeine → mean half life ~5 hours (can take ≥12+ hours to eliminate!)
- Limit fluid intake prior to sleep.
- Don't go to bed hungry.
- Avoid napping after 3PM.
- Bedroom for sleep ONLY.
- Avoid alcohol consumption or smoking in the evening.
- Avoid electronics & screen time!



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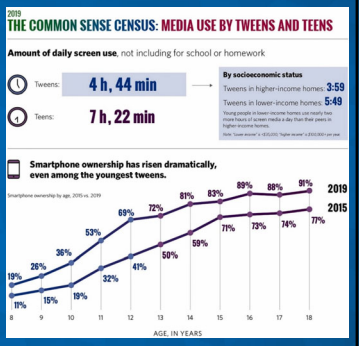
Screen Time

***We Are Social's* 2019 Global Statshot:**

- 5.11 billion individuals own a cell phone → ~66% of the world's population!
- United Nations estimates that more people worldwide have access to smartphones than toilets!
- ~62% spend ≥4 hrs/day on screen media
- ~29% spend ≥8 hrs/day



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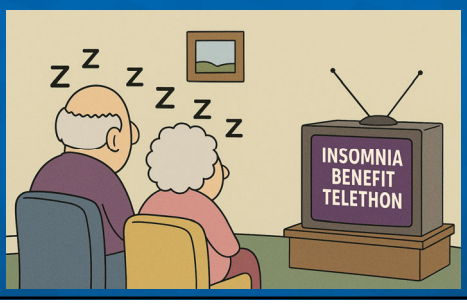
Screen Time

- Psychological Effects + Physiologic Arousals and change from SCREEN LIGHT



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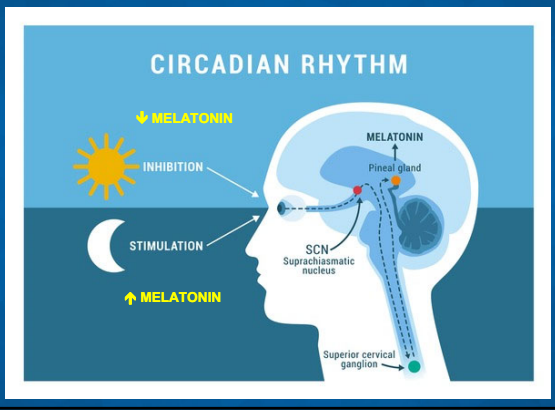
Light Moderates Circadian Rhythm



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Bedtime Routine

- Tie sleep hygiene with a healthy bedtime routine → RITUAL.
- Routine is consistent, same time daily, flows in one direction (ideally from kitchen, to bathroom, to bedroom), and activities stay in same order.
- I advise bedtime routine to generally "start" after dinner!
- Incorporate 3-5 quiet activities lasting ~20-45 minutes.
- Reward systems! We all love incentives!
  - Example: Bedtime pass program to assist with reducing curtain calls → 1-3 laminated passes permitting them to get out of bed for pre-approved activities such as a hug from a parent or a drink of water. Rewarded in morning for any unused passes.

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5 Core Components of CBT-i

Cognitive Therapy

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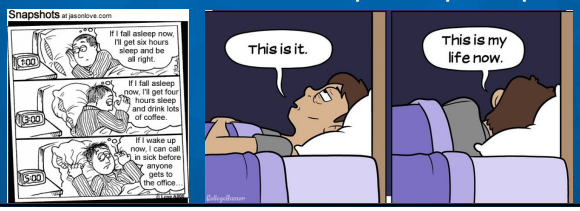
Cognitive Therapy

- Aims to identify, challenge, and replace dysfunctional beliefs and attitudes about sleep and insomnia.
- Frequent Misconceptions:
  - unrealistic expectations of sleep,
  - fear of missing out on sleep,
  - and overestimation of the consequences of poor sleep



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Challenging Negative Sleep Thoughts

All or Nothing Thinking: If I can't sleep 8 hrs tonight, it's terrible.

- Coping thought (reframing): Every time I get even an extra hour of sleep, that is a good outcome.

Overgeneralization: I didn't sleep well last night, and I'll never sleep well again.

- Coping thought (action): I will try using one of my relaxation techniques to help relax my body.

Disqualifying the Positive: Although I slept well last night, it was probably just a fluke.

- Coping thought (reinforcement): I slept well last night and having been working hard on good sleep habits which seems to be working.

Fortune Telling: I just know that tonight is going to be another bad one. Here we go again.

- Coping thought (logical thinking): I can't predict the future and worrying about my sleep will just make it worse.

Mind Reading: No one understands what it's like for me to cope with insomnia.

- Coping thought (Finding the exception).: I'm not the only person who has had insomnia. I don't like it but I'm working on getting better.

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Challenging Negative Sleep Thoughts

Catastrophizing: I can't stand it when I don't sleep well.

- Coping thought (Choosing words carefully): I don't like not sleeping well but I still do a good job functioning as best as I can even after a bad night.

Emotional Reasoning: I feel like I won't be able to sleep well, therefore I know I won't sleep well.

- Coping thought (Separating out the emotion): Just because I feel bad doesn't mean it has to be a bad night.

Should Statements: I should be able to sleep 8 hours straight every night.

- Coping thought (Keeping it reasonable): I will work on small goals first to help me feel accomplishment.

It's not fair...: It's not fair that others can sleep well and I can't.

- Coping thought (Life isn't fair): Everyone has different difficulties. Sleep is my issue.

External control: There is nothing I can do to control my sleep.

- Coping thought (Taking back control): I have tools that I can use to help improve sleep (relaxation, exercise, habits, etc.)

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Cognitive Therapy: Worry Time

- Scheduling a time to worry before it comes out during sleep time is a good way to address some worry problems.
  - Done best during the day, outside of bed
  - Opportunity to think through worries, examine validity, & problem solve is best done outside of bed during day
    - My Go-To Protocol

- Set aside daily time (can incorporate it into early part of bedtime routine)
- Two bowls → one bowl with empty slips of paper & second bowl with worries individually listed out
- Problem solve
- Tear slip of paper → throw into trash!

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Cognitive Restructuring

- Address child's fears before bed.
  - Example: Fear of the Dark
    - Teach brave self-talk, coping statements
    - Parents incorporate creative game play at bedtime (flashlight treasure hunt)

- Special needs or autism spectrum → use more visual cues
- Nightmare Disorder → Imagery Rehearsal Therapy
  - Generate & repeatedly discuss a new ending for the dream
    - Example: Adolescent dreaming of being chased → reshape it so that the person chasing her "was in fact" her mother coming to tell her she had won the lottery!!!!

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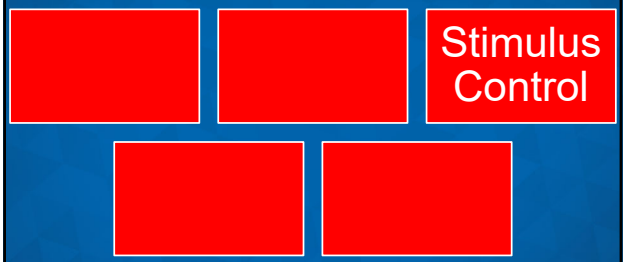
5 Core Components of CBT-i



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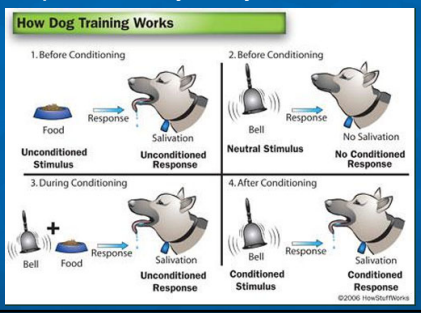
Stimulus Control to ↓ Conditioned Arousal

Learned associated between wakefulness and the bed

Bed = Sleep vs. Bed = worry, anxiety, work, read, toss, turn



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Stimulus Control

1. Do not use the bed for non-sleep activities → classical conditioning (train to learn that bed is associated with only sleep!)
2. Go to bed only when 'sleepy', not just 'tired' → instrumental conditioning (breaking the association that bed is associated with wakefulness)
3. Get out of bed if not asleep after 20 min, go into another room and stay up until sleepy → instrumental conditioning
   - Repeat as often as necessary.
4. Set an alarm to have the same wake up time each morning, regardless of how much sleep you got the night before → promotes circadian regularity, prevents sleep extension and homeostatic dysregulation
5. No naps → circadian regularity, prevents homeostatic dysregulation

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5 Core Components of CBT-i

Sleep Restriction

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Sleep Restriction

- Systematic reduction of time in bed to the amount of total sleep time (based on reviewed sleep log data)*
  - NOT decreasing sleep → Decreasing time awake in the bed
- Step 1: Decrease time in bed to better match actual sleep time.
- Step 2: Slowly increase time in bed based on sleep efficiency.
  - Sleep Efficiency (SE) =

    Time Asleep / Time In Bed (aka Time allotted for sleep)
    - 5.5 hours of sleep and 9 hours in bed → 61% SE
    - 7 hours of sleep and 7.5 hour in bed → 93% SE

*Ideally should be supervised closely by certified sleep physician or sleep psychologist.

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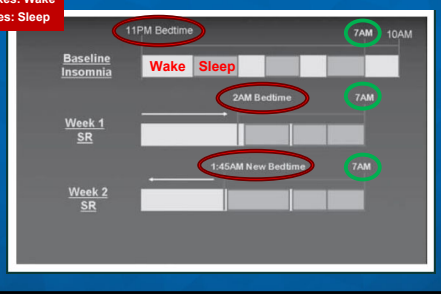
Sleep Restriction

- **Goal is that you are asleep for most of the time you are in bed.

White boxes: Wake
Dark boxes: Sleep



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Resistance to Sleep Restriction

- I won't be able to stay up until my bedtime.
  - Won't be able to vs. doesn't want to?
  - Often want to catch sleep whenever it might happen – but we need to change this mindset
  - If truly cannot seem to stay up until bedtime, brainstorm activities for what to do at night:
    - Sit up straight vs. lie down
    - Avoid sleep-inducing activities (e.g., sedentary things)
    - Try slightly more activating activities (e.g., wash dishes, fold laundry, phone call with someone on the West coast)
    - Splash cold water on face, set timer in another room to go off in 5 to 10minute increments

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Sleep Compression

- "Gentler" than sleep restriction by splitting wake time in bed and splitting minutes needing to be decreased per week over several weeks.
- May help avoid excessive daytime tiredness due to the rapid sleep restriction ("sleep deprivation").

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Bedtime Fading

- For children ages 3+ who regularly take >30 minutes to fall asleep (+/- cry, fuss or feel anxious at night, call out from bed, talk a lot, leave bedroom a lot, ec.)
- Bedtime is temporarily moved later to more closely match the time the child typically falls asleep.
  - Child is sleepier at this later time → more likely to stay in bed and fall asleep quickly with less crying/fussing.
- After several good nights in a row, the bedtime is "faded" or moved 15 minutes earlier, until the target or "best" bedtime is reached.
- This program works best when used after a calming bedtime routine.


"When I'm older will I get to snore like you?"

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Sleep Scheduling Tools

- Get out of bed at the same time every day
- Reduce time in bed to match average sleep time
- Do not get in bed prior to identified "bedtime" (Desired wake time – maximum time in bed)
  - E.g., 06:00AM rise time and want 8 hours in bed → then 22:00PM is identified bedtime
- Do not get in bed until you are sleepy (not *tired*)
- Limit naps → Not after 4:00 pm and no longer than 45 minutes
- Half Hour – Half Hour Rule: Do not lie awake in bed for >30 minutes & engage in another activity for 30 minutes before return to bed.


"I can get by on just 2 hours of sleep every day, as long as I nap for 14 hours."

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5 Core Components of CBT-i

Relaxation Therapy

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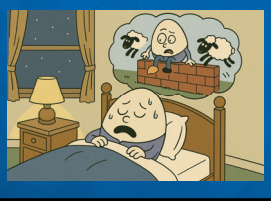
Relaxation Training

- Diaphragmatic Breathing
- Progressive Muscle Relaxation
- Imagery
- Many Others!



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What about Meds?

- No FDA approved medication therapy for medications to treat pediatric chronic insomnia.
- Though there is indicated role in certain patient populations.

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Summary

- Screening for Insomnia is very important!
- Education can be impactful in managing a patient's symptom burden.
- Initial screening, sleep history gathering, and sleep diary/log review can provide PCPs with initial areas of concern to address!
- Sleep Hygiene is important and a great first area of education towards helping a patient establish a healthy bedtime routine.
- Formal CBT-i with certified sleep providers remains a gold-standard management of primary chronic insomnia in pediatric patients.

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Resources

- Information on sleep, sleep disorders, & treatments:
  - http://yoursleep.aasmnet.org/
  - http://www.sleepeducation.com/
  - http://sleepfoundation.org/
  - http://www.behavioralsleep.org/
- Locate an AASM-accredited sleep center:
  - http://www.sleepeducation.com/find-a-center
- List of Behavioral Sleep Medicine specialists, typically psychologists/therapists Board-certified in Behavioral Sleep Medicine ("CBSM"):
  - http://www.absm.org/bsmspecialists.aspx
  - http://www.behavioralsleep.org/findspecialist.aspx

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Resources

- Books:
  - "Say Goodnight to Insomnia" by Gregg Jacobs, PhD
  - "Quiet Your Mind and Get to Sleep" by Carney & Manber
  - "The Insomnia Answer" by Glovinsky & Spielman
  - Insomnia: A Clinical Guide to Assessment and Treatment by Morin & Espie
  - Behavioral Treatments for Sleep Disorders by Perlis, Aloia, Kuhn; or Perlis and Lichstein
- Mobile Apps: CBT-i Coach
- Internet Sources: SHUTi (~$135 for 16 weeks), Sleepio (~$149 for 12 weeks or $249 for 1 year; can link with Jawbone or Fitbit), Go! To Sleep by Cleveland Clinic Wellness (~$40 for lifetime access), etc.

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