Need Sleep?  
A Five Week Intervention

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Behavioral Sleep Medicine Program

- Michael Perlis, PhD, Director Behavioral Sleep Medicine  
  Program at University of Pennsylvania
- CBT-I workshop
- Advanced CBT-I workshop
- http://www.med.upenn.edu/bsm/cbt.html

"No wonder you have insomnia...  
lying there awake all night."
Assessments

- BSI-18
- Epworth Sleepiness Scale
- Dysfunctional Beliefs and Attitudes about Sleep
- Insomnia Severity Index
- Pittsburgh Sleep Quality Index
- MD Anderson Symptom Inventory

Technology

- Measurement of sleep amount and quality
  - FitBit
  - Jawbone – Up24
- Applications
  - Insomniafix
  - Veterans Administration – CBT-I Coach
    - http://www ptsd va gov/professional/materials/apps/cbticoach app pro asp
Cognitive Behavioral Therapy for Insomnia

- Stimulus control
- Sleep restriction
- Education
- Thoughts about sleep
- Relaxation techniques
- Sleep hygiene
- Improvements in 4-6 weeks
- No tolerance or dependency risks
- Effective for 80% of patients
- Slows brain waves by curbing mental activity
- Strengthens the sleep system

Session I

- Assessments
- Introductions
- Education
- Stimulus control
- Sleep Diary (sleep restriction)
Is Indicated for:

- Trouble falling asleep (SL- sleep latency)
- Trouble staying asleep (WASO- wake after sleep onset)
- Non-Restorative sleep?
- Early morning awakenings?

Focus will be:

- Trouble falling asleep
- Trouble staying asleep
- Early morning awakenings

Not...

- Sleep apnea
- Restless leg
- Circadian rhythm disorders (Parkinson’s, shift work)
- Poor quality (usually sleep disorders)
- GERD, COPD, fibromyalgia
- Hyperinsomnia (10+ hours)
- Untreated major depression
- PTSD
- Substance abuse
- Psychosis
- Nightmares
### Insomnia

- Falling asleep > 30 minutes
- Staying asleep > 30 minutes
- Non-restorative sleep
- Occurs at least 3 nights per week
- Causes significant impairment in daytime functioning or distress
- Acute (directly connected to a stressor...abates)
- Chronic (learned association, negative thoughts, “I’m never going to fall asleep.”)

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### What it Looks like

- 1/3 Americans complain of episode at least once year
- May change over time
- Most common complaint after pain and headaches
- More frequent in women and older adults
- “I’ll take it wherever I can get it.”

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### Consequences

- Decreased reflexes (accidents)
- Low, irritable/anxious mood
- Depression
- Decreased pain tolerance
- Decreased cognition, memory
- Reduced seizure threshold
- Increase cortisol
- Impairs glucose tolerance
- Affects NK cells
- Increases cytokines (inflammation)
- Gene activity
Sleep and Mortality

- 6-8 hours per night optimal for health (ACS 7 hrs optimal)
- National Sleep Foundation 7-9
- Long Sleepers: >9 hours possible undiagnosed co-morbidity, additional marker of ill-health
- Short Sleepers: <5 hours, higher risk factor for co-morbidity, may trigger biological mechanisms contributing to the deterioration of health status
- Is it a cause or marker for ill-health?

Insomnia and Cancer

- 3 times more likely to have sleep disturbances when compared to control group
- May peak at diagnosis, chemo, XRT, end-stage
- Succession of stressors
- Greater difficulty with sleep onset and sleep maintenance
- Sleep medication most commonly prescribed medication after those for nausea
- Possible impact on immune function
Medications Indicated for Insomnia

<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
<th>Dose (mg)</th>
<th>Drug Class</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flurazepam</td>
<td>Dalmane</td>
<td>15-30</td>
<td>BZD</td>
<td>suppress SW/REM, rebound insom</td>
</tr>
<tr>
<td>Temazepam</td>
<td>Restoril</td>
<td>15-30</td>
<td>BZD</td>
<td>same</td>
</tr>
<tr>
<td>Triazolam</td>
<td>Halcion</td>
<td>0.125-0.25</td>
<td>BZD</td>
<td>same</td>
</tr>
<tr>
<td>Zaleplon</td>
<td>Melatonin</td>
<td>5-10</td>
<td>non-BZD</td>
<td>not curative</td>
</tr>
<tr>
<td>Zaleplon</td>
<td>Sonata</td>
<td>5-10</td>
<td>non-BZD</td>
<td>same</td>
</tr>
<tr>
<td>Zaleplon</td>
<td>Lunesta</td>
<td>1-3</td>
<td>non-BZD</td>
<td>same</td>
</tr>
<tr>
<td>Ramelton</td>
<td>Reonem</td>
<td>8</td>
<td>MT agonist</td>
<td>not melatonin, efficacy?</td>
</tr>
<tr>
<td>Tramadol</td>
<td>Desyrel/Deprax</td>
<td></td>
<td></td>
<td>not curative</td>
</tr>
<tr>
<td>Valerian</td>
<td></td>
<td>400mg</td>
<td>herb</td>
<td>? fatigue</td>
</tr>
</tbody>
</table>

Melatonin

- Hormone secreted by the pineal gland
- Controls sleep/wake cycles
- Levels rise late evening and drop in early morning
- Light (artificial can also) affects production
- Melatonin levels drop with age
- Side affects: sleepiness, grogginess in morning, decrease temperature, decrease BP, vivid dreams
- Inconclusive research for insomnia
- Supplements not regulated
- Talk with your doctor!
Alcohol
- Gets you to sleep
- Metabolizes during sleep
- Decreases REM early in night
- Increases sleep disruption later in night, fragmentation
- Increases sympathetic arousal
- As dependency increases there is a decrease in total sleep time
- Disruption of circadian rhythm
- Exacerbates snoring/sleep apnea
- Limit to 1 ounce at least 2 hrs before bedtime

Modafinil
- Stimulant
- Improves wakefulness
- Shift work
- Military

Stimulus Control

Some people don’t sleep because they have insomnia.

I can’t sleep because I have internet connection.

Effects of Technology

- Artificial room light
- Technology use (television, computer, video games, cell phone, tablet)
- Blue blocking glasses
- Blue blocking program
- Bright light therapy


Sleep Restriction

- Calculate actual time spent asleep (sleep diary)
- Sleep ability matches sleep opportunity
- Set wake time
- Count back to hour of bedtime
- Consistency
- Builds sleep compression
- No naps
### Sleep Diaries

- Time to bed and then put down...do not fill in during the night
- Estimate time for awakenings, what did it feel like, put clock under bed
- Fill out first thing in morning
- Diaries are necessary for this intervention

### Session II

- Comments
- Review diaries
- Education
- Sleep restriction
- Sleep efficiency
- Handouts
- Homework

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
<th>Sat</th>
<th>Average for Week</th>
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<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
### Sleep Efficiency

<table>
<thead>
<tr>
<th>Total Sleep Time (TST)</th>
<th>X</th>
<th>100</th>
<th>= SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total time in Bed (TTIB)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- < 85% (Mismatch between sleep opportunity and sleep ability, take away 15 minutes)
- 85% - 90% (Hold)
- > 90% (Add 15 minutes)

### Match Sleep Ability with Sleep Effort

![Graph showing In Bed vs Slept over days](image)

- In Bed: Sleep Opportunity
- Slept: Sleep Ability

### Sleep Compression

![Image of a piglet sleeping](image)
Caution

- In treatment
- Sleepiness

To Stay Awake Until Bedtime...

- Stay off the Internet
- Call a friend
- Do some chores
- Turn on all the lights
- Read a book that is hard to put down
- Stand up and walk around
- Watch a comedy
- Listen to upbeat music
- Pay bills

U.S. Department of Veterans Affairs

Waking in the Middle of the Night

- "Give up," and "Don't fight it."
- GET OUT OF BED
- Don't eat or exercise
- No work
- Activities that do not result in arousal
- Journal
- Watch TV
- When sleepy...Go back to bed.
- Repeat as necessary
How to Get Out of Bed at Wake Time

- Set two alarms
- Wiggle fingers and toes
- Stretch
- Positive thoughts about the day
- Get into the light

****If YOU ARE SLEEPY, DO NOT DRIVE. GET A RIDE. IF YOU FEEL SLEEPY WHILE DRIVING, PULL OVER TO THE SIDE OF THE ROAD AND TAKE A NAP.

Handouts
- VA Sleep
- Retraining your Brain
- Sleep Hygiene
- Nutrition

Homework
- SLEEP DIARY
- Sleep Environment Questionnaire
- Five thoughts I have about sleep

Sleep Hygiene
- Exercise regularly
- Nighttime ritual
- Bedroom dark, cool, free from noise
- Do not go to bed hungry (light snack, carbohydrates)
- Avoid excessive liquids in the evening
- Decrease caffeinated beverages
- Avoid alcohol
- Turn the clock around
- Avoid naps
Session III

- Comments
- Review diaries, sleep restriction, calculate sleep efficiency
- Review handouts
- Review homework (sleep environment, Five Thoughts I have about Sleep)
- Education (arousal, sleep architecture)
- CBT
- Homework

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1/3 of Your Life

Sleep Cycle about 90 Minutes; 4-6 Times a Night

Stage 1: drowsy, slow rolling eye movements, daydreaming, theta waves, few minutes

Stage 2: light sleep, more relaxed, sleep spindles, 30-45 minutes

Stage 3/4: deep sleep, delta, slow waves, respiration, HR, BP all decrease, difficult to wake, restore tissue, 45 minutes

REM: dream, eyes move, can awake, HR, BP, respiration become irregular, increase blood flow to brain, muscles paralyzed, memory, few minutes to 1 hour
Beta emitted when we are consciously alert, or we feel agitated, tense, afraid

Alpha when we are in a state of physical and mental relaxation, but still aware, meditation

Theta a state of somnolence with reduced consciousness, stage 1

Delta when there is unconsciousness, deep sleep, stage 3/4

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Increased Arousal at Bedtime

- Sympathetic arousal during sleep
- Are you awake because you are anxious or are you anxious because you are laying in bed awake due to insomnia
Brain and Stress Response

- Hippocampus
- Prefrontal Cortex

CBT-I

- Slows brain waves by curbing mental activity
- Strengthens the sleep system

Speilman Model

- Perpetuating Factors
- Precipitating Factors
- Predisposing Factors

Good Sleep

Poor Sleep
Cognitive Model

Language is Important

- All-or-Nothing Thinking: “If I don’t get to sleep, I’ll do terrible at work tomorrow.”
- Overgeneralization: single event is seen as a pattern: “I haven’t slept all week.”
- Mind Reading: you know what people think/feel
- Catastrophizing: worry about worse case scenario
- Personalizing: compare self, all about me
- Should Statements: inflexible rules
Disrupted Sleep the Night before Work

<table>
<thead>
<tr>
<th>Thoughts</th>
<th>How Certain</th>
<th># times actually happened</th>
<th># times it did not happen</th>
<th>Chance it will NOT happen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up all night</td>
<td>95%</td>
<td>0</td>
<td>365</td>
<td>100%</td>
</tr>
<tr>
<td>Won’t be able to function</td>
<td>80%</td>
<td>30</td>
<td>335</td>
<td>91.7%</td>
</tr>
<tr>
<td>Make mistakes</td>
<td>100%</td>
<td>15</td>
<td>350</td>
<td>95.8%</td>
</tr>
<tr>
<td>Lose job</td>
<td>100%</td>
<td>0</td>
<td>365</td>
<td>100%</td>
</tr>
</tbody>
</table>

Cognitive Therapy

- What’s the evidence?
- What makes the thought true or not completely true?
- What is the effect of continuing to have this thought?
- What could happen if I changed my thinking?
- What would I tell a friend in the same position?
- What should I do next?

1. You have a thought
2. Repeat “It’s not likely to happen.”
3. Get out of bed.
### Positive Sleep Thoughts

- My performance will not suffer significantly if I get my core sleep.
- I’m probably getting more sleep than I think I am.
- Sleeping 7 hours is associated with the longest life expectancy.
- In most cases, the worst thing that might happen is that my mood will be impaired during the day.
- My sleep will improve as I learn these techniques.
- These techniques have worked for others, they will work for me.

"I am having a thought. It is only a thought and probably not likely to happen."

"I'll be tired tomorrow but I have been tired before and managed OK."

"If I practice these strategies my insomnia will get better."

"If I don't sleep well tonight, I will probably sleep better tomorrow night."

"I'm probably getting more sleep than I think I am."
Homework

- Diary
- Negative/positive sleep thoughts
- Affirmations
- Inspirational words
- VA CBT Mobile App

Session IV

- Sleep diaries
- Review homework
- Biodots
- Relaxation response review
- Relaxation strategies
- CD’s/DVD’s
- Hypnosis
- Review previous sessions
Relaxation Strategies

- Breath
- Meditation
- Progressive muscle relaxation
- Gravity body scan
- Yoga poses

Yoga for Cancer Survivors

- Journal of Clinical Oncology
- Cancer survivors engaging in yoga:
  - Slept better
  - Less daytime exhaustion
  - Better perceptions of how they slept
  - Less frequent use of sleep medications


Mindfulness-Based Stress Reduction (MBSR)

- Journal of Clinical Oncology
- Results: Both increased total sleep time
- CBT-I more rapid improvement, MBSR more gradual
- Both improved mood and stress related symptoms

Read Hypnosis Script

Technical Aids/Apps

- Meditation Apps (iPhone and android)
  - The Mindfulness App
  - Simply Being
  - Mindfulness Meditation
  - Buddhist Meditation Trainer

- CD's
  - Healthful Sleep Meditations - Belleruth Naparstek
  - Sleep: Guided Relaxation & Instrumental Harmonies – Dr. James Reuse (GAIAM)

- DVD
  - Mayo Clinic Wellness Solutions for Insomnia – (GAIAM)

Session V

- Review
- My Sleep Tools
- Sleep Plan
- Sleep Diaries
- Assessments
Sleep Tools Activity

What has helped you over these last four weeks?

1. _______________________
2. _______________________
3. _______________________
4. _______________________

Red Flags
- Awake for > 30 min
- Difficulty functioning
- Increased worries
- Preoccupation about sleeping
- Sleep efficiency < 85%

Strategies
- I have learned skills
- Review sleep tools
- Restrict time in bed
- Avoid arousing activities
- Challenge negative thoughts
- Stress management
- Restart sleep diary

Sleep Plan
It appears that every man’s insomnia is as different from his neighbour’s as are their daytime hopes and aspirations.

~F. Scott Fitzgerald

Insomnia References

Insomnia References

- Insomnia frequent and enduring problem, early intervention strategies such as CBT can prevent from becoming more severe and chronic.