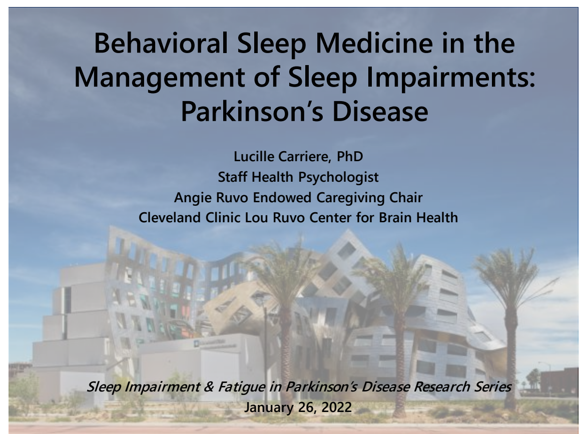
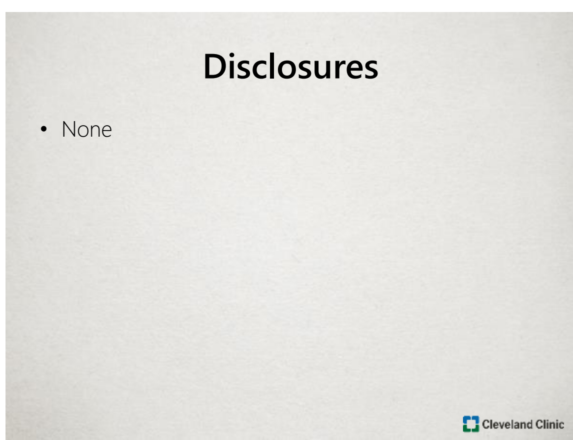

Behavioral Sleep Medicine in the Management of Sleep Impairments: Parkinson's Disease
Lucille Carriere, PhD
Staff Health Psychologist
Angie Ruvo Endowed Caregiving Chair
Cleveland Clinic Lou Ruvo Center for Brain Health
Sleep Impairment & Fatigue in Parkinson's Disease Research Series
January 26, 2022


Disclosures
• None
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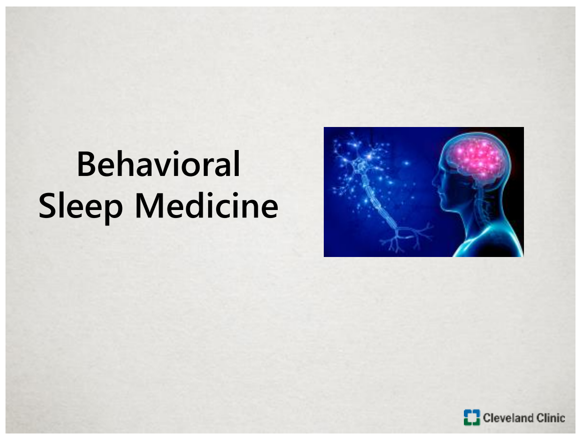
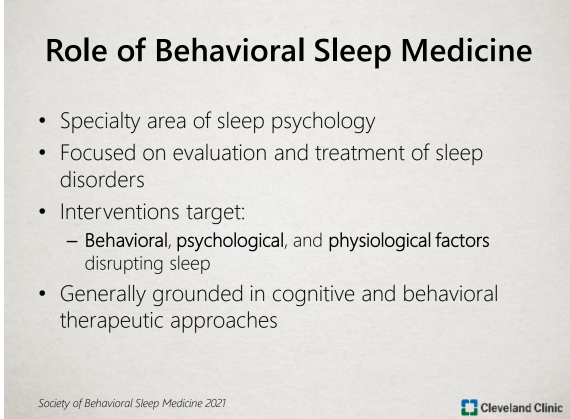
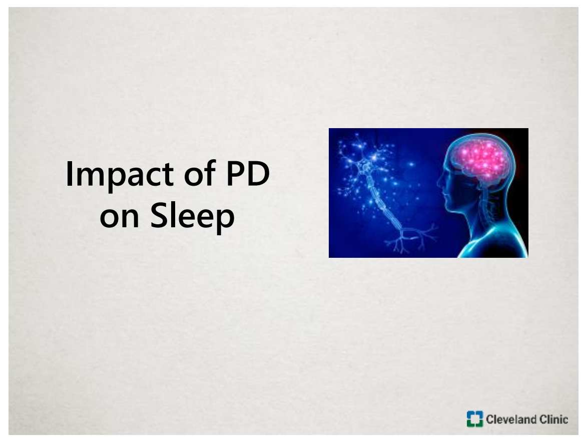
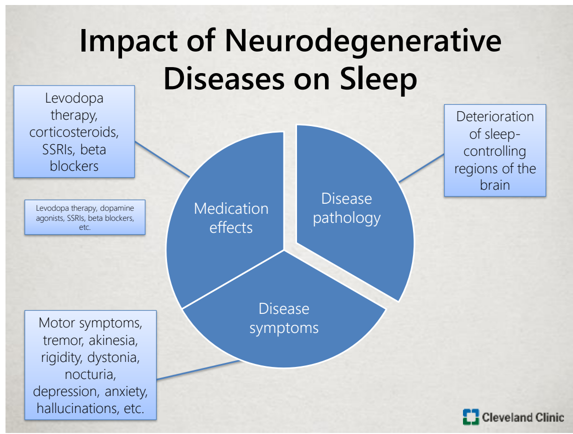

Behavioral Sleep Medicine
Cleveland Clinic


Role of Behavioral Sleep Medicine
• Specialty area of sleep psychology
• Focused on evaluation and treatment of sleep disorders
• Interventions target:
– Behavioral, psychological, and physiological factors disrupting sleep
• Generally grounded in cognitive and behavioral therapeutic approaches
Society of Behavioral Sleep Medicine 2021
Cleveland Clinic


Impact of PD on Sleep
Cleveland Clinic


Impact of Neurodegenerative Diseases on Sleep
Levodopa therapy, corticosteroids, SSRIs, beta blockers
Levodopa therapy, dopamine agonists, SSRIs, beta blockers, etc.
Medication effects
Disease pathology
Deterioration of sleep-controlling regions of the brain
Disease symptoms
Motor symptoms, tremor, akinesia, rigidity, dystonia, nocturia, depression, anxiety, hallucinations, etc.
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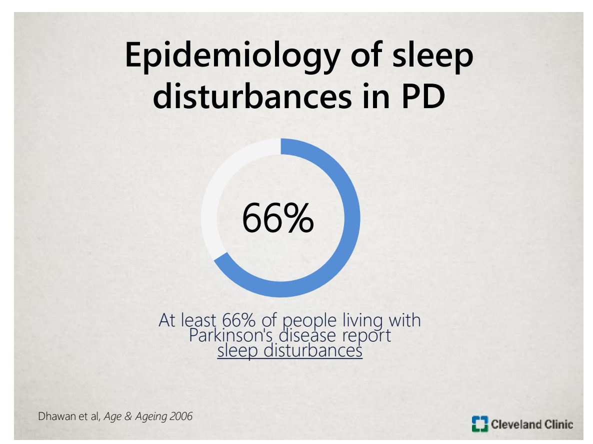

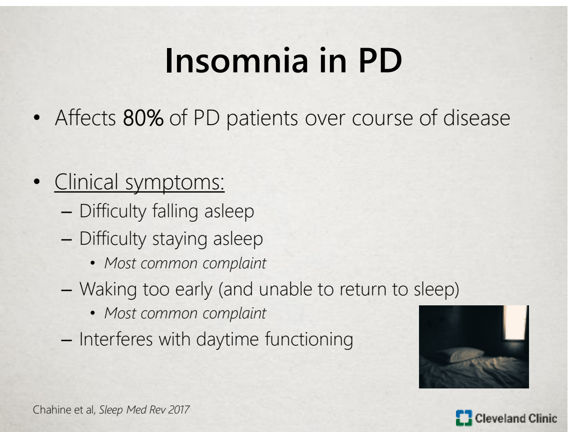

Impact of Poor Sleep in NDD Populations

- Reduced quality of life
- Psychiatric symptoms
- Reduced independence & functional status
- Excessive daytime sleepiness/fatigue
- Increased cognitive impairment
- Accelerated disease progression
- Increased caregiver burden

Breen et al, *JAMA Neurol.* 2014
Kim et al, *J Mov Disord.* 2014

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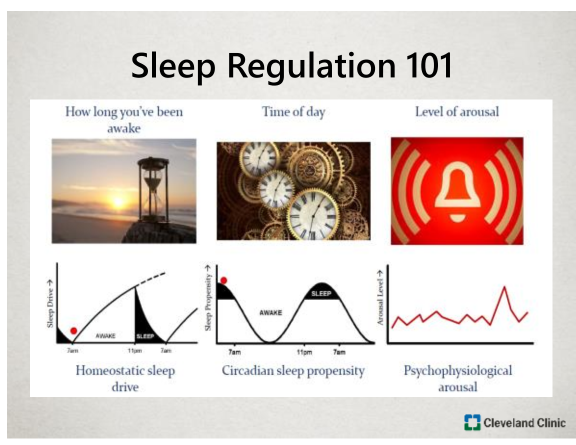

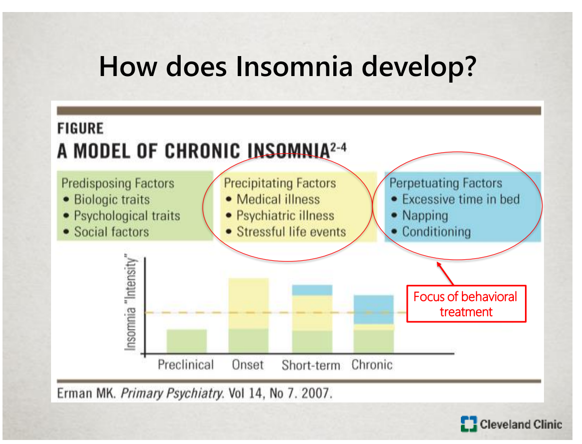

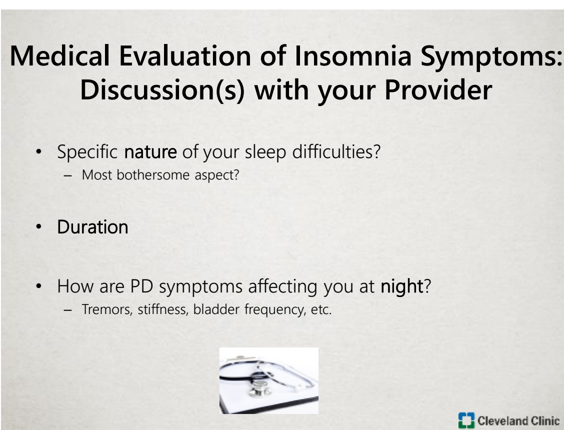

Medical Evaluation of Insomnia Symptoms

- **Comprehensive evaluation with medical provider** is critical to understand insomnia complaints.
  - Are PD symptoms and/or other medical conditions *optimally managed*?
  - Is insomnia *primary* (independent) or *co-morbid* to the medical symptoms?
  - Do you need to be screened for *other sleep disorders?*
    - E.g., Restless Legs Syndrome, REM Sleep Behavior Disorder, Sleep Apnea)?

Loddo et al, *Front. Neurol.* 2017

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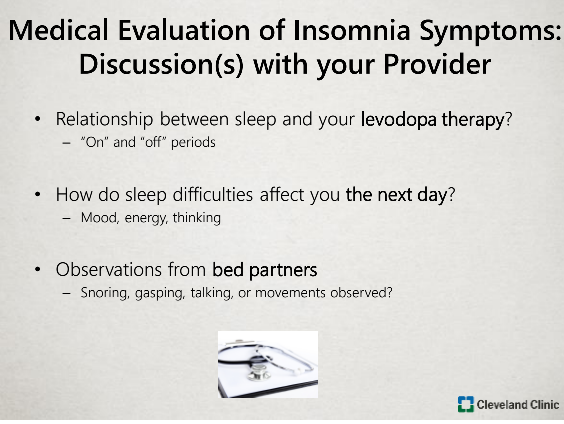
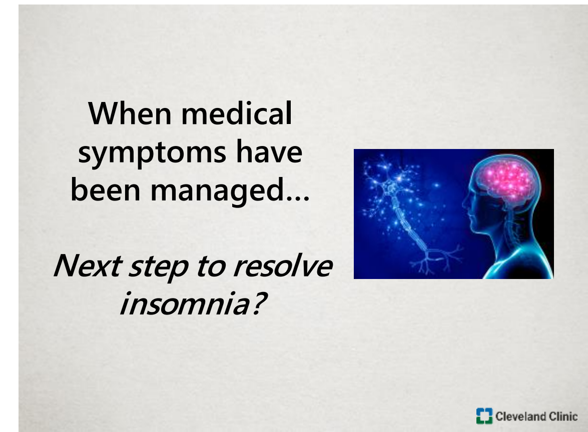
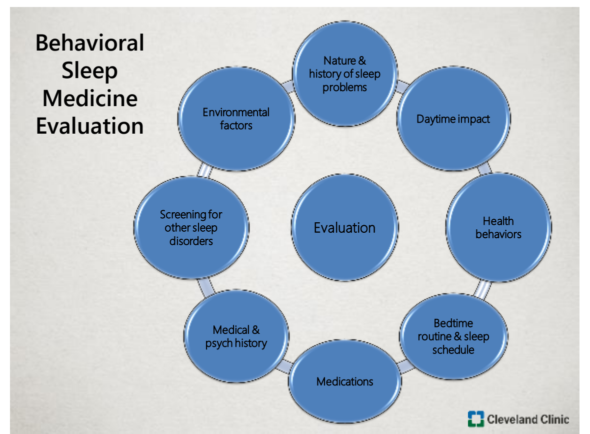
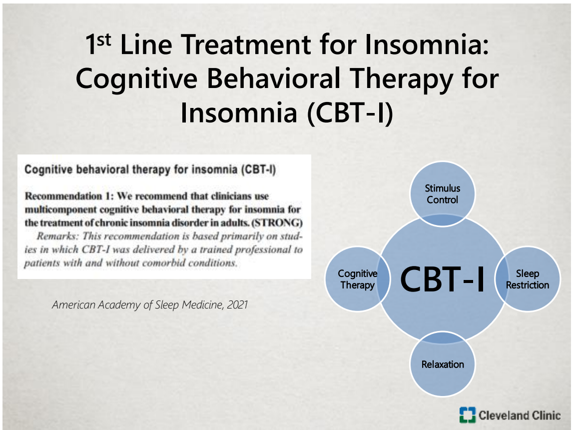
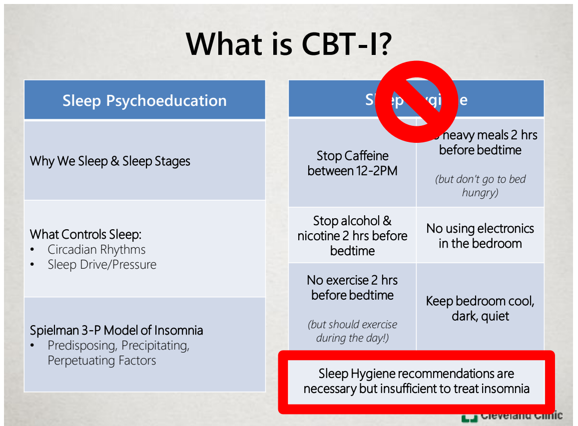
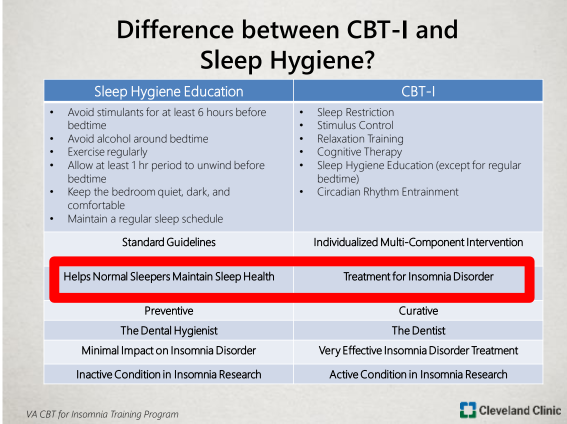





Behavioral Sleep Medicine Evaluation
Nature & history of sleep problems
Daytime impact
Health behaviors
Bedtime routine & sleep schedule
Medications
Medical & psych history
Screening for other sleep disorders
Environmental factors
Evaluation
Cleveland Clinic


1st Line Treatment for Insomnia: Cognitive Behavioral Therapy for Insomnia (CBT-I)
Cognitive behavioral therapy for insomnia (CBT-I)
Recommendation 1: We recommend that clinicians use multicomponent cognitive behavioral therapy for insomnia for the treatment of chronic insomnia disorder in adults. (STRONG)
Remarks: This recommendation is based primarily on studies in which CBT-I was delivered by a trained professional to patients with and without comorbid conditions.
American Academy of Sleep Medicine, 2021
Stimulus Control
Cognitive Therapy
CBT-I
Sleep Restriction
Relaxation
Cleveland Clinic


What is CBT-I?
Sleep Psychoeducation
Why We Sleep & Sleep Stages
What Controls Sleep:
Circadian Rhythms
Sleep Drive/Pressure
Spielman 3-P Model of Insomnia
Predisposing, Precipitating, Perpetuating Factors
Stop Caffeine between 12-2PM
heavy meals 2 hrs before bedtime
(but don't go to bed hungry)
Stop alcohol & nicotine 2 hrs before bedtime
No using electronics in the bedroom
No exercise 2 hrs before bedtime
(but should exercise during the day!)
Keep bedroom cool, dark, quiet
Sleep Hygiene recommendations are necessary but insufficient to treat insomnia


Difference between CBT-I and Sleep Hygiene?
Sleep Hygiene Education
Avoid stimulants for at least 6 hours before bedtime
Avoid alcohol around bedtime
Exercise regularly
Allow at least 1 hr period to unwind before bedtime
Keep the bedroom quiet, dark, and comfortable
Maintain a regular sleep schedule
CBT-I
Sleep Restriction
Stimulus Control
Relaxation Training
Cognitive Therapy
Sleep Hygiene Education (except for regular bedtime)
Circadian Rhythm Entrainment
Standard Guidelines
Individualized Multi-Component Intervention
Helps Normal Sleepers Maintain Sleep Health
Treatment for Insomnia Disorder
Preventive
Curative
The Dental Hygienist
The Dentist
Minimal Impact on Insomnia Disorder
Very Effective Insomnia Disorder Treatment
Inactive Condition in Insomnia Research
Active Condition in Insomnia Research
VA CBT for Insomnia Training Program
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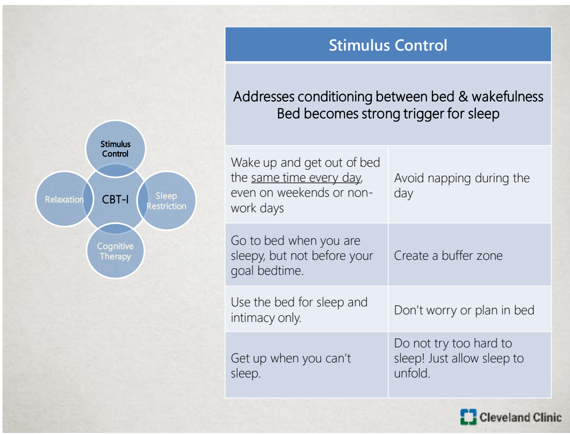
Stimulus Control
CBT-I
Relaxation
Sleep Restriction
Cognitive Therapy
Addresses conditioning between bed & wakefulness
Bed becomes strong trigger for sleep
Wake up and get out of bed the same time every day, even on weekends or non-work days
Avoid napping during the day
Go to bed when you are sleepy, but not before your goal bedtime.
Create a buffer zone
Use the bed for sleep and intimacy only.
Don't worry or plan in bed
Get up when you can't sleep.
Do not try too hard to sleep! Just allow sleep to unfold.
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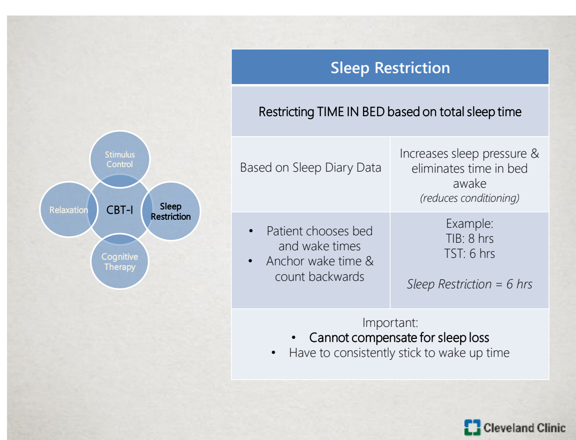
Stimulus Control
Relaxation
CBT-I
Sleep Restriction
Cognitive Therapy
Sleep Restriction
Restricting TIME IN BED based on total sleep time
Based on Sleep Diary Data
Increases sleep pressure & eliminates time in bed awake
(reduces conditioning)
Patient chooses bed and wake times
Anchor wake time & count backwards
Example:
TIB: 8 hrs
TST: 6 hrs
Sleep Restriction = 6 hrs
Important:
Cannot compensate for sleep loss
Have to consistently stick to wake up time
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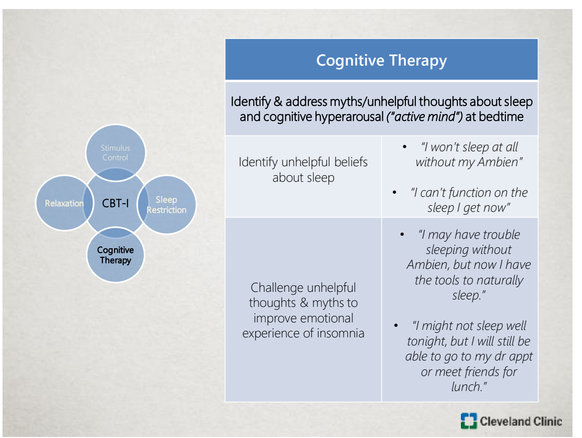
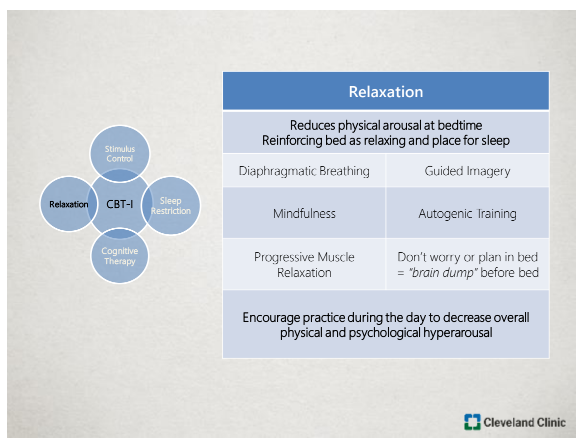


Cognitive Therapy	
Identify & address myths/unhelpful thoughts about sleep and cognitive hyperarousal *("active mind")* at bedtime	
Identify unhelpful beliefs about sleep	• *"I won't sleep at all without my Ambien"* • *"I can't function on the sleep I get now"*
Challenge unhelpful thoughts & myths to improve emotional experience of insomnia	• *"I may have trouble sleeping without Ambien, but now I have the tools to naturally sleep."* • *"I might not sleep well tonight, but I will still be able to go to my dr appt or meet friends for lunch."*



Relaxation	
Reduces physical arousal at bedtime Reinforcing bed as relaxing and place for sleep	
Diaphragmatic Breathing	Guided Imagery
Mindfulness	Autogenic Training
Progressive Muscle Relaxation	Don't worry or plan in bed = *"brain dump"* before bed
Encourage practice during the day to decrease overall physical and psychological hyperarousal	

What to Expect from CBT-I in Clinical Practice?

- Typical course is **~4-8 sessions**
- Use of **weekly sleep diary** to track and monitor factors affecting sleep is important
- **Highly structured** form of treatment
  - Each session focuses on 1-2 sleep related recommendations to "practice" at home

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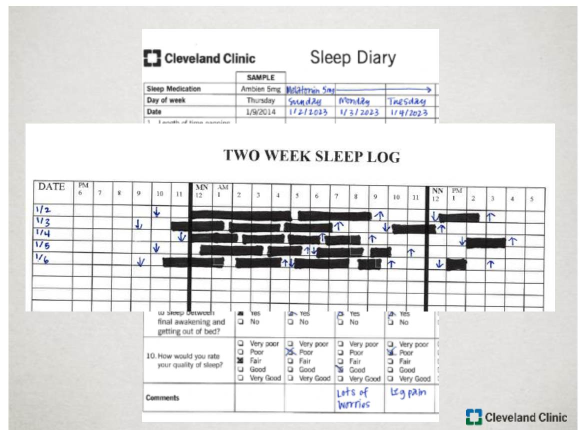

Individualized Approach to CBT-I in PD

- **Tailored** sleep education to PD
- Establishing **realistic expectations** for treatment outcomes
  - *"I want to sleep uninterrupted for 10 hours every night."*
  - *"I want to sleep like I'm 20 years old again."*
- **Adjusting behavioral interventions** to account for:
  - Physical & motor limitations
    - Ex: Switching to silk or satin sheets
  - Cognitive changes
    - Ex: Using different type of sleep diary
  - Complex dosing schedules of medications

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Individualized Approach to CBT-I in PD

- Inclusion of **PD care partner** into treatment
  - To optimize session content and at-home changes
- Strategic use of **napping**
  - To reduce *negative impact* of daytime sleepiness and improve functioning
- **Sleep aids** in CBT-I
  - Best *timing* of sleep aids
  - Collaborating with medical team for Rx taper

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Evidence for CBT-I in PD

- Limited research base but results are promising
  - May be more applicable to mild-to-moderate PD
- Early evidence of improvements to sleep quality
  - Reduced frequency and duration of awakenings
  - Increased sleep quantity
  - Reduced daytime sleepiness
  - Reduced anxiety and depressive symptoms
  - Sustained treatment benefits at +3 month follow-up

Humbert et al, *NPJ Parkinsons Dis 2017*
Lebrun et al., *J Clin Psychol 2019*
Lebrun et al, *J Clin Psychol 2020*
Lopes, Khan, & Chand, *Int J Geriatr Psychiatry 2021*

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Behavioral Treatments applicable to other Sleep Disruptions

- Circadian Rhythm Disorders
  - Realign the biological clock to preferred sleep schedule
  - *Planned sleep schedules, timed light/melatonin schedules*
- Hypersomnolence (excessive daytime sleepiness)
  - Reduce interference and impact on daily activities
  - *Structured days/nights, planned napping, coping skills*
- CPAP Therapy Adherence
  - *Exposure exercises to reduce discomfort or anxiety with CPAP use*

Morgenthaler et al, *Sleep 2007*

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Behavioral Treatments Applicable to Dementia

- Bright light therapy
  - Applicable to irregular sleep-wake rhythms
  - Target: 1-2 hr exposure during morning hours
- Consistency in daytime & bedtime routine
  - Stimulating activities, physical exercise (30 minutes/daily), limiting napping
- Collaboration and education with family caregiver
- Collaboration with medical team:
  - Management of medical comorbidities
  - Medication review

Hanford & Figueiro, *J Alzheimer's Dis 2013*
Ooms & Ju, *Curr Trea Options Neurol 2016*

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Sleep Quality for PD Care Partners

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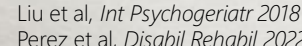
What about Sleep Quality in PD Care Partners?

Do any of these descriptors sound familiar to you?

- Surveys of PD care partner sleep as:
  - *Poor quality*
  - *Fragmented or unrefreshing sleep*
  - *Difficult to fall and stay asleep*
- High levels of daytime sleepiness
- High levels of daytime fatigue



Liu et al, *Int Psychogeriatr 2018*
Perez et al, *Disabil Rehabil 2022*

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Contributors to Sleep Disruptions in PD Care Partners

- Care recipient factors
  - Poor quality sleep
  - Severe motor symptoms
  - Depression
- Management of night time PD symptoms
  - Hallucinations, tremors, nightmares, bathroom assist, dispensing meds, etc.
- Caregiver stress and burden
  - Nocturnal 'hypervigilance' & worries
  - Dose-response pattern

Sprajcer et al, *BMJ 2022*

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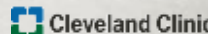
Optimizing Sleep Quality of PD Care Partners

- Target: Care Recipient
  - Primary goal: Reducing *care recipient* sleep disruptions
  - Medical and behavioral management 
    - Alert care recipient medical team
  - Adding respite and/or in-home support?
- Target: Care Partner
  - Relaxation & stress reduction techniques
  - Exercise
  - Cognitive-behavioral sleep interventions
  - Talk to your medical provider(s)

Liu et al, *Int Psychogeriatr 2018*
Perez et al, *Disabil Rehabil 2022*
Sprajcer et al, *BMJ 2022*

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Conclusions

- Sleep disturbances in Parkinson's disease are **common** but treatments are available – and can be beneficial.
- **Behavioral sleep interventions (including CBT-I)** should be considered as part of a multidisciplinary approach to improve sleep quality.
- PD care partners and caregivers play an **important role** in the management of sleep complaints.
- Sleep quality of PD care partners and caregivers should also be **monitored and prioritized**.

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How Do I Find a Behavioral Sleep Medicine Provider?

- International Directory for the **Society of Behavioral Sleep Medicine**
  - https://www.behavioralsleep.org/index.php/united-states-sbsm-members
- International Directory of **CBT-I Providers**
  - https://cbti.directory/

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