Approach to Sleep Disorders in Older Adults

Dr. Sophiya Benjamin
Geriatric Psychiatrist,
Specialized Mental Health
Grand River Hospital
Medical Lead, GeriMedRisk

A Day in Psychiatry- 2018
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Bingeman’s Conference Centre
Kitchener, Ontario
Approach to Sleep Disorders in Older Adults
Dr. Sophiya Benjamin
Day in Psychiatry 2018

Declaration of Conflict of Interest:

I DO have an affiliation (financial or otherwise) with a not-for-profit organizations.

GeriMedRisk: Co Founder, Geriatric Psychiatrist

GeriMedRisk has received support from CMHA WW, WWLHIN, Schlegel RIA, McMaster University, St. Joseph’s Health Centre Guelph, Ontario Poison Centre, Ontario Telemedicine Network, CLRI, Grand River Hospital, Regional Geriatric Program Central, MOHLTC

Grand River Hospital

McMaster University: Department of Psychiatry and Behavioural Neurosciences

I DO INTEND to make therapeutic recommendations for medications that have not received regulatory approval (e.g. “off-label” use).
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Mitigating Potential Conflicts of Interest:

Not applicable

I will specifically identify any therapeutic recommendations that have not yet received regulatory approval (Off label recommendations).
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Learning Goals

1. Introduction to a locally developed resource for geriatric clinical pharmacology, psychiatry, and medicine consultations – GeriMedRisk.
2. Have an understanding of the influence of ageing on sleep.
3. Know common sleep and circadian rhythm disturbances in late life.
4. Understand how to treat late life sleep problems.
Rural regions have higher proportions of older adults.
A virtual multi-subspecialty team

How GERIMEDRISK Works

OLDER ADULT

Consultation

MD/NP/PHARMACIST

eConsult

Telephone (urgent cases)

GERIATRIC PHARMACY
GERIATRIC PSYCHIATRY
GERIATRIC MEDICINE
CLINICAL PHARMACOLOGY
Virtually Integrated Interprofessional consult

Average 5 business days

Recommendations:
Pharmacist: ---- ----- ----- 

Clinical Pharmacologist/Geriatrican:
----- ----- 

Geriatric Psychiatrist:----- 
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GERIMEDRISK
Supports and Successes

- Labarge Grant; Partnership with RIA & McMaster
- SPARK grant, WWLHIN funding; Needs assessment on OTN; 1st GeriMedRisk eConsult (PC)
- Pharm Hired GRH; Specialty consultant from 6 LHINs
- 1st GeriMedRisk Royal College Accr Rounds; CLRI grant, BASE eConsult
- Spark grant, CMHA and CLRI funding; Telemedicine curriculum
- Admin & Evaluation Hires; Summer students; Collaboration with NSM

2017:
- Q1: Office construction at RIA; Partnership with CMHA
- Q2: New admin hire; Call centre phone system
- Q3: Feasibility study begins; 1st consults from AC and LTC; GMR specialists recruited
- Q4: Hosted 9 Medical Trainees; Presented at 41 Education events; Consults from 6 LHINs

2018:
- Q1: LABARGE Grant; Partnership with RIA & McMaster
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Today:
- Consults from 11 LHINs; Provincial steering group formed; 8 employees

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MOHLTC funding to spread and scale; Post grad clinical fellowship approved

Today: Consults from 11 LHINs; Provincial steering group formed; 8 employees
Clinical Service expansion

- Consults received from 11/14 LHINs
Let’s Collaborate

Would you like to join our monthly rounds?

Do you have a question about a patient?

Do you know an underserviced area where we could help?

Do you work in an area where our model might be helpful?

Do you want to do a rotation, research project or fellowship?
Assessment of sleep disorders in older adults

More than one-half of noninstitutionalized individuals older than age 65 years report chronic sleep difficulties.
DOCTOR, I HAVE TROUBLE SLEEPING

- REM sleep behavior disorder
- Breathing related sleep disorder
- Insomnia disorder?
- Circadian rhythm disorder?
- NREM sleep arousal disorder
- REM sleep behavior disorder
- Substance or medication induced sleep disorder
**Examples**

Sleep Apnea and CHF, COPD

Depression and Insomnia disorder

Insomnia disorder and Arthritis
NORMAL CIRCADIAN RHYTHM

Homeostatic sleep drive

Circadian arousal drive

Sleep onset

Waking

Sleep

7am   9pm   midnight   7am   9pm   midnight

Normal Sleep Muza R. Sleep Disorders in Psychiatric Patients Publisher: Springer Berlin Heidelberg
WHILE YOU WERE SLEEPING


NREM: Deep, slow wave sleep. Hypo aroused state. Muscles can move. Earlier at night.

Normal Sleep Muza R. Sleep Disorders in Psychiatric Patients Publisher: Springer Berlin Heidelberg
EFFECTS OF COMMONLY USED MEDICATIONS ON SLEEP


NREM: Deep, slow wave sleep. Hypo aroused state. Muscles can move. Earlier at night.

REM sleep suppressed by antidepressants

Slow wave sleep suppressed by benzodiazepines
CHANGES TO SLEEP WITH AGING

- Need for sleep is same but ability to sleep decreases
- Decreased REM and slow wave sleep
- Phase advanced sleep (tendency to sleep earlier wake up earlier)
- Increased sleep latency (time it takes to fall asleep)
- Increased sleep fragmentation
- Decreased sleep efficiency (spend more time in bed compared to sleep time)

CHANGES TO SLEEP WITH AGE

1) Loss of routine
2) Loss of time markers
3) Added physical comorbidities
ALCOHOL AND SLEEP

Decreased REM; Increased REM latency
During the first half of sleep, increased slow wave sleep at all doses
After alcohol is metabolized, second half of night- increase in arousals
and sleep fragmentation, REM rebound, and reduction in slow wave sleep.
Can worsen snoring and exacerbate obstructive sleep apnea due
weakening of pharyngeal dilator muscle tone and subsequent
increase in upper airway resistance.
Can worsen RLS

INSOMNIA DISORDER

DISSATISFACTION WITH SLEEP AND IMPAIRMENT DURING THE DAY
CRITERIA

• Dissatisfaction with sleep quantity or quality, associated with one (or more) of the following symptoms:
  – Difficulty initiating sleep
  – Difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep after awakenings
  – Early-morning awakening with inability to return to sleep.

• Distress and impairment during the day

• The sleep difficulty occurs at least 3 nights per week. Present for 3 months or more.

• The sleep difficulty occurs despite adequate opportunity for sleep.

• No explained by another sleep disorder or substance or another disorder
SPIELMAN MODEL OF CHRONIC INSOMNIA

THOUGHTS AND BELIEFS ABOUT SLEEP

GUIDELINES FOR TREATMENT OF CHRONIC INSOMNIA

• Recommendation 1: ACP All adult patients receive cognitive behavioral therapy for insomnia (CBT-I) as the initial treatment for chronic insomnia disorder. (Grade: strong recommendation, moderate-quality evidence)

• Recommendation 2: ACP recommends that clinicians use a shared decision-making approach, including a discussion of the benefits, harms, and costs of short-term use of medications, to decide whether to add pharmacological therapy in adults with chronic insomnia disorder in whom cognitive behavioral therapy for insomnia (CBT-I) alone was unsuccessful. (Grade: weak recommendation, low-quality evidence)
### Psychological

- CBT-I: improved PSQI (3.0 points) and ISI (3.6 points) scores, SOL (8.2 min), WASO (37.6 min), sleep efficiency
- Multicomponent behavioral therapy/BBT: improved SOL (10.4 min), WASO (14.9 min), sleep efficiency, sleep quality
- Stimulus control: improved TST (40.4 min)

### Pharmacologic

- Eszopiclone: improved remission, ISI score (2.3 points), TST (30.0 min), WASO (21.6 min)
- Zolpidem: improved SOL (18.3 min)
- Ramelteon: improved SOL (10.1 min)
- Doxepin: improved ISI score (1.7 points), SOL (14.7 min), TST (23.9 min), WASO (17.0 min)

### Complementary and alternative

- Insufficient evidence

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Management of Chronic Insomnia Disorder in Adults: A Clinical Practice Guideline From the American College of Physicians Qaseem A Kansagara D Forciea M Cooke M Denberg T Annals of Internal Medicine 2016 vol: 165 (2) pp: 125
CUMULATIVE EVIDENCE FOR CBT-I

- 20 studies (1162 participants [64% female; mean age, 56 years])
- Sleep Onset Latency improved by 19.03 (95% CI, 14.12 to 23.93) minutes
- Wake After Sleep Onset improved by 26.00 (CI, 15.48 to 36.52) minutes
- TST improved by 7.61 (CI, –0.51 to 15.74) minutes
- Sleep Efficiency improved by 9.91% (CI, 8.09% to 11.73%)

Although all patients with chronic insomnia should adhere to rules of good sleep hygiene, there is insufficient evidence to indicate that sleep hygiene alone is effective in the treatment of chronic insomnia. It should be used in combination with other therapies.
EVALUATION

- Sleep History
- A general medical/psychiatric questionnaire to identify comorbid disorders
- The Epworth Sleepiness Scale or other sleepiness assessment to identify sleepy patients and comorbid disorders of sleepiness
- A two-week sleep log to identify general patterns of sleep-wake times and day-to-day variability.
- Physical and mental status exam
- Polysomnogram or multiple sleep latency test (MSLT) not required.

WHAT IS RECORDED IN A SLEEP LOG?

• Bedtime
• Sleep latency (SL: time to fall asleep following bedtime)
• Number of awakenings and duration of each awakening
• Wake after sleep onset (WASO: the sum of wake times from sleep onset to the final awakening)
• Time in bed (TIB: time from bedtime to getting out of bed)
• Total sleep time (TST: time in bed minus SL and minus WASO)
• Sleep efficiency percent (SE equals TST divided by TIB times 100)
• Nap times (frequency, times, durations)
EXAMPLE SLEEP LOG

TWO WEEK SLEEP DIARY

INSTRUCTIONS:
Write the date, day of the week, and type of day: Work, School, Day Off, or Vacation.
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.
Put a line (I) to show when you go to bed. Shade in the box that shows when you think you fell asleep.
Shade in all the boxes that show when you are asleep at night or when you take a nap during the day.
Leave boxes unshaded 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 9 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 7:00 in the morning.
Cognitive Behavioral Therapy for Insomnia in Veterans

Therapist Manual

Rachel Manber, Ph.D.
Leah Friedman, Ph.D.
Allison T. Sieber, Ph.D.
Colleen Carney, Ph.D.
Jack Edinger, Ph.D.
Dana Epstein, RN, Ph.D.
Patricia Haynes, Ph.D.
Wilfred Pigeon, Ph.D.
Bradley E. Karlin, Ph.D.

CBT-I MANUAL

4 Sessions

Accessed at:
I. Session 1: Primary Treatment Components (45 to 60 min.)
   A. Presentation of Treatment Rationale
   B. Sleep Education
      1. Sleep Norms
      2. Circadian Rhythms
      3. Effects of Aging on Sleep
      4. Sleep Deprivation
   C. Behavioral Regimen
   D. Instruction on Making Adjustments in Individualized TIB Prescriptions

II. Sessions 2 to 4: Review of Progress/Trouble Shooting (30 to 45 min. each)
   • A. Review Sleep Logs/Alter TIB Prescriptions
   • B. Encourage/Reinforce Compliance
   • C. Trouble-shoot Patient's Problems

Treatment manual Cognitive-behavioral insomnia therapy
Jack d. Edinger, PhD
STIMULUS CONTROL

• Problem: Learned negative association between bed and sleep.
• Goal: Extinguish the negative association between the bed and undesirable outcomes such as wakefulness, frustration, and worry

Instruction:
– Go to bed only when sleepy
– Maintain regular schedule, wake up time
– If awake in bed, leave bed after approximately 20 minutes
– Do boring activity till drowsy
– Back to bed
– No clockwatching

SLEEP RESTRICTION

- Problem: Fragmented sleep. Spending time in bed awake.
- Goal: Increase sleep efficiency by increasing sleep drive.
- Maintain a sleep log and determine the mean total sleep time (TST) for the baseline period (e.g., 1-2 weeks)
- Set bedtime and wake-up times to approximate the mean TST to achieve a >85% sleep efficiency (TST/TIB × 100%) over 7 days; the goal is for the total time in bed (TIB) (not 85% to 90% over 7 days) TIB can be increased by 15-20 minutes; 2) for SE

EXAMPLE SLEEP RESTRICTION

**BEFORE**

- Average sleep time = 5.5 hours per night
- Average time spent in bed is 9 hours
- Time spent awake in bed is 3.5

**AFTER**

- New time allowed in bed is 6 hours
- Increase time in bed gradually while still maintaining sleep efficiency >85%
ADDRESSING HIGH AROUSAL BEFORE SLEEP

- Creating a time to unwind before bedtime
- Addressing intrusive worries (“scheduled worry time”)
- “To do” list for tomorrow
- Relaxation training
- Shift focus from anxiety when trying to relax
- Discourage behaviors that reflect trying too hard to sleep

ADDRESSING COGNITIONS THAT INTERFERE WITH SLEEP

• I really have to sleep tonight because tomorrow I have to be at my best.

• Here we go again, I am up at 1 a.m., and will likely be up for a while now.

• I am so tired, if I could only sleep more I will have more energy during the day.

• Sleep education
• Cognitive restructuring

2 SESSION ABBREVIATED COGNITIVE-BEHAVIORAL INSOMNIA THERAPY (ACBT) VS SIMILARLY BRIEF INTERVENTION [SHC]

2 Sessions 25 minutes each

Session 1:
- Review sleep logs
- Provide sleep education
- Behavioral regimen (SC, SR)
- Audiotape to take home

Session 2:
- Review treatment plan
- Problem solve issues

Edinger JD, Sampson WS. A primary care “friendly” cognitive behavioral insomnia therapy. SLEEP 2003;2:177-
SLEEP APPS

Mayo clinic app for sleep
SEDATIVE HYPNOTICS IN OLDER ADULTS

**BENEFITS**

- 24 studies (involving 2417 participants)
- Sleep quality improved (effect size 0.14, P < 0.05)
- Total sleep time increased (mean 25.2 minutes, P < 0.001),
- Number of night time awakenings decreased (0.63, P < 0.001)
- NNT for increased sleep quality 13

**HARMS**

- 6 studies (2220 participants), the number needed to harm for sedative hypnotics compared with placebo is 6 (4.7 to 7.1)
- Drowsiness or fatigue, headache, nightmares, and nausea or gastrointestinal disturbances
- Higher incidence of cognitive impairment
- Higher risk of falls and motor vehicle crashes
- NNH for adverse effect 7

Treatment with Sandoz Zopiclone should usually not exceed 7 to 10 consecutive days. Use for more than 2 to 3 consecutive weeks requires complete re-evaluation of the patient. Prescriptions for Sandoz Zopiclone should be written for short-term use (7 to 10 days) and it should not be prescribed in quantities exceeding a 1-month supply.

- The absolute bioavailability of zopiclone was increased (94% vs 77% in young subjects) and the elimination half-life prolonged (~7 hours).

- Contraindications: Myasthenia gravis; severe hepatic insufficiency; severe impairment of respiratory function (e.g., significant sleep apnea syndrome).
<table>
<thead>
<tr>
<th>Study outcomes</th>
<th>PSG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PBO, min</td>
</tr>
<tr>
<td>Sleep onset</td>
<td>LPS (% reduction compared with PBO)</td>
</tr>
<tr>
<td>Scharf et al. 2008</td>
<td>26.8</td>
</tr>
<tr>
<td>Krystal et al. 2010</td>
<td>34.9</td>
</tr>
<tr>
<td>Lankford et al. 2012</td>
<td>NA</td>
</tr>
<tr>
<td>Sleep maintenance</td>
<td>WASO (% reduction compared with PBO)</td>
</tr>
<tr>
<td>Scharf et al. 2008</td>
<td>98</td>
</tr>
<tr>
<td>Krystal et al. 2010</td>
<td>109.2</td>
</tr>
<tr>
<td>Lankford et al. 2012</td>
<td>NA</td>
</tr>
<tr>
<td>Sleep duration</td>
<td>TST (% increase compared with PBO)</td>
</tr>
<tr>
<td>Scharf et al. 2008</td>
<td>360.7</td>
</tr>
<tr>
<td>Krystal et al. 2010</td>
<td>343.7</td>
</tr>
<tr>
<td>Lankford et al. 2012</td>
<td>NA</td>
</tr>
</tbody>
</table>

LPS, latency to persistent sleep
WASO, Wake after sleep onset
TST, Total sleep time


Krystal AD, Durrence HH, Scharf M, et al. Efficacy and safety of doxepin 1 mg and 3 mg in a 12-week sleep laboratory and outpatient trial of elderly subjects with chronic primary insomnia. Sleep2010;33:1553-61

DOXEPIN DRUG SUMMARY

- **Dosage:** Initiate at 3 mg once daily 30 minutes before bedtime, can increase to 6 mg once daily.

- **Pharmacokinetics:**

- **Absorption:** Rapidly absorbed, time to peak concentration is 3.5 hours. Administration with a high fat meal delays peak concentration by ~3 hrs and increases bioavailability and it is therefore not recommended to take within 3 hours of a meal.

- **Metabolism:** Hepatic; primarily metabolized by CYP2C19 and CYP2D6, **Half-life:** 15.3 hours (parent compound), N-desmethyldoxepin: 31 hours

- **Drug interactions:** Inhibitors of CYP2C19 and CYP2D6 may increase the exposure of doxepin.

- **Adverse effects:** Common: Somnolence, sedation, headache, dizziness
REM SLEEP BEHAVIOR DISORDER
• Presence of REM sleep without atonia
• Usually after 90 minutes of sleep or later at night.
• When patient wakes up – is alert and not confused
• Either
  – REM without atonia on PSG
  – Hx of alpha synucleinopathy
• Early marker of Parkinson’s disease or Lewy Body dementia
SUGGESTED TREATMENTS

• Maintain safe space around sleeping area, partner in another bed if needed.
• Melatonin high dose (3-12 mg) at bed time
• Second line: Clonazepam 0.25 to 0.5 mg at bed time.
• Monitor for cognitive impairment.
RESTLESS LEG SYNDROME
DSM V CRITERIA

• An urge to move the legs, usually accompanied by or in response to uncomfortable and unpleasant sensations in the legs, characterized by:
  – Urge begins or worsens during periods of rest or inactivity.
  – Partially or totally relieved by movement.
  – Worse in the evening or at night than during the day, or occurs only in the evening or at night.
• 3 times a week for 3 months or more.
• Distress and functional impairment
• Not due to another disorder (e.g. peripheral edema), substance or medication (e.g. akathisia)
DIAGNOSIS

- Based on history and self report
- Prevalence: 2% to 7.2%
- Predisposing factors include female gender, advancing age, genetic risk variants, and family history of RLS.
- Precipitating factors are often time-limited, such as iron deficiency
- Can be seen in end stage renal failure, normal pregnancy, peripheral neuropathy

APPROACH TO RLS

• Decrease or eliminate alcohol, nicotine and caffeine
• Evaluate medications that increase RLS such as antidepressants (serotonergic) and antipsychotics
• Measure ferritin and replace until target ferritin > 75 μg/L
• May replace e.g. FeSO4 with vitamin C tid 2 hours before or after meals
• Pramipexole and Ropinarole (See caution in next slide)
• Pregabalin and Gabapentin may be safer (but not completely safe)
• If there is comorbid depression, try Bupropion
## PRAMIPEXOLE

### Dosage Schedule for RLS

- **Titration Step Duration** Dosage (mg) to be taken once daily, 2-3 hours before bedtime

<table>
<thead>
<tr>
<th>Step</th>
<th>Duration</th>
<th>Dosage (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4-7 days</td>
<td>0.125</td>
</tr>
<tr>
<td>2*</td>
<td>4-7 days</td>
<td>0.25</td>
</tr>
<tr>
<td>3*</td>
<td>4-7 days</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*if needed

- Pramipexole clearance decreases with age as the half-life and clearance are about 40% longer and 30% lower, respectively, in elderly (aged 65 years or older)
- Warning: “Falling asleep during ADLs.”
- Hallucinations: 9-16% based on the study
- Risk is 5.2 times greater than placebo in patients older than 65 years
- Hypotension
- Post marketing surveillance: HIGH INCIDENCE OF IMPULSE CONTROL DISORDERS

[https://www.accessdata.fda.gov/drugsatfda_docs/label/2008/020667s014s017s018lbl.pdf](https://www.accessdata.fda.gov/drugsatfda_docs/label/2008/020667s014s017s018lbl.pdf)
DOPAMINE AGONISTS AND IMPULSE CONTROL


Table 3. Dopamine Receptor Agonist Drugs Associated With Impulse Control Disorder Events

<table>
<thead>
<tr>
<th>Drug</th>
<th>ICD Events, No.</th>
<th>All Events, No.</th>
<th>D₃ Selective</th>
<th>PRRᵃ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pramipexole</td>
<td>410</td>
<td>2095</td>
<td>Yes</td>
<td>455.9</td>
</tr>
<tr>
<td>Ropinirole</td>
<td>188</td>
<td>2414</td>
<td>Yes</td>
<td>152.5</td>
</tr>
<tr>
<td>Cabergoline</td>
<td>56</td>
<td>1592</td>
<td>No</td>
<td>62.9</td>
</tr>
<tr>
<td>Bromocriptine</td>
<td>30</td>
<td>613</td>
<td>No</td>
<td>86.1</td>
</tr>
<tr>
<td>Rotigotine</td>
<td>14</td>
<td>677</td>
<td>No</td>
<td>36.0</td>
</tr>
<tr>
<td>Apomorphine</td>
<td>12</td>
<td>605</td>
<td>No</td>
<td>34.5</td>
</tr>
</tbody>
</table>
Sleep deprivation or fragmentation can result from aging, other diseases, environmental influences, circadian clock (SCN) dysfunction, or neurodegeneration. Increased wakefulness, which is promoted by orexin, causes increased neuronal activity, leading to elevated Ab production and aggregation.

PHARMACOTHERAPIES FOR SLEEP DISTURBANCES IN DEMENTIA

- 6 RCTs: melatonin (222 participants, four studies, but only two yielded data on our primary sleep outcomes suitable for meta-analysis), trazodone (30 participants, one study), and ramelteon (74 participants, one study, no peer-reviewed publication, limited information available)

  - Melatonin: No effect
  - Trazadone: (MD 42.46 minutes, 95% CI 0.9 to 84.0; N = 30; one study)
  - Ramelteon – Not available in Canada (one small study, negative)

Approach to Non REM Activation Sleep Disturbance in Dementia

- Determine stage of dementia
- Educate patient, family and staff working with patient
- Alter expectations of normal circadian rhythm
- Support and respite for family
- Melatonin at 6:00pm
- If ineffective, discontinue and try Doxepin 3 mg
- If ineffective, discontinue and try Trazodone 25 mg. (Monitor for worsening anxiety and agitation)
Thank you

QUESTIONS
CANNABIS AND SLEEP

- Low-dose cannabis intoxication appears to decrease sleep onset latency and decreases in REM sleep.
- Chronic use leads to suppression of slow wave sleep.
- No dreams due to REM suppression
- Slow wave sleep most restorative so decrease correlates with poor quality of sleep

• Are Cannabis or Cannabinoids an Effective Treatment for Improving Sleep Outcomes?
• One good systematic review
• 2 studies (1 with high bias and 1 with low bias).
• Low bias study compared with Amytriptyline

• Moderate evidence that cannabinoids, primarily nabiximols, are an effective treatment to improve short-term sleep outcomes in patients with comorbidities.