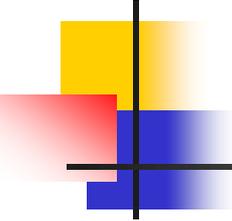




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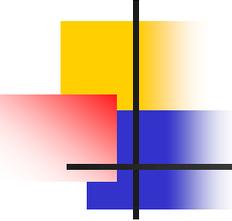


Pharmacotherapy in Sleep Disorders

Mehdi Samadzadeh
Psychiatrist

International Classification of Sleep Disorders, Version 3 (ICSD-3)

- 1) **Insomnia**
- 2) Sleep-Related Breathing Disorders
- 3) Central Disorders of Hypersomnolence
- 4) Circadian Rhythm Sleep Wake Disorders
- 5) Parasomnias
- 6) Sleep-Related Movement Disorders
- 7) Other Sleep Disorders

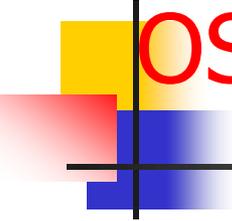


Hypnotic medications

- GABA Agonists
 - Benzodiazepines
 - Non-Benzodiazepines
- Orexin antagonists
- Antidepressants
- Melatonin Agonists
- Antipsychotics
 - Typical
 - Atypical
- Antihistaminics
- Phytotherapy

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OSAHS Treatment;

■ Pharmacotherapy;

-O2

-Protriptyline

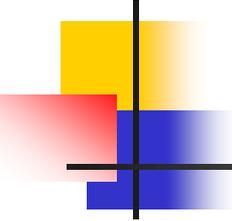
-Serotonine Reuptake Inhibitors

-Medication to promote wakefulness

Stimulants, Modafinil

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Narcolepsy

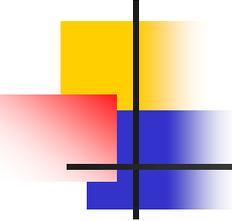
- **Disturbed nighttime sleep (DNS)**
Benzodiazepines, non-benzodiazepines hypnotic
- **EDS**
Modafinil, Armodafinil (FDA approved)
- **EDS and cataplexy**
Sodium Oxybate: Gamma-hydroxybutric acid (GHB)
- **Cataplexy, hypnagogic hallucinations, sleep paralysis**
Antidepressants: SSRIs, SNRIs, TCAs

Table 90-3 Narcolepsy Drugs Currently Available

Drug	Usual Dosage* (All Drugs Administered Orally)
Treatment of EDS	
<i>Stimulants[†]</i>	
Modafinil	100–400 mg/day
Sodium oxybate	6–9 g/day (divided in two doses)
Methylphenidate	10–60 mg/day
Atomoxetine	10–25 mg/day
Dextroamphetamine	5–60 mg/day
Methamphetamine	20–25 mg/day
Treatment of Auxiliary Effects (e.g., Cataplexy)	
Sodium oxybate (gamma-hydroxybutyrate)	6–9 g/day (divided in two doses)
<i>Antidepressants[†]</i>	
<i>Without Atropinic Side Effects</i>	
Venlafaxine XR	75–300 mg/day
Fluoxetine	20–60 mg/day
Viloxazine	50–200 mg/day
Duloxetine	60 mg/day
<i>With Atropinic Side Effects</i>	
Protriptyline	2.5–20 mg/day
Imipramine	25–200 mg/day
Clomipramine	25–200 mg/day
Desipramine	25–200 mg/day

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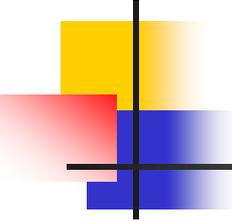


CRSWPD, Treatment

- Pharmacotherapy
 - Melatonin: evening 0.5 – 5mg, 13-14 hour after wake up
 - Sedative-Hypnotics
 - Stimulants
 - Vitamin B12
- Light therapy, timing, duration, intensity
- CBT

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REM Behavior Disorder

-Clonazepam ,

traditional drug of choice for RBD,
0.25 and 2.0 mg at bedtime.

-Melatonin

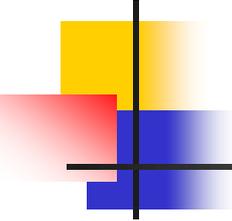
- a slightly more robust effect with fewer adverse effects,
- may be more effective and tolerable in elderly especially with cognitive impairment or parkinsonism.
 - 3 - 15 mg at bedtime, with a median dose of 6 mg

-Other drugs:

pramipexole, zopiclone, donepezil, ramelteon, agomelatine, memantine,

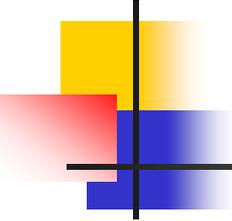
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RLS treatment

- Four categories of medications:
 - dopaminergic agents,
 - alpha-2-delta (a2d) ligands
 - opioids,
 - benzodiazepines.



RLS treatment

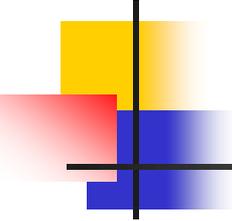
Dopaminergic medications

Long-Term Complications:

1-**Augmentation**(worsening of the underlying RLS symptoms) develops in most patients, usually insidiously and often longer duration of treatment.

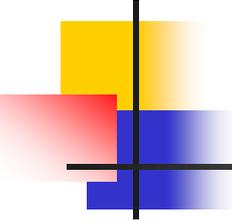
2-**Compulsive behaviors** and profound sleepiness develop in a few patients,

3- Stopping the medication is difficult for many because of the strong **withdrawal** symptoms



RLS treatment

- **A2d Ligands (Anticonvulsants)**
- -They are a first-line treatment for RLS when their adverse effects are not a problem.
 - marked by the FDA for possible development of suicidal ideation,
 - caution is advised for patients with major depression.
- -should be started at low doses
 - with a gradual increase in dose about once a week



RLS treatment

- **A2d Ligands (Anticonvulsants)**

- Three a2d agents are currently used to treat RLS.

- **Gabapentin enacarbil**

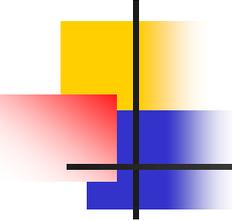
- It is approved by the FDA for treatment of RLS at a dose of 600 mg daily.

- **Pregabalin**

- Pregabalin 300 mg is as effective as 0.5 mg pramipexole and more effective than 0.25 mg

- **Gabapentin**

- effective for treatment of moderate to severe RLS.



RLS treatment

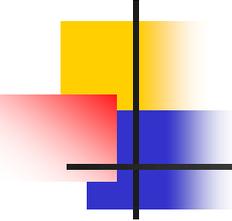
Opioids

-often prescribed For severe cases of RLS, especially in patients unresponsive to other treatments.

-A prolonged-release **oxycodone** combined with **naloxone** (doses of 5 to 40 mg oxycodone and 2.5 to 20 mg naloxone, twice daily) - approved for use in Europe as a second-line treatment.

-**Methadone** has also been used for treatment of severe RLS in patients with inadequate responses to other medications.

-The dose of methadone for RLS is usually 2.5 to 20 mg a day,

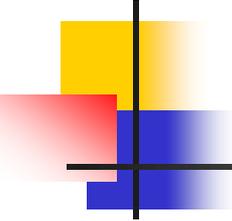


RLS treatment

- **Benzodiazepines**

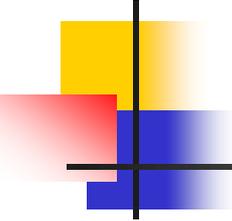
- benzodiazepines, including clonazepam, nitrazepam, and temazepam,

- improve sleep quality and reduce arousals with PLMS in patients with RLS and PLMS.



RLS treatment

- **Iron: oral and Intravenous**
- Oral iron as supplemental treatment when the patient's ferritin level is less than 75 mcg/L.
- Iron deficiency can occur with a normal hemoglobin
- Ferrous sulfate 325 mg, or its equivalent, with vitamin C 100 to 200 mg can be taken twice a day, preferably on an empty stomach,
- In some patients, oral iron can lead to complete remission from the RLS.



RLS treatment

- **Step 1: A2 Agents**

 - Gabapentin enacarbil: 300-600 mg

 - Pregabalin: 50 - 450 mg

 - Gabapentin: 100 - 1800 mg

- **Step2:Dopamine agonists**

 - Pramipexole: 0.125 - 0.5mg

 - Ropinirole: 0.5 - 4 mg

- **Step3:Dopamin precursors**

 - levodopa-benzeserid, levodopa-carbidopa: 100/25, 200/50 mg

- **Benzodiazepines**

 - Clonazepam, 0.5-2.0 mg

 - Temazepam, 15-30 mg

 - Nitrazepam, 5-10 m

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