

Perceiving Parkinson's

Sleep Disruption In Parkinson's (Day 56)

Sleep is disrupted in people with Parkinson's - they get less of it, and it is less effective. Sleep disruption may predate motor symptoms by over a decade; eventually, **up to 98%** of people with Parkinson's experience a degree of sleep disruption in the form of insomnia, restless legs syndrome, rapid eye movement (REM) sleep behaviour disorders, or excessive daytime sleepiness.

Insomnia

Insomnia refers to difficulty falling or staying asleep. In Parkinson's, it is the result of one or more of excessive "off" periods (when the medication benefits have worn off and the motor symptoms re-emerge), nocturia, night sweats, depression, anxiety, or restless legs syndrome. The **excessive "off" periods**, resulting in tremor or rigidity during sleep, are often the main reason for insomnia in Parkinson's, which may be so severe that a person literally gets "stuck" in the bedcovers.

The **first step in managing insomnia** in Parkinson's is to **optimize sleep hygiene**:

- (1) **After dinner, work on a hobby or go for a stroll.** Avoid television in the evening; it will make you doze before bedtime. Avoid extreme exercise in the evening; it will keep you stimulated and awake.
- (2) **Avoid caffeine after 2 pm.** Caffeine (cola, tea, coffee) is a stimulant. Avoid.
- (3) **Avoid alcohol before bedtime.** Alcohol helps a person fall asleep, but it wakes you up in the middle of the night, disturbing vital REM sleep in the early morning hours.
- (4) **Sleep in a quiet, dark, cool room.** Cooler temperatures (16-19 °C) are best for sleep.
- (5) **Keep the clock, television, and phone out of sight.** Even if they are not being used, having these distractions in the bedroom will keep your body in a more alert state.



Stop staring at the clock - remove it from sight (and turn off the alarm).

The **second step in managing insomnia** in Parkinson's is to **treat excessive "off" periods**. It is often thought that people with Parkinson's needs more levodopa during the day and less levodopa by night,

but this is not so - **day or night**, full doses of levodopa are required. The best strategy depends on whether a person has difficulty **falling** asleep (takes a long time to drift off) or difficulty **staying** asleep (frequent awakenings throughout the night):

(1) **Difficulty falling asleep** - Ideally, **take a full dose of immediate-release levodopa one hour before bedtime**. Immediate-release levodopa is 99% absorbed into the blood, takes one hour to achieve maximum effect, and lasts up to four hours. Thus, a full dose of levodopa one hour before bedtime ensures that a person remains in the “on” state, the state **best for sleep** in Parkinson’s. Importantly, **levodopa is all-or-none** - anything less than a full dose of levodopa is pointless.

(2) **Difficulty staying asleep** - Ideally, **take a controlled-release levodopa right before turning off the light**; sinemet and madopar are available in controlled-release forms. Controlled-release levodopa is 70% absorbed into the blood, takes two hours to achieve maximum effect, and lasts up to six hours. Importantly, since it is only 70% absorbed, controlled-release levodopa dose must be **increased by 50%** compared to the usual immediate-release levodopa dose; anything less is pointless.

(3) **Difficulty staying asleep** - One other method is to **take a full dose of immediate-release levodopa on waking in the middle of the night**. If you wake up in the night, having a glass of water and a full dose of levodopa sitting on the bedside table will help you to return to sleep within the hour.



Difficulty staying asleep? Try controlled-release levodopa right before turning off the light.

If that fails, the **third step in managing insomnia** in Parkinson’s is a **sleep medication**. **Melatonin** is a natural brain hormone that aids falling asleep. Antidepressants such as **amitriptyline**, **nortriptyline**, **trazodone**, and **mirtazapine** are useful, but consider the side-effects - trazodone can induce postural hypotension, and mirtazapine can produce weight gain and worsen constipation. **Zolpidem** is handy but may confer headaches and complex sleep-related behaviours, such as sleep walking. **Clonazepam** is great in the short-term but its effect weakens in the long-term, and it has a considerable side-effect profile including sedation, cognitive impairment, and loss of balance which can lead to falls.

Restless Legs Syndrome

Restless legs syndrome is an uncomfortable urge to move the legs while relaxing in the evening or trying to fall asleep. There may be crawling, itching, or pulling sensations that are so bothersome that a person cannot lie still, and must walk to relieve the discomfort. Restless legs syndrome is often accompanied by **akathisia**, which is a feeling of inner restlessness, or **periodic limb movements**, which are leg jerks that occur every 20-40 seconds throughout the night’s sleep.

The ideal way to **manage** restless legs syndrome is to **optimize levodopa cover at night** using the methods above. If needed, there are several useful **medications** that can be taken two hours before bedtime. The dopamine agonists **ropinirole** and **pramipexole** have marked side-effects, but are used in small doses for restless legs syndrome. **Gabapentin** is effective, but can induce weight gain and swelling in the legs or feet. **Clonazepam** is best used as a last resort due to its side-effect profile.

REM Sleep Behaviour Disorders

During normal dreaming, the link between the dreaming circuits and the movement regions of the brain is “turned off” such that a person lies quiet and unmoving. Yet in **30%** of people with Parkinson’s, this connection remains “turned on” and the person acts out their dreams in the form of **vocalizations** (talking, shouting, or threatening) or **movements** (thrashing, punching, or kicking).

The best way to **manage** REM sleep behaviour disorders is to **modify the sleep environment** to protect both sleeper and sleep-mate. Protecting the sleeper involves surrounding the bed with pads, removing furniture with sharp corners, and putting up bedrails. Protecting the sleep-mate means sleeping in separate beds. If these measures fail, a **medication** can be used. **Melatonin** is helpful, but must be used in high doses; fortunately, its side-effects are negligible. **Clonazepam** is the definitive treatment for REM sleep behaviour disorders, but its side-effects are considerable.

Excessive Daytime Sleepiness

Excessive daytime sleepiness is falling asleep during the day. It affects **50%** of people with Parkinson’s and is usually due to **insomnia, sleep apnea, or medications that produce sleepiness** which includes all of the usual suspects - dopamine agonists (ropinirole, pramipexole), benzodiazepines (clonazepam, lorazepam), narcotics (codeine, oxycodone), antidepressants (amitriptyline, nortriptyline, trazodone, mirtazapine), antipsychotics (quetiapine, olanzapine), baclofen, and tramadol. To **manage** excessive daytime sleepiness, work with your neurologist to **treat the insomnia, consider a sleep study, and remove medications that produce sleepiness**, unless they are vital.

In summary, sleep disruption takes many forms in Parkinson’s. Insomnia is particularly common and it is best managed by optimizing sleep hygiene and treating excessive “off” periods. If your sleep is not ideal, **identify which form of sleep disruption you have and do all you can to improve it.**

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References

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- (2) Ahlskog. 2015. *The New Parkinson's Disease Treatment Book*. Oxford University Press.
- (3) Sveinbjornsdottir. 2016. The clinical symptoms of Parkinson’s disease. *Journal of Neurochemistry* 139(Suppl. 1), 318-324.