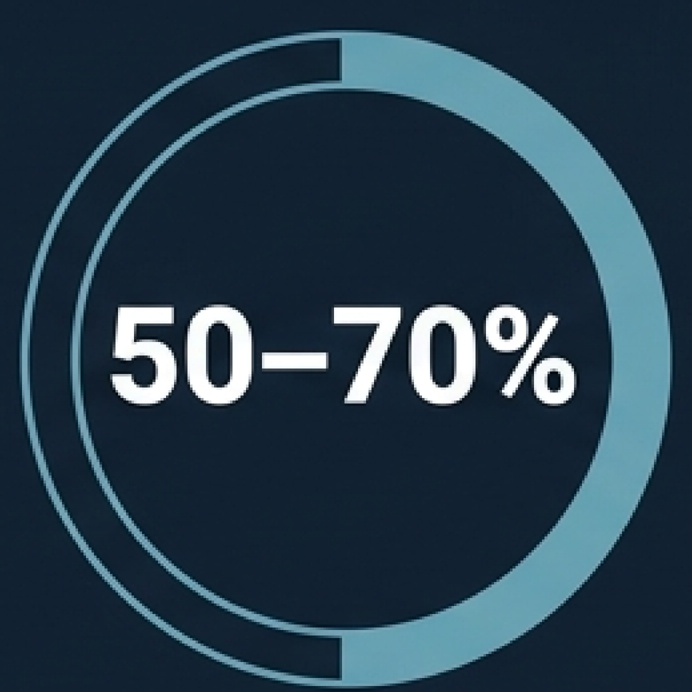
Clinical Guidelines Digest

# Illuminating Sleep Neurology

## Diagnostic Frameworks and Pharmacotherapy for the Hidden Epidemic

# The Hidden Epidemic in Australian Neurology

Insomnia prevalence in Parkinson disease.




RBD prevalence in neurodegenerative cohorts.

RLS prevalence in neurological patients.

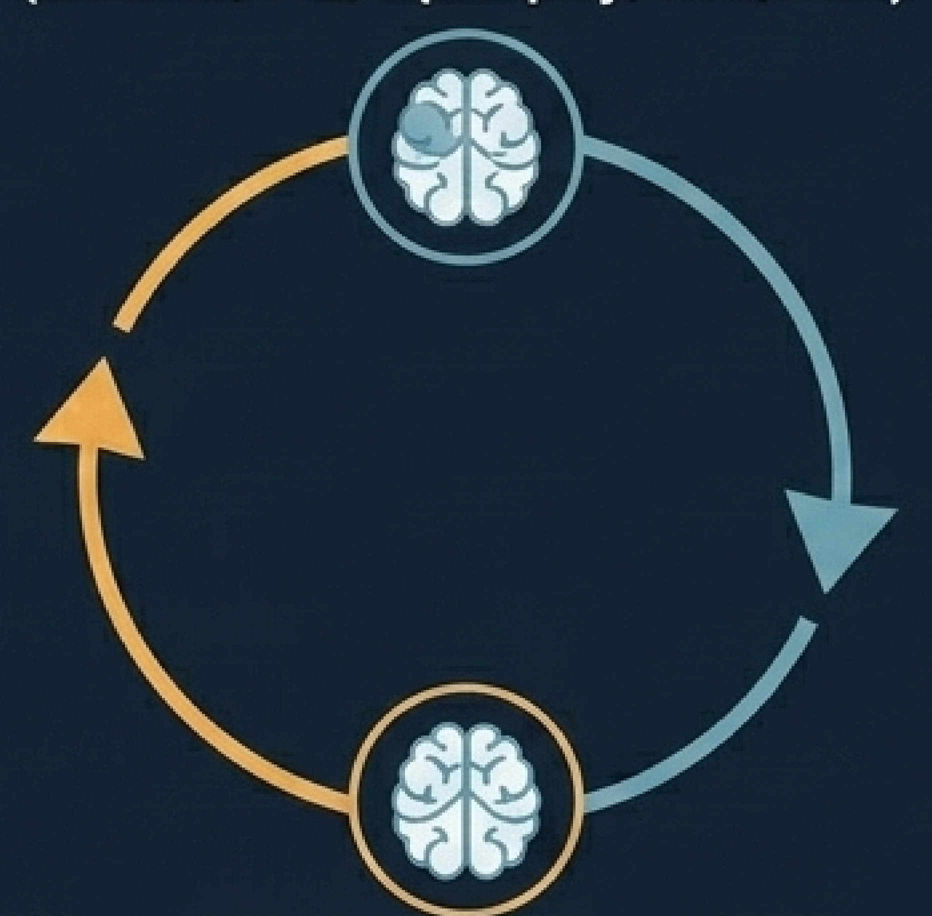
**The Economic Reality**

$45.2 billion annual cost to the Australian economy due to inadequate sleep (healthcare, productivity, and carer burden).

**Clinical Imperative:** Screen every neurological patient for sleep disturbance using validated tools (PSQI, ESS, Berlin). Untreated sleep disorders worsen seizure control, accelerate cognitive decline, and increase fall risk.

# The Bidirectional Burden of Sleep and Neurological Decline

**Primary Neurological Disease**
(Stroke, PD, Epilepsy, MS, TBI)



Accelerates cognitive decline, prevents glymphatic clearance, worsens seizure control, and reduces rehabilitation gains.

Drives anatomical circadian disruption, nocturnal akinesia, pain, and medication-induced architecture changes.

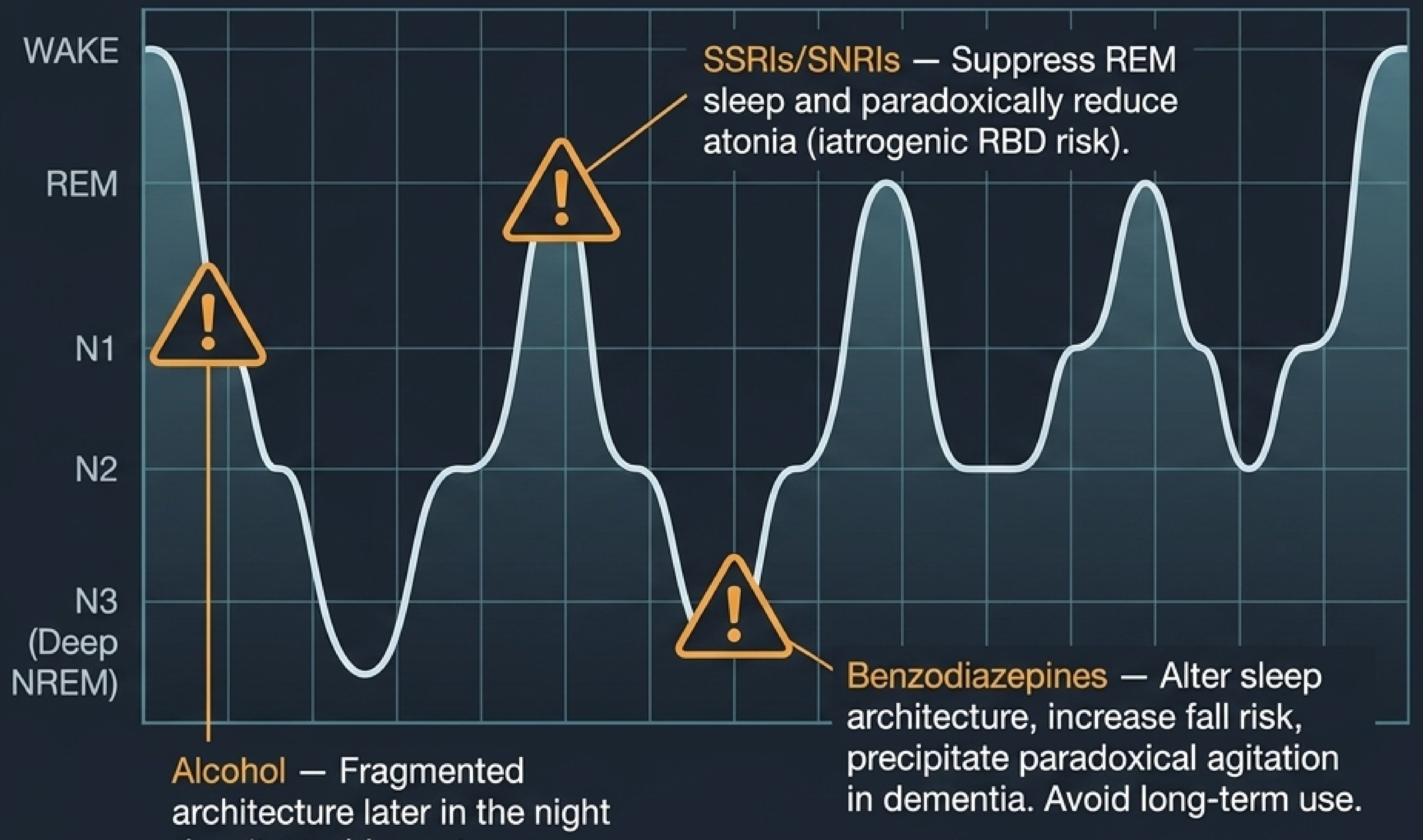
**Sleep Disturbance**
(Insomnia, Fragmentation, Hypoxia)

**Core Insight:** Sleep is not merely a symptom; it is an active driver of neurological disease progression.

# The Neurological Sleep Triad

| | Insomnia | Restless Legs Syndrome (RLS) | REM Sleep Behavior Disorder (RBD) |
|---|---|---|---|
| Pathophysiology | Hyperarousal, circadian disruption | Iron-dependent dopaminergic dysfunction | SLD nucleus dysfunction, RWA |
| Presentation | Sleep initiation/ maintenance failure | Urge to move, evening worsening | Dream enactment, loss of atonia |
| Diagnostic Gold Standard | Clinical criteria | IRLSSG criteria + Ferritin | In-lab Polysomnography |
| First-Line Management | CBT-I | IV/Oral Iron or α-2δ ligands | Safety measures + Melatonin |
| Major Neurological Risk | Cognitive decline, falls | Augmentation, severe sleep fragmentation | 80%+ conversion to synucleinopathy |

# Insomnia: Architecture Disruptors and Comorbidities




## Comorbid Mood Disorders

- Depression/anxiety affect 30–50% of insomnia patients. Screen with PHQ-9/GAD-7.
- Prioritize CBT-I.
- Low-dose Mirtazapine (7.5–15 mg) offers dual benefits with caution for sedation/weight gain.

# Insomnia Management Hierarchy

### Tier 4: Benzodiazepines

Avoid long-term use. Extreme risk of falls, respiratory depression, and cognitive decline.

### Tier 3: Z-Drugs (Zolpidem)

Short-term only (≤2-4 weeks). Max 10 mg. High risk of sleepwalking, falls, and cognitive impairment. Avoid in dementia.

### Tier 2: Melatonin

First-line pharmacotherapy in neurodegeneration: 2 mg PR (titrate to 4-6 mg). Restores circadian rhythm, low fall risk. (PBS General Benefit ≥55 yrs).

### Tier 1: CBT-I & Sleep Hygiene (First-Line)

Cognitive restructuring, stimulus control, sleep restriction. Neurology adaptions: shorter restriction in PD; carer-assisted in dementia. (Medicare rebatable via Mental Health Plans).

# Restless Legs Syndrome: Clinical Diagnosis and The Iron Link

## IRLSSG 2014 Criteria

- **Urge to move legs**, usually with uncomfortable sensations.
- **Begins/worsens** during rest or inactivity.
- Partially/totally **relieved** by movement.
- Worse in the **evening/night**.
- **Not** solely accounted for by mimics (cramps, arthritis, drug–induced akathisia).

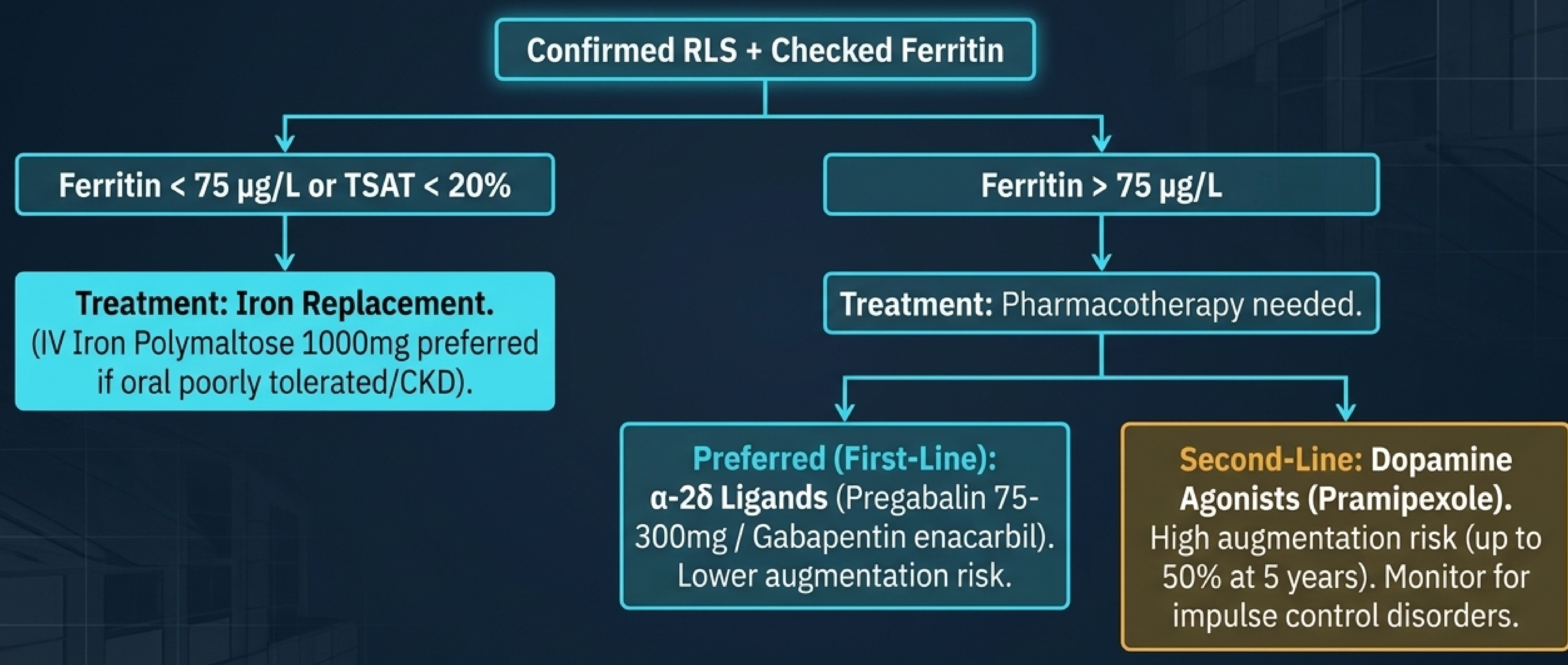
## The Iron Link

**Rule:** Iron deficiency is the **most** important **reversible cause**.

**Mandatory Labs:** Serum ferritin, TSAT, Iron studies, FBC.

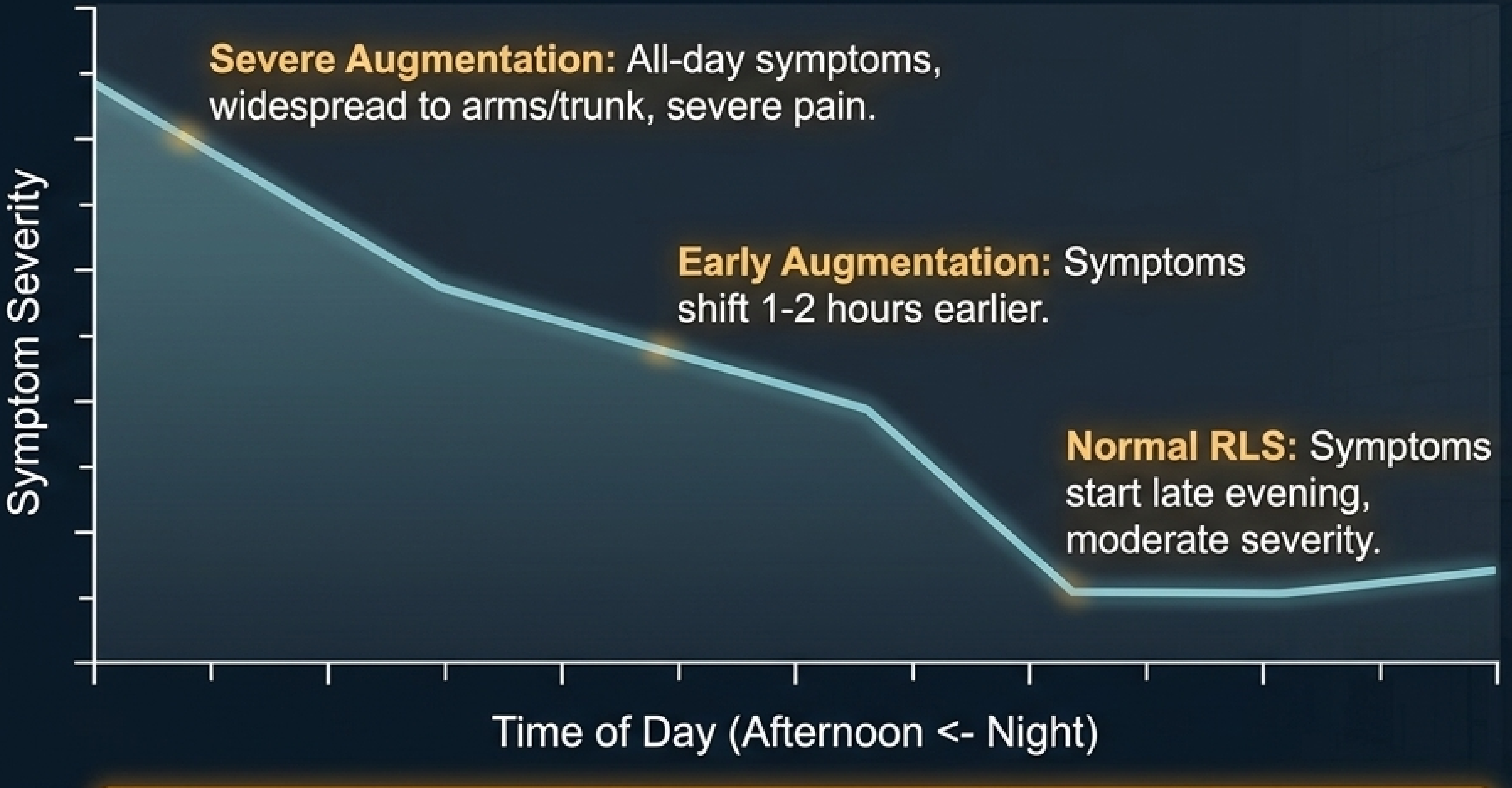
**Target:** Ferritin <75 µg/L warrants immediate replacement (some target ≥100 µg/L).

# RLS Pharmacotherapy Protocol




Refractory RLS -> Low-dose opioids (Oxycodone) or Buprenorphine patch (Specialist only).

# The Dopaminergic Trap: Recognizing RLS Augmentation




### Management Tactics

- **Mild:** Optimise iron, shift dosing earlier.
- **Moderate/Severe:** Switch to α-2δ ligand with slow cross-taper. Rapid dopamine wean.

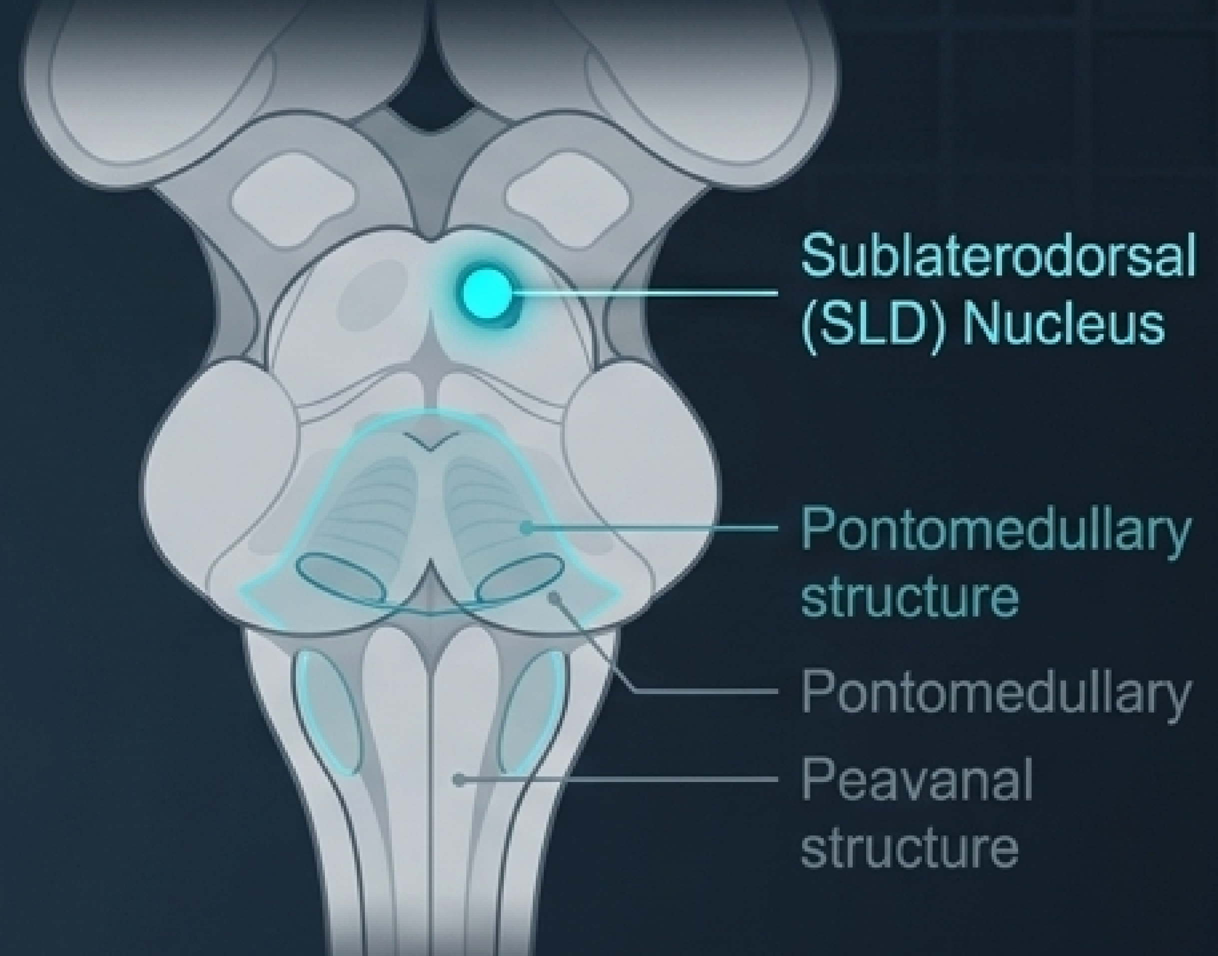
**Core Rule:** Avoid escalating dopamine agonist doses for treatment failure. Dose escalation worsens augmentation.

# REM Sleep Behavior Disorder (RBD): Diagnosis and Mechanism

## Clinical Clipboard

**ICSD-3 Criteria**

- ☑ Repeated vocalization and/or complex motor behaviors in sleep.
- ☑ Documented by PSG or clinical history as occurring during REM.
- ☑ PSG demonstrates REM without atonia (RWA).
- ☑ Not explained by other disorders or medications.

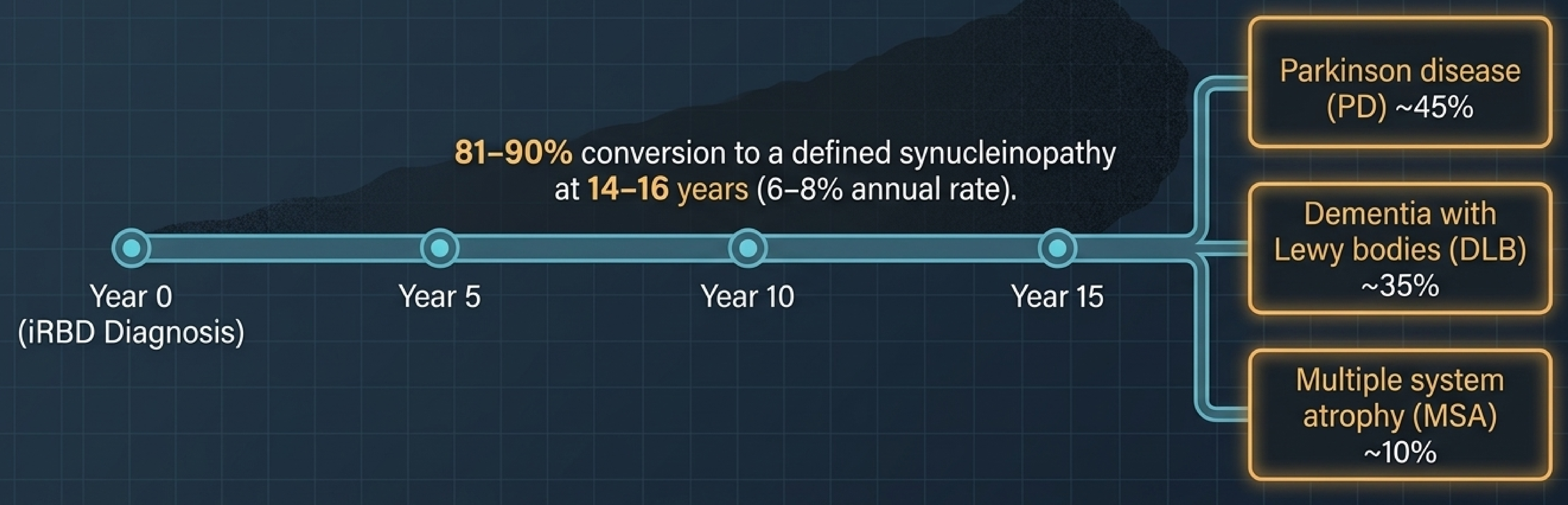



## Mechanism

Dysfunction of the SLD nucleus and pontomedullary pathways prevents normal glycinergic/GABAergic motor inhibition during REM.

**Iatrogenic RBD:** SSRIs, SNRIs, and TCAs can precipitate or mask RBD by suppressing REM. Review medications immediately upon suspicion.

# Idiopathic RBD: The Neurodegenerative Prodrome




Clinical Action: Requires longitudinal neurology follow-up, annual cognitive screening (MoCA), and monitoring for motor signs/orthostatic hypotension.

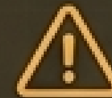
# RBD Management Phase 1: The Safety Blueprint

**The Environment:** Remove sharp objects, glass, and weapons. Ensure functional nightlights.

**The Bed:** Moved away from windows/walls. Mattress placed on the floor if recurrent falls occur. Bed rails padded.

**The Door:** Install doors that cannot be locked from the inside to allow carer access.

**The Bed Partner:** Consider separate sleeping arrangements until pharmacologically pharmacologically controlled (partner injury is highly common).



Non-pharmacological safety interventions are mandatory for all patients prior to or alongside medication.

# RBD Management Phase 2: Pharmacotherapy

## **First-Line:** Melatonin (Immediate-Release)

- **Dose:** 3 mg nocte, titrate to 6–12 mg.
- **Mechanism:** Restores REM atonia via MT1/MT2.
- **Profile:** Highly tolerated, no respiratory depression. Preferred in elderly and neurodegenerative disease. (Takes 2-4 weeks for full effect).

## **Second-Line:** Clonazepam

- **Dose:** 0.25–0.5 mg nocte, titrate to 1–2 mg.
- **Mechanism:** Benzodiazepine (GABA-A modulator).
- **Profile:** Highly effective (~80%), but carries significant risk of falls, daytime somnolence, cognitive impairment, and respiratory depression (OSA).

**Emerging Therapy:** Suvorexant/Lemborexant (Orexin antagonists) showing promise for refractory cases.

# The Sleep Neurology Investigative Toolkit

## Essential Labs

Serum ferritin, iron studies, TSAT (Mandatory for all RLS). FBC, renal, LFTs, B12, TSH (Secondary screening).

## Polysomnography (PSG)

In-lab gold standard. Mandatory for RBD (quantify RWA) and complex OSA. (Public wait: 3-12 months).

## Remote/Ambulatory

Home Sleep Apnoea Testing (HSAT) for high-probability OSA (Not suitable for RBD). Actigraphy for circadian mapping over 7-14 days.

## Specialist Imaging

DAT-SPECT (DaTscan). Indicated for suspected parkinsonism in iRBD. Normal scan makes synucleinopathy unlikely.

# Pharmacotherapy Adaptations in Special Populations

| | Elderly (≥65) | Renal Impairment | Hepatic Impairment | Pregnancy |
|---|---|---|---|---|
| Melatonin | ✓ First-line. | ✓ No adjustment. | ! Prolonged half-life, reduce dose. | ✗ Limited safety data. |
| α-2δ Ligands (Pregabalin) | ! Start low, titrate. | ! Adjust dose strictly by eGFR. | ✓ Preferred. | ✗ Not recommended. |
| Dopamine Agonists | ! Fall/confusion risk. | ! Adjust dose. | ✓ Safe. | ✗ Contraindicated. Rely on oral iron/CBT-I. |
| Z-Drugs / Benzos | ✗ High fall/cognitive risk. | ! Caution. | ✗ Accumulation risk. | ✗ Avoid. |

Renal + RLS Iron Note: IV iron preferred; high uremic RLS prevalence.

# Aboriginal and Torres Strait Islander Health Considerations

Indigenous Australians experience 1.5–2x higher rates of insufficient sleep, driven heavily by **chronic** disease burden rather than isolated primary sleep disorders.

## Chronic Disease Overlap

Rheumatic heart disease (**CSA risk**), Diabetes (**OSA**), and CKD (**RLS up to 4x higher**). **Routine ferritin screening is critical** due to nutritional/parasitic intersections.

## Environment & Housing

Overcrowded housing in remote communities **directly compromises sleep hygiene** and **limits the feasibility of RBD safety modifications**.

## Cultural Safety & Access

**Yarning-based sleep education** is more effective. **Utilize telehealth and ACCHOs** to bypass **severe regional access barriers to PSG**. Ensure **Section 100 medication continuity**.

# Synthesis: The Integrated Sleep Assessment

**The Neurological Patient**
(Stroke, PD, Epilepsy, iRBD)

**Biological Drivers:**
Is **ferritin >75?**
Is **eGFR** affecting clearance?
Are **SSRIs masking/driving RWA?**

**Social & Cultural Determinants:**
Does **housing allow for sleep hygiene?**
Is care **culturally safe?**
Is telehealth required for access?

**Clinical Environment:**
Can the bedroom be made **safe?**
Is the **bed partner protected?**

**Social & Cultural Determinants:**
Does housing allow for sleep hygiene?
Is care **culturally safe?**
Is **telehealth** required for access?

**Takeaway:** Successful sleep neurology moves beyond a simple prescription to align biological optimization (iron, careful pharmacotherapy) with environmental and systemic realities.

# Core Clinical References


- IRLSSG Consensus Criteria (Allen et al., 2014) & AAN Guidelines (Winkelman et al., 2016) for RLS.
- RBD as a Neurodegenerative Prodrome (Iranzo et al., 2013; Postuma et al., 2019).
- ICSD-3 Diagnostic Criteria for Sleep Disorders.
- CBT-I Efficacy (Trauer et al., 2015).
- Australian Institute of Health and Welfare (AIHW, 2022) & Sleep Health Foundation (2019) Epidemiology.


Based on Med2Date Clinical Guidelines, updated May 2026.