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ESRS SOMNOLOGIST EXAMINATION · BSS ISMC 2026

Parasomnias

Classification, diagnosis and management according to ICSD-3-TR and the ESRS catalogue of knowledge and skills

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Conflict of Interest Disclosures for Speakers

☒

1. I do not have any potential conflicts to disclose.

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2. I wish to disclose the following potential conflicts of interest:

Type of Potential Conflict	Details of Potential Conflict
Grant/Research Support	
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3. The material presented in this lecture has no relationship with any of these potential conflicts, **OR**

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4. This talk presents material that is related to one or more of these potential conflicts, and the following objective references are provided as support for this lecture:

- 1.
- 2.
- 3.

Learning objectives

1

Classify

Apply the ICSD-3-TR structure: NREM disorders of arousal, REM parasomnias, and other parasomnias.

2

Diagnose

Recall diagnostic criteria for sleepwalking, sleep terrors, RBD, nightmare disorder and related entities.

3

Explain mechanism

Describe state-dissociation models underlying NREM and REM parasomnias.

4

Identify red flags

Recognise RBD as a prodromal marker of synucleinopathy and counsel appropriately.

5

Manage

Outline safety measures and evidence-based pharmacological/behavioural treatment.

6

Differentiate

Distinguish parasomnias from nocturnal frontal lobe epilepsy and other mimics.

ICSD-3-TR: parasomnias

NREM-related (disorders of arousal)

- Confusional arousals
- Sleepwalking
- Sleep terrors
- Sleep-related eating disorder

REM-related

- REM sleep behaviour disorder
- Recurrent isolated sleep paralysis
- Nightmare disorder

Other parasomnias

- Exploding head syndrome
- Sleep-related hallucinations
- Sleep enuresis
- Parasomnia due to medical disorder
- Parasomnia due to medication/substance
- Parasomnia, unspecified

State dissociation and disorders of arousal

CONCEPT

NREM disorders of arousal reflect incomplete dissociation between wakefulness and slow-wave sleep — parts of the brain (motor and limbic cortex) 'wake up' while others (prefrontal cortex, full consciousness) remain asleep.

'Slow wave arousal disorder'

- SWS dominates the first third of the night — hence early-night timing
- Deep SWS carries a naturally high arousal threshold and EEG hypersynchronous delta activity often precedes episodes
- Anything that deepens/fragments SWS increases episode likelihood

GENETICS

- Strong familial aggregation — up to 10x risk with an affected first-degree relative
- Concordance higher in monozygotic than dizygotic twins
- HLA DQB1*05:01 is associated with NREM parasomnias broadly (not sleepwalking alone) — Heidbreder et al., 2016

EPIDEMIOLOGY

- Sleepwalking peaks age 5–13 y (~17%); most children outgrow it by adolescence
- Adult prevalence ~2–4%; new adult onset should prompt work-up for triggers

Disorders of arousal — the shared template

1

Recurrent incomplete awakening

episodes of incomplete awakening from sleep, typically occurring during the first third of the major sleep episode

2

Inappropriate/absent responsiveness

reduced or absent responsiveness to efforts of others to intervene or redirect the person during the episode

3

Little or no cognition/dream imagery

limited or no associated cognitive processing or dream recall reported

4

Partial or complete amnesia

the episode is partially or fully not recalled afterwards

5

Not better explained

not attributable to another sleep disorder, mental disorder, medical condition, medication or substance use

Confusional arousals & sleepwalking

CONFUSIONAL AROUSALS

- Episodes of mental confusion or confused behaviour during or after arousal, usually from SWS
- Person may sit up, look around, mumble, or appear dazed — without leaving the bed
- Slow, disoriented response if awakened; may be inappropriately combative if forcibly aroused
- Most common in infants and toddlers; also seen as 'sleep drunkenness' in adults with sedative use

SLEEPWALKING (SOMNAMBULISM)

- Series of complex behaviours initiated during arousal from SWS, culminating in walking
- Blank, staring face; relative unresponsiveness to communication; can be difficult to awaken
- Behaviour ranges from calm ambulation to agitated attempts to 'escape' — injury risk is significant
- Sleep-related driving and other complex behaviours have been described in severe cases

Sleep terrors

CLINICAL FEATURES

- Abrupt arousal from SWS with a piercing scream or cry — the hallmark presenting feature
- Intense fear with marked autonomic activation: tachycardia, tachypnoea, flushing, diaphoresis, mydriasis
- Person sits up or leaps out of bed, appears terrified, is difficult to console and largely unresponsive to comforting
- Ends spontaneously; return to sleep with complete amnesia for the event the next morning

EXAM PEARLS

- The scream/cry is the classic distinguishing clue from a nightmare, which occurs in REM and is well recalled
- Peak prevalence around age 5–7 years; usually resolves by adolescence
- Distressing to witnesses, but the child is not 'awake' during the episode and is not endangered by lack of intervention

Priming, predisposing & precipitating factors

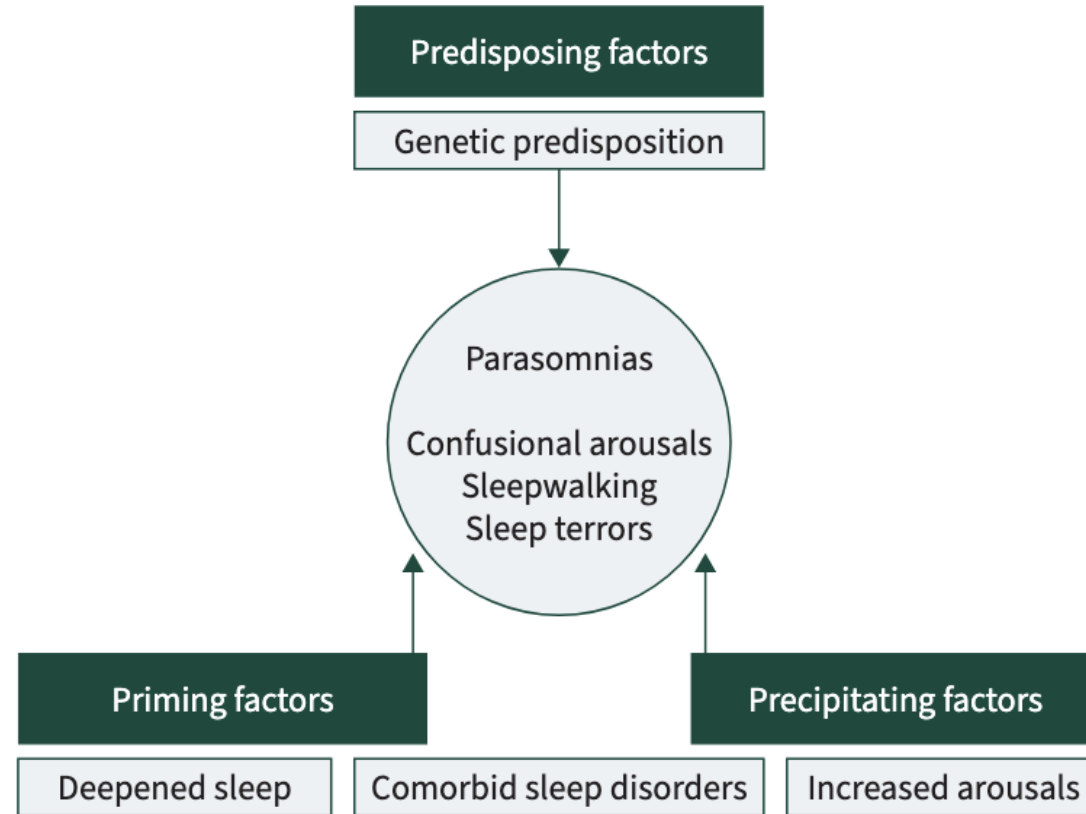


FIGURE 1 A pathophysiological model of disorders of arousal.

Priming, predisposing & precipitating factors

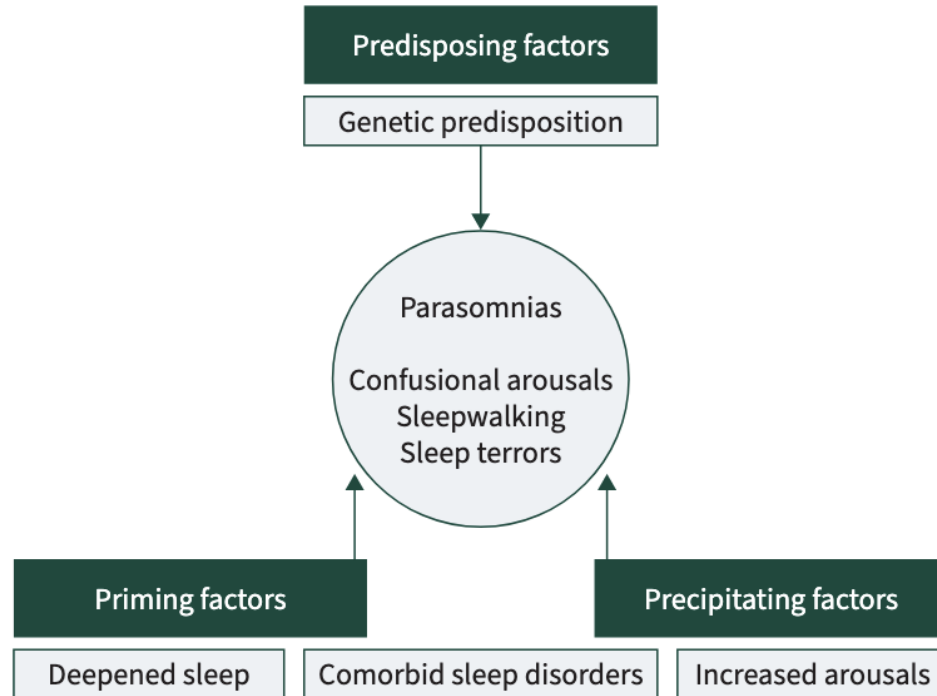


FIGURE 1 A pathophysiological model of disorders of arousal.

Predisposing

- Genetic/familial loading
- Younger age (higher SWS proportion)
- HLA DQB1*05 (sleepwalking)

Priming, predisposing & precipitating factors

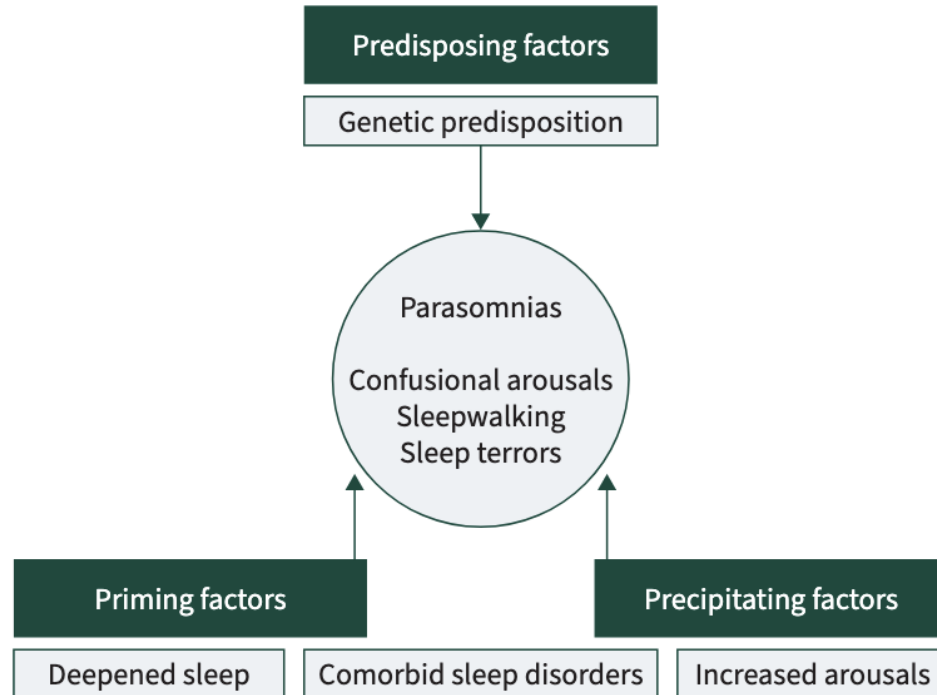


FIGURE 1 A pathophysiological model of disorders of arousal.

Priming

- Sleep deprivation / irregular schedule / co-morbid sleep pathology
- Fever, illness
- Alcohol; sedative-hypnotics (esp. zolpidem), lithium
- Psychological stress

Priming, predisposing & precipitating factors

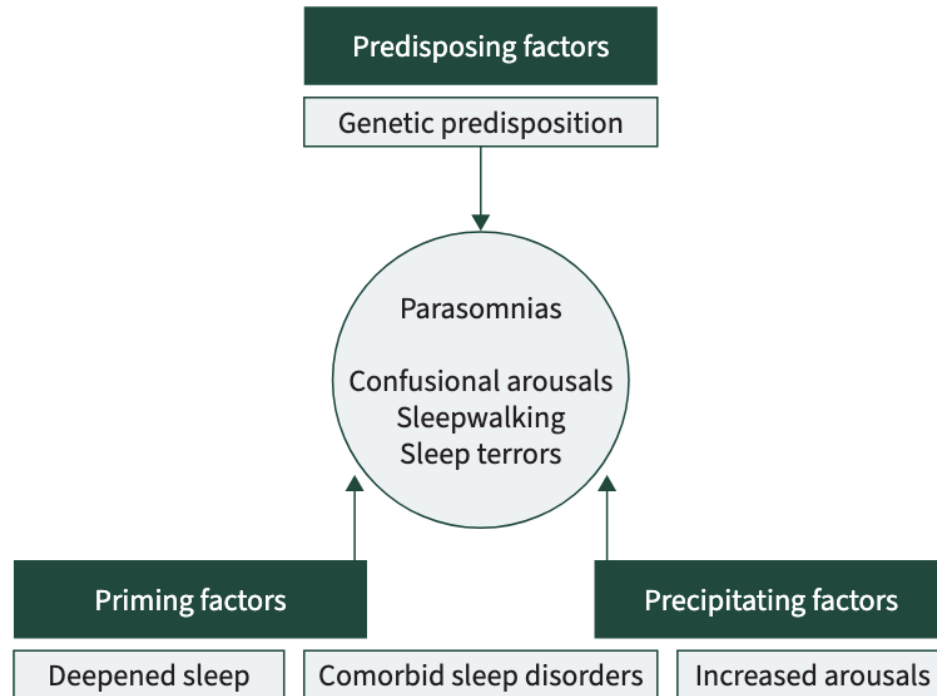


FIGURE 1 A pathophysiological model of disorders of arousal.

Precipitating

- Forced or spontaneous arousal
- Obstructive sleep apnoea
- Periodic limb movements
- Noise, bladder distension, bed-partner movement

Evaluation and management of disorders of arousal

EVALUATION

- Diagnosis is primarily clinical, from a detailed history (ideally bed-partner/parent account)
- Video-PSG indicated for: injurious/violent behaviour, diagnostic uncertainty, suspected comorbid OSA/PLMS, atypical or adult-onset presentations, or when epilepsy is a differential
- PSG may show hypersynchronous delta activity or abrupt arousals from SWS, but a normal study does not exclude the diagnosis
- Evidence review (Lopez et al. 2018; Mainieri et al. 2023) flags poor sensitivity of the amnesia criterion and proposes video-PSG-based levels of diagnostic certainty (possible/clinical vs. video-confirmed)

MANAGEMENT

- Reassurance — most childhood cases are self-limited and require no drug treatment
- Safety first: lock doors/windows, remove hazards, consider bed/door alarms, ground-floor sleeping
- Correct priming/precipitating factors: sleep extension, regular schedule, treat OSA/PLMS, avoid triggering medications
- Scheduled awakenings (waking 15–30 min before the usual episode time) for predictable, frequent events
- Pharmacotherapy (severe/injurious/refractory cases): melatonin, benzodiazepines (e.g. clonazepam) or certain antidepressants

Sleep-related eating disorder (SRED)

FEATURES

- Recurrent involuntary episodes of eating or drinking during arousal from sleep
- Partial or complete amnesia for the episode; impaired judgement during it
- Consumption of odd combinations or inedible/toxic substances is reported
- Problematic consequences: weight gain, injury (burns, cuts while preparing food), morning anorexia
- Associated with sedative-hypnotic use (classically zolpidem), other disorders of arousal, RLS, and stress

SRED vs. NIGHT EATING SYNDROME

Awareness

SRED: amnesic, involuntary | NES: fully awake and aware

Classification

SRED: NREM parasomnia | NES: eating disorder, not a parasomnia

Pattern

SRED: discrete arousal-associated episodes | NES: evening hyperphagia + delayed circadian meal pattern

Recall

SRED: little/no recall | NES: full recall

REM sleep behaviour disorder (RBD) — diagnosis

1

Dream enactment behaviour

repeated episodes of sleep-related vocalisation and/or complex motor behaviours

2

REM sleep timing

documented by PSG to occur during REM sleep, or presumed to occur during REM based on clinical history

3

REM sleep without atonia

polysomnography demonstrates REM sleep without atonia (RSWA) — the essential neurophysiological signature

4

Clinical significance

behaviours cause injury, potential injury, or sleep disruption to patient or bed partner

5

Not better explained

not attributable to another sleep, mental, or neurological disorder, medication, or substance use

RBD: the PSG signature (RSWA)

REM sleep without atonia (RSWA) — sustained (tonic) muscle activity and/or excessive transient (phasic) EMG bursts in chin or limb leads during REM sleep, at a time when muscle tone should normally be almost completely suppressed.

Montage

- Chin EMG plus bilateral limb leads
- SINBAR montage (chin + bilateral flexor digitorum superficialis) increases sensitivity for phasic activity over a standard montage

Quantitative criteria

- AASM Scoring Manual defines tonic and phasic EMG criteria
- IRBDSG video-PSG guideline (Cesari et al., 2022) sets the % of REM mini-epochs with tonic/phasic activity required for a positive study

Video confirmation

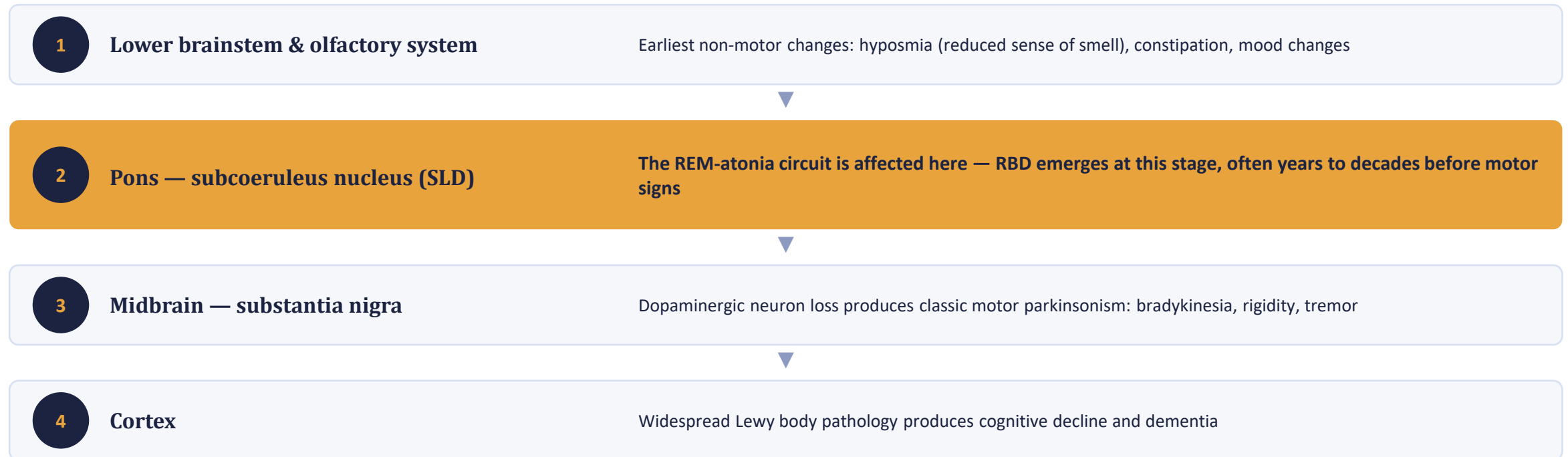
- Time-synchronised video confirms behaviours are locked to REM sleep
- Excludes NREM disorders of arousal and nocturnal seizure as the cause of the behaviour

Exam pearl

RSWA is necessary for the diagnosis but not sufficient on its own — a clinical history of dream-enactment behaviour is also required for a diagnosis of RBD. RSWA found incidentally without a history of dream enactment (“isolated RSWA”) does not meet criteria for RBD, but is itself associated with an increased risk of future neurodegeneration.

Why RBD predicts future neurodegeneration

REM atonia is normally generated by a brainstem circuit: the sublaterodorsal nucleus (SLD, also called the subcoeruleus nucleus) in the pons drives descending pathways — relayed through the ventromedial medulla — that inhibit spinal motor neurons during REM sleep. In RBD, this same circuit is damaged by an evolving alpha-synucleinopathy, and abnormal alpha-synuclein protein pathology is thought to spread through the brain in a caudal-to-rostral direction — reaching this pontine circuit well before it reaches the areas responsible for movement and cognition.



Phenoconversion: rates, destinations & risk stratification

~35–45%

phenoconvert within 5 years of iRBD diagnosis

~75–90%

phenoconvert with long-term follow-up (10–15+ years)

Figures vary by cohort and follow-up duration, but the direction is consistent: risk rises the longer a person is followed.

DESTINATION SYNDROMES

- Parkinson's disease
- Dementia with Lewy bodies
- Multiple system atrophy

The same underlying alpha-synucleinopathy can ultimately manifest as any of these three — RBD does not predict which one.

RISK-STRATIFICATION MARKERS

- DAT-SPECT — reduced striatal dopamine transporter uptake
- Olfactory testing — hyposmia
- Colour vision testing
- Quantitative motor testing — subtle bradykinesia
- Autonomic testing — orthostatic hypotension (more suggestive of MSA)
- Alpha-synuclein seed amplification assay (CSF or skin biopsy) — detects misfolded protein directly

COUNSELLING

- Longitudinal neurological follow-up for all iRBD patients
- Disclose risk sensitively and in a staged way — this is a major, life-altering piece of information
- iRBD cohorts are used as an enrichment population for neuroprotective trials

RBD — management

Safety first

- Bedroom safety review: remove sharp/breakable objects, pad furniture corners, floor mattress
- Bed partner may need to sleep separately, or place a pillow barrier, during severe phases
- IRBDSG 2025: reassess injury risk at every visit; bed-partner reports and video are key monitoring tools
- Start pharmacotherapy after any dream-enactment episode causing or risking injury

AASM 2023: four options

- GRADE-based guideline (Howell et al. 2023) conditionally recommends: clonazepam, immediate-release melatonin, pramipexole, or rivastigmine
- No agent reaches a strong recommendation — evidence base is limited to small trials
- Choice individualised: age, falls/sedation risk, cognitive status, comorbid OSA

2025 IRBDSG algorithm

- Consensus treatment algorithm (During et al. 2025) sequences agents by comorbidity — e.g. rivastigmine favoured with coexisting cognitive impairment
- Refractory disease: consider sodium oxybate; investigational agents (e.g. nelotanserin) remain unproven
- Counsel iRBD patients on neurodegeneration risk in a patient-centred, staged way

Recurrent isolated sleep paralysis

FEATURES

- Recurrent inability to move the trunk and limbs at sleep onset (hypnagogic) or on waking (hypnopompic)
- Consciousness and awareness of the environment are intact throughout
- Often accompanied by frightening hallucinations and a sensation of chest pressure/inability to breathe fully
- Resolves spontaneously within seconds to a couple of minutes, or immediately with external sensory stimulation (touch, being spoken to)
- Causes clinically significant distress in the recurrent/isolated form

EXAM PEARLS

- Reflects persistence of REM atonia into wakefulness — the physiological mirror image of RBD
- 'Isolated' specifically means narcolepsy has been excluded — sleep paralysis is also one component of the narcolepsy tetrad
- Common triggers: sleep deprivation, irregular schedule, supine sleep position, stress
- Management: reassurance, address triggers; SSRIs sometimes used for frequent, distressing episodes

Nightmare disorder

DIAGNOSTIC FEATURES

- Repeated, extended, extremely dysphoric and well-remembered dreams involving threats to survival, security or physical integrity
- Occur predominantly in the second half of the sleep period (REM-dense)
- Rapid orientation and alertness on awakening — contrasts sharply with sleep terrors
- Causes clinically significant distress or impairment (mood, sleep-onset anxiety, avoidance)

MANAGEMENT

- Image rehearsal therapy (IRT) — first-line, evidence-based: patient rewrites the nightmare with a non-threatening ending and mentally rehearses it while awake
- Other CBT-based approaches (exposure, relaxation, lucid dreaming techniques)
- Prazosin has been used for PTSD-associated nightmares, though evidence is mixed and it is not universally recommended; Trazodone helpful with co-morbid insomnia
- Screen for and treat comorbid PTSD, anxiety, depression, and check for nightmare-inducing medications (e.g. certain antidepressants, beta-blockers)

Other parasomnias (I) — exploding head syndrome

DEFINITION

A sudden, subjective sensation of a loud noise or explosive sensation in the head, typically arising at the transition from wakefulness to sleep — without objective sound and generally without significant pain.

Presentation

- Perceived bang, explosion, or crashing sound
- Sometimes with a flash of light or a brief myoclonic jerk
- Usually painless, though can be alarming and cause an abrupt arousal with fear/anxiety

Epidemiology

- Under-recognised — likely more prevalent than reported
- More common with advancing age; slight female predominance in some series
- Often idiopathic; can be exacerbated by stress and sleep deprivation

Management

- Reassurance is usually sufficient once serious differentials excluded
- Rule out: nocturnal seizure, hemicrania/other headache disorders, TIA-mimicking symptoms
- Tricyclic antidepressants reported anecdotally to reduce frequency in severe cases

Sleep-related hallucinations & sleep enuresis

SLEEP-RELATED HALLUCINATIONS

- Hypnagogic: occur at sleep onset; hypnopompic: occur on awakening
- Predominantly vivid, often visual imagery; may include auditory or tactile components
- Occur in healthy individuals but are more frequent, prolonged and vivid in narcolepsy (part of the classic tetrad)
- Distinguish from nocturnal psychosis/delirium by the sleep-wake transition timing and preserved insight afterwards

SLEEP ENURESIS

- Recurrent involuntary voiding during sleep in a child older than 5 years (the age below which bedwetting is developmentally normal)
- Primary: continence never established; secondary: recurrence after ≥ 6 months of dryness — warrants work-up for organic/psychological cause
- In adults, always secondary — screen for OSA, diabetes, neurological or urological disease, medications
- Management: behavioural (fluid timing, bedwetting alarms), address underlying cause; desmopressin an option in select cases

Catathrenia — moved out of the parasomnias section

Catathrenia (nocturnal groaning) — prolonged expiratory groaning sounds during sleep, typically in REM — was reclassified in ICSD-3 from the parasomnias section to sleep-related breathing disorders / isolated symptoms, reflecting its relationship to the respiratory cycle.

Clinical picture

- Long expiration against a partially closed glottis producing a groaning sound
- Usually most prominent in REM sleep, often clusters late in the night
- More disruptive to bed partner than to the patient's own sleep quality

Differential

- Distinguish from stridor, snoring/OSA, and vocalisations of RBD or NREM parasomnia
- Video-PSG with audio is the confirmatory investigation

High-yield take-home points

1

NREM disorders of arousal occur in the first third of the night from SWS, with amnesia and poor responsiveness

2

Ambulation defines sleepwalking; a piercing scream with autonomic surge defines a sleep terror

3

SRED = amnestic eating during arousal (a parasomnia); night eating syndrome = fully aware evening hyperphagia (not a parasomnia)

4

RBD requires PSG-confirmed REM sleep without atonia (RSWA) plus dream-enactment behaviour

5

Isolated RBD is a major prodromal marker for Parkinson's disease, Lewy body dementia and multiple system atrophy

6

AASM (2023) conditionally recommends four RBD agents — clonazepam, melatonin, pramipexole, rivastigmine — none proven superior; safety review at every visit (IRBD SG 2025)

7

Nightmares occur in REM (2nd half of night), are vividly recalled, and orientation on waking is rapid — image rehearsal therapy is first-line treatment

8

Recurrent isolated sleep paralysis = persistence of REM atonia into wakefulness; excludes narcolepsy by definition

9

Catathrenia was reclassified in ICSD-3 from parasomnias to sleep-related breathing disorders

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