Sleep Disorders Unlocked

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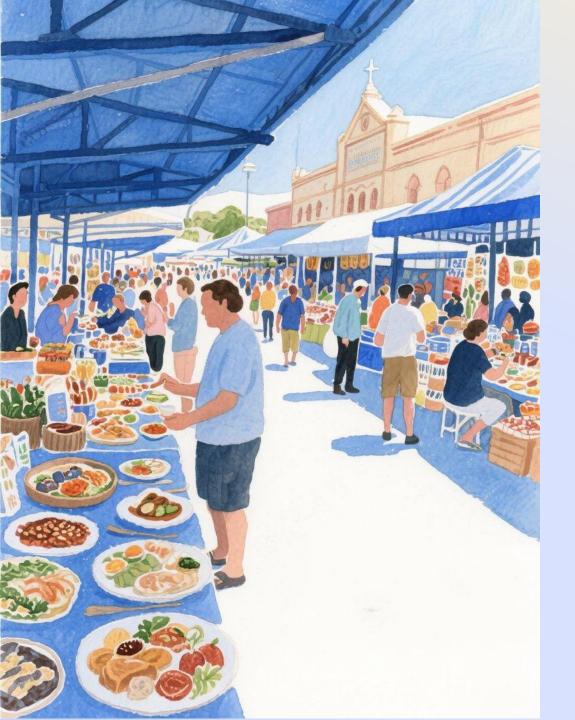
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What Are Sleep Disorders



Defining Sleep Disorders

Definition

Sleep disorders are medical conditions that disrupt the normal sleep-wake cycle, impairing physical health, mental well-being, and daytime functioning.

Impact

These disorders can lead to significant distress and impairment in social, occupational, and other areas of functioning.

Categories

They encompass insomnia, hypersomnia, breathing-related disorders, circadian rhythm disorders, parasomnias, and movement disorders.

Core Diagnostic Criteria

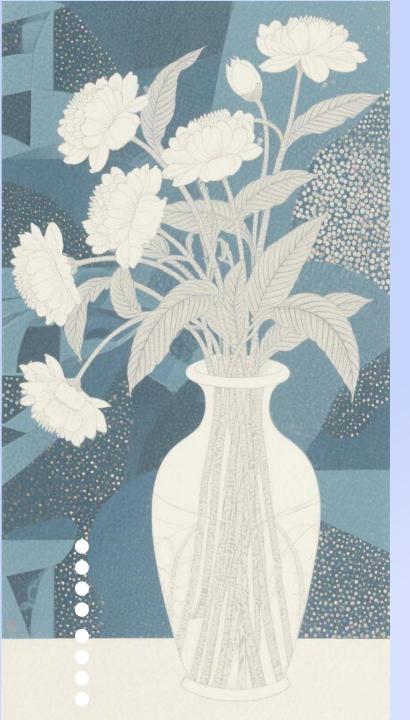
Persistent Disturbance

Diagnosis requires persistent sleep disturbanc causing clinically significant distress or impairment in daily functioning.

Exclusion Criteria

Symptoms must not be better explained by another disorder or substance use.





Global Burden Snapshot

Insomnia Prevalence

Roughly one-third of adults report insomnia symptoms, with 9–15% suffering from chronic insomnia.

Sleep Apnea

2–4% of the population suffer from obstructive sleep apnea.

Narcolepsy

0.02–0.05% of individuals have narcolepsy.

Health Risks

Untreated disorders elevate cardiovascular, metabolic, and psychiatric morbidity.

Insomnia Spectrum



Acute vs Chronic Insomnia

Acute Insomnia

Acute insomnia lasts days to weeks, triggered by stress or environment.

Chronic Insomnia

Chronic insomnia persists for ≥3 nights/week for ≥3 months, driven by conditioned arousal and maladaptive behaviors.





Hyperarousal

Heightened arousal and learned sleeppreventing associations create a vicious cycle of worry about sleeplessness.

Psychophysiological Insomnia Symptoms

Patients report racing thoughts, clock-watching, and increased tension at bedtime.

Impact

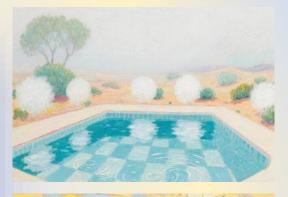
This type of insomnia can significantly impair daily functioning and quality of life.

Misperception

Patients dramatically underestimate sleep duration, reporting near-total sleeplessness despite normal polysomnography.

Mechanism

Linked to hyperarousal and heightened sensory processing.

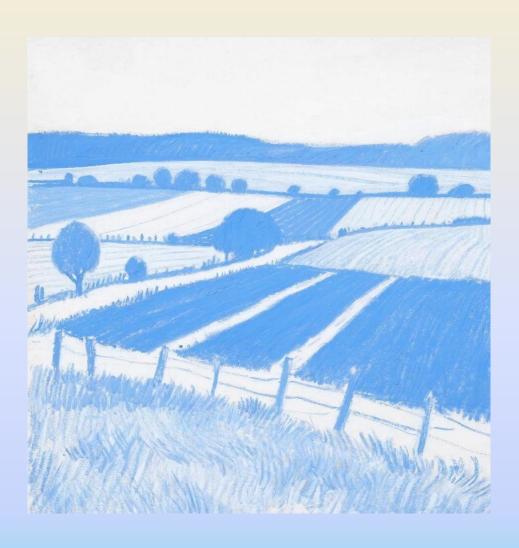




Paradoxical Insomnia



Insomnia Due to Medical Conditions



Common Causes

Chronic pain, asthma, GERD, hyperthyroidism, and neurodegenerative diseases fragment sleep.

Management

Treating underlying pathology and optimizing sleep hygiene are essential for symptom relief.

Impact

This type of insomnia can exacerbate existing medical conditions and complicate treatment.

Substance-Induced Insomnia





Substances

Caffeine, nicotine, alcohol, stimulants, corticosteroids, and SSRIs can delay sleep onset or increase awakenings.

Withdrawal Withdrawal from sedatives may also produce rebound insomnia.

Breathing Disorders



Obstructive Sleep Apnea

Definition

Repetitive upper-airway collapse during sleep causes oxygen desaturation and sleep fragmentation.

Symptoms

Patients experience loud snoring, excessive daytime sleepiness, and frequent awakenings.

Risk Factors

Obesity, craniofacial anatomy, and aging are common risk factors.

Central Sleep Apnea

Definition
Cessation of respiratory drive without airway obstruction, often linked to heart failure or stroke.

Symptoms

Patients experience cyclic breathing and frequent awakenings.



Sleep-Related Hypoventilation

Definition

Reduced alveolar ventilation leads to hypercapnia and hypoxemia.

Causes

Causes include obesity hypoventilation syndrome, neuromuscular disease, and congenital central hypoventilation.

Impact

This condition can lead to significant respiratory and cardiovascular complications.







OSA Screening Tools

Tools

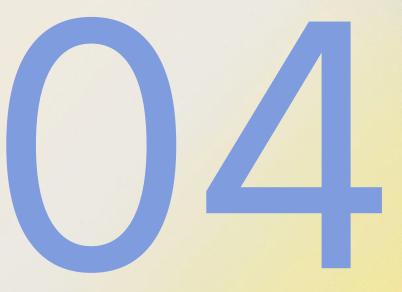
STOP-Bang, Berlin Questionnaire, and NoSAS score identify high-risk patients.

Testing

Overnight oximetry and home sleep apnea testing streamline diagnosis, with polysomnography reserved for complex cases.



Central Hypersomnias



Narcolepsy Type 1

Definition

Characterized by irrepressible daytime sleepiness, cataplexy, sleep paralysis, and hypnagogic hallucinations.



Pathophysiology

Orexin deficiency due to autoimmune hypothalamic neuronal loss underlies symptoms.



Impact

This type of narcolepsy can significantly impair daily functioning and requires comprehensive management.



Narcolepsy Type 2



Diagnosis

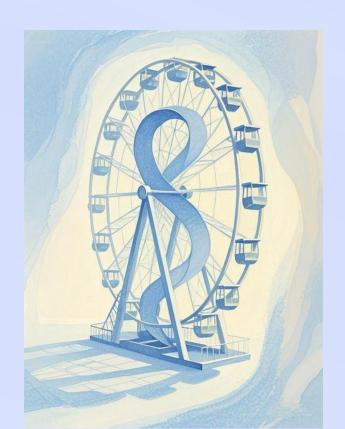
Diagnosis requires polysomnography plus multiple sleep latency test showing short sleep latency and ≥2 SOREMPs.

Definition

Similar daytime sleepiness without cataplexy and with normal orexin levels.



Idiopathic Hypersomnia





Definition

Excessive daytime sleepiness despite adequate or prolonged nocturnal sleep, unrefreshing naps, and sleep inertia.

Symptoms

Patients may experience headaches, sweating, fainting, and difficulty waking from naps.

Management

Treatment often involves behavioral modifications and medications used for narcolepsy.

Kleine-Levin Syndrome

Definition
Rare episodic hypersomnia with recurrent bouts lasting days to weeks, accompanied by hyperphagia and irritability.

Symptoms

Patients experience cognitive dysfunction and may have normal functioning between episodes.



Circadian Rhythm Disorders



Delayed Sleep-Wake Phase

Definition

Chronic inability to fall asleep and wake at desired clock times, typically sleep onset after 2 a.m.

Symptoms

Patients experience difficulty waking up in the morning and may have daytime sleepiness.

Etiology

Common in adolescents and linked to genetic polymorphisms in circadian genes.

Advanced Sleep-Wake Phase

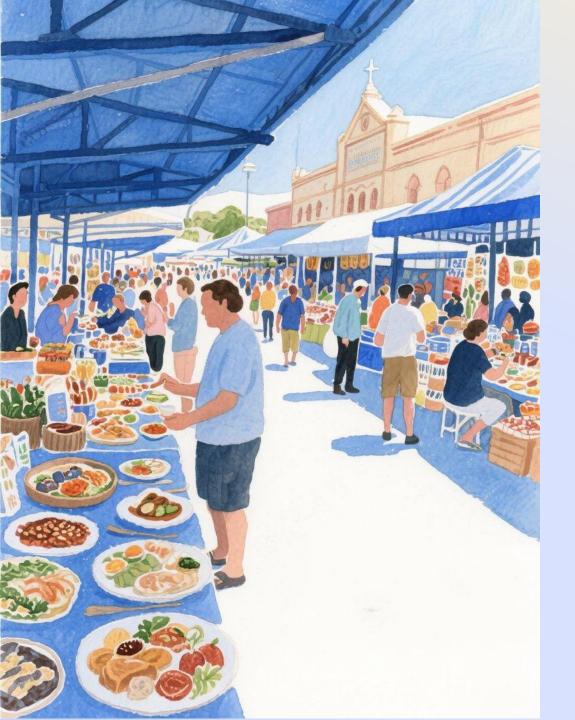
Definition

Early evening sleepiness and early morning awakening, more prevalent in older adults.

Etiology

Strong familial clustering suggests autosomal dominant inheritance of PER2 or CK1δ mutations.





Shift Work Disorder

Definition

Misalignment between work hours and circadian phase produces insomnia during desired sleep and excessive sleepiness during work.

Impact

Associated with metabolic syndrome and increased risk of accidents.

Management

Strategies include light therapy, melatonin, and optimizing sleep hygiene.



Definition

Rapid travel across time zones causes transient insomnia, fatigue, and GI upset.

Strategies

Strategic light exposure, melatonin, and gradual schedule adjustment accelerate circadian realignment.



Parasomnias



NREM Arousal Disorders

Definition

Confusional arousals, sleepwalking, and sleep terrors arise from incomplete awakening from deep NREM sleep.



Symptoms

Patients may exhibit disoriented behavior, walking, or screaming during sleep.



Triggers

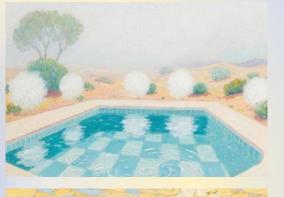
Sleep deprivation, fever, and sedative medications can trigger these events.

Definition

Loss of REM atonia enables dream enactment with potentially violent movements.

Impact

Strongly associated with future synucleinopathies like Parkinson disease and Lewy body dementia.

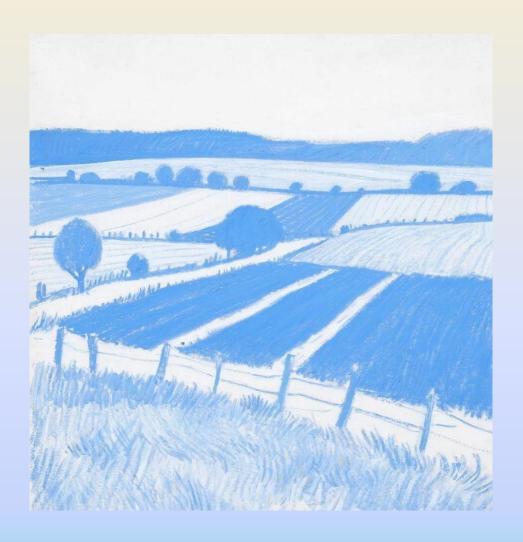




REM Sleep Behavior Disorder



Nightmare Disorder



Definition

Recurrent disturbing dreams causing awakenings with full alertness and distress.

Symptoms

Differentiated from PTSD nightmares by absence of traumarelated re-experiencing.

Management

Treatment may involve cognitive-behavioral therapy and addressing underlying stressors.

Exploding Head Syndrome

Definition

Perception of loud noise or explosive sensation at sleep onset or awakening.

Impact

This benign condition can provoke significant anxiety about sleep.



Movement Disorders





Legs

Definition

Urge to move legs accompanied by uncomfortable sensations worsening at rest and evening.

Restless Syndrome Symptoms

Linked to dopaminergic dysfunction, iron deficiency, and genetic variants.

Management

Treatment may involve medications, lifestyle changes, and addressing underlying conditions.

Periodic Limb Movement





Definition

Repetitive stereotyped limb jerks during NREM sleep causing arousals and daytime fatigue.

Management
May respond to dopamine agonists or gabapentin.

Sleep-Related Bruxism

Definition

Rhythmic masticatory muscle activity leading to tooth grinding and jaw pain.

Symptoms

Multifactorial etiology including stress, malocclusion, and neurotransmitter imbalance.

Management

Treatment may involve dental appliances, stress management, and addressing underlying causes.







Sleep-Related Leg Cramps



Definition

Painful involuntary muscle contractions typically affecting calves or feet during sleep.

Etiology

Associated with dehydration, electrolyte imbalance, and peripheral neuropathy.



Assessment Toolkit





Sleep





Definition

Structured interview covers bedtime, sleep latency, awakenings, snoring, movement, daytime sleepiness, medications, caffeine, and psychiatric comorbidities.

Purpose

Aims to guide differential diagnosis and identify underlying causes.

Impact

Comprehensive history is crucial for effective treatment planning.

Sleep Diaries & Actigraphy

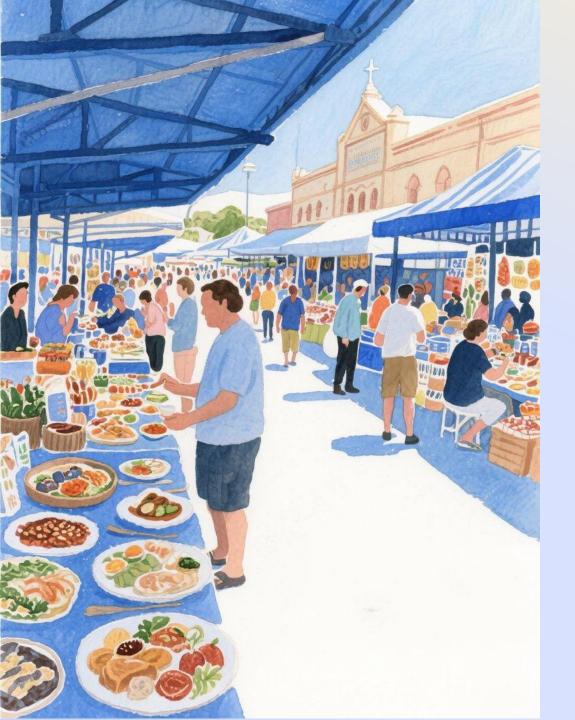
Sleep Diaries

Two-week sleep diaries track bedtime, wake time, naps, and subjective quality.

Actigraphy

Wrist actigraphy provides objective restactivity patterns, aiding insomnia and circadia rhythm evaluation.





Polysomnography Essentials

Definition

Overnight recording of EEG, EOG, EMG, ECG, airflow, and oxygen saturation.

Purpose

Captures sleep architecture, respiratory events, and limb movements, gold standard for OSA and parasomnia diagnosis.

Impact

Polysomnography provides detailed insights into sleep disorders, guiding targeted treatments.

Definition

Four or five nap opportunities quantify daytime sleep propensity.

Purpose

Mean sleep latency ≤8 minutes and ≥2 SOREMPs support narcolepsy diagnosis, differentiating from idiopathic hypersomnia.

Multiple Sleep Latency Test



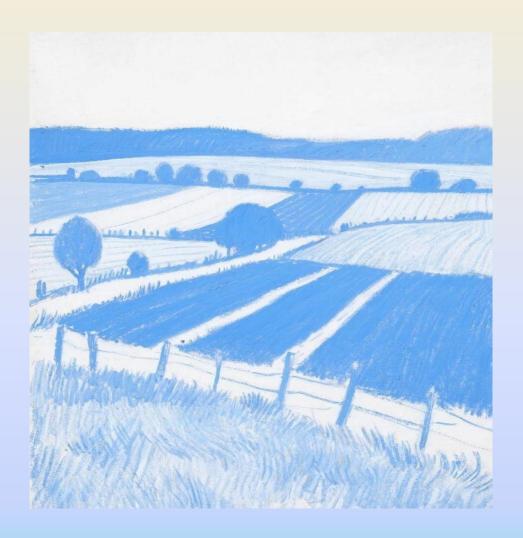




Treatment Pathways



Cognitive Behavioral Therapy-I



Definition

CBT-I combines sleep restriction, stimulus control, relaxation, and cognitive restructuring.

Efficacy

First-line for chronic insomnia with durable benefits, improving sleep quality and reducing daytime distress.

Impact

CBT-I addresses the underlying causes of insomnia, promoting long-term recovery.

CPAP & Oral Appliances





CPAP

Continuous positive airway pressure maintains upper-airway patency in OSA.

Oral Appliances
Custom oral appliances advance mandible for mild-moderate cases or CPAP intolerance.

Pharmacologic Options

Medications

Melatonin agonists, orexin receptor antagonists, benzodiazepine receptor agonists, and modafinil target specific disorders.

Risks

Careful risk-benefit assessment and monitoring required due to potential side effects.

Impact

Pharmacotherapy can provide relief, especially when combined with behavioral interventions.





Light & Chronotherapy

Light Therapy

Timed bright light exposure realigns circadian phase in delayed or advanced disorders.

Chronotherapy

Gradual sleep schedule shifts and melatonin adjunctively enhance entrainment effectiveness.



Thank You