Assessment, Diagnosis, Treatment of Sleep Disorders

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Assessment : Sleep History

1. When do you **normally go to bed** at night? When do you **normally wake up** in the morning?
2. Do you often have trouble falling asleep?
3. How many times do you wake up at night?
4. If you wake up at night, do you have any trouble falling back to sleep?
5. Do you frequently snore, gasp for air, or stop breathing? (if they are aware or bed partner says so)
6. Do you kick or thrash in bed while asleep?
7. Are you aware that you ever walk, eat, punch, kick, or scream during sleep?
8. Are you tired or sleepy during the day?
9. Do you usually 1-2 more naps during the day?
10. Do you usually doze off without planning to during the day?
11. How much sleep time do you need to feel alert and function well?
12. Are you currently taking any type of medication?

Assessment : Guided History

1. Do you have the urge to move your legs or do you have uncomfortable sensations in legs during rest or at night?
2. Do you have to get up to urinate during the night?
3. How much physical activity or exercise do you get daily?
4. Are you exposed to natural outdoor light most days?
5. How much caffeine and/or alcohol do you consume each day/night?
6. Do you often feel sad/anxious?

Diagnosis : DSM 5

1) Insomnia disorder
2) Hypersomnolence disorder
3) Narcolepsy
4) Breathing-related sleep disorders
5) Circadian rhythm sleep-wake disorders
6) NREM sleep arousal disorders
7) Nightmare disorder
8) REM sleep behavior disorder
9) Restless legs syndrome
10) Substance/medication-induced sleep disorder

Diagnosis : ICD-10
F51 – Nonorganic Sleep Disorders

1) Nonorganic insomnia
2) Nonorganic hypersomnia
3) Nonorganic disorder of the sleep-wake schedule
4) Sleepwalking (somnambulism)
5) Sleep terrors (night terrors)
6) Nightmares
7) Other nonorganic sleep disorders
8) Nonorganic sleep disorder, unspecified

Insomnia

Diagnosis

Insomnia Disorder

Diagnostic Criteria — 780.52 (G47.00)

A. A predominant complaint of dissatisfaction with sleep quantity or quality, associated with one (or more) of the following symptoms:
   1. Difficulty initiating sleep. (In children, this may manifest as difficulty initiating sleep without caregiver intervention.)
   2. Difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep after awakenings. (In children, this may manifest as difficulty returning to sleep without caregiver intervention.)
   3. Early-morning awakening with inability to return to sleep.

B. The sleep disturbance causes clinically significant distress or impairment in social, occupational, educational, academic, behavioral, or other important areas of functioning.

C. The sleep difficulty occurs at least 3 nights per week.

D. The sleep difficulty is present for at least 3 months.

E. The sleep difficulty occurs despite adequate opportunity for sleep.

F. The insomnia is not better explained by and does not occur exclusively during the course of another sleep-wake disorder (e.g., narcolepsy, a breathing-related sleep disorder, a circadian rhythm sleep-wake disorder, a parasomnia).

G. The insomnia is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication).

H. Coexisting mental disorders and medical conditions do not adequately explain the predominant complaint of insomnia.

Diagnosis

Specify if:

With non–sleep disorder mental comorbidity, including substance use disorders

With other medical comorbidity

With other sleep disorder

Coding note: The code 780.52 (G47.00) applies to all three specifiers. Code also the relevant associated mental disorder, medical condition, or other sleep disorder immediately after the code for insomnia disorder in order to indicate the association.

Specify if:

Episodic: Symptoms last at least 1 month but less than 3 months.

Persistent: Symptoms last 3 months or longer.

Recurrent: Two (or more) episodes within the space of 1 year.

Note: Acute and short-term insomnia (i.e., symptoms lasting less than 3 months but otherwise meeting all criteria with regard to frequency, intensity, distress, and/or impairment) should be coded as an other specified insomnia disorder.

Insomnia – Diagnostic Features

- Essential feature → dissatisfaction with sleep quantity or quality, with complaints of difficulty initiating or maintaining sleep.
  - Accompanied with clinically significant distress or impairment in social, occupational, or other areas of functioning.

- Manifestations, by time:
  - Sleep-onset or initial insomnia
    - Subjective sleep latency >20-30 minutes
  - Sleep maintenance or middle insomnia → prolonged awakening
    - Subjective time awake after sleep >20-30 minutes
  - Late insomnia → early morning waking & inability to return
    - Awakening at least 30 minutes before scheduled time and before total sleep time reaches 6,5 hours

- Manifestations → fatigue, daytime sleepiness, impaired cognition, mood disturbances

Diagnostic Markers

- Polysomnography : increased sleep latency & time awake
- Quantitave EEG : greater high-frequeny power, increased cortical arousal
- Increased cortisol levels, heart rate variability, reactivity to stress, metabolic rate → HPA axis activation

Differential Diagnosis

- Situational/acute insomnia : a condition lasting a few days to a few weeks, often associated with life events or with changes in sleep schedules.
  - When such symptoms are frequent enough and meet all other criteria except for the 3-month duration, a diagnosis of other specified insomnia disorder or unspecified insomnia disorder is made

- Delayed lseep phase & shift work type of circadian rhythm sleep-wake disorder → Sleep onset insomnia
- Restless legs syndrome → difficulty initiating/maintaining sleep
- Breathing-related sleep disorders → daytime sleepiness
- Narcolepsy → daytime sleepiness
- Parasomnia

Treatment of Insomnia

- Insomnia is not a disorder that can necessarily be "cured"
- Symptoms treated in order to relieve patient of distress
- Treated by two different methods
  - Non-Pharmacological Treatment
  - Pharmacological Treatment

Non-Pharmacological Treatment

- This is attempted before the use of pharmacological treatment, typically for at least 2-3 weeks
- This mainly has to do with attempting to improve sleep habits
- The different methods used are:
  - Improving Sleep Hygiene
  - Stimulus Control Therapy
  - Restrictive Sleep Therapy

Improving Sleep Hygiene

- Basically improving comfort when sleeping
  - Decrease Ambient Noise
  - Go to bed/wake up at a constant time
  - Reduce Lighting
  - Think Positively
- Not shown to be particularly effective on its own, though has been seen to be very critical to improving the efficacy of other non-pharmacological treatments

Stimulus Control Therapy

- Learn to associate the bedroom with sleep alone
  - Don't go in the bedroom unless going to sleep
  - Do not go to bed unless tired
  - Leave the bedroom if haven't fallen asleep in 15 minutes
  - Be completely relaxed when in bed
- This method has been seen to be very effective if used for over a prolonged period of time
- Improved efficacy if sleep hygiene is also managed

Sleep Restriction Therapy

- Restricting sleep during the day
- Cutting sleep short during certain nights
- Goal is to be excessively tired when time to sleep at night
- Shown the most promising results of all the non-pharmacological therapies and even more effective when sleep hygiene is improved

Pharmacological Treatment

- 4 Classes of Prescription Agents
  - Benzodiazepines
  - Benzodiazepine Receptor Agonists
  - Melatonin Receptor Agonists
  - Antidepressants/Antipsychotics

Benzodiazepines

- Potent hypnotics and anxolytics
- Improve sleep time, but not usually sleep latency (often one of the more desired effects)
- Disrupt normal sleep cycles
- Tend to cause bad "hangover" effects
  - Very drowsy the following day
  - Occasional impaired cognition
- Extremely high potential for abuse with prolonged use as well as tolerance
- Drugs in this class are
  - Estazolam (Esilgan), Flurazepam (Dalmadorm), Quazepam, Temazepam, and **Triazolam** (Halcion)

Triazolam Mechanism

- Interacts with the $GABA_A$ receptor to bind at the post synaptic membrane and induce chloride permeability to inhibit excitation
- By doing so, hypnotic effects are induced, and inducing sleep is therefore achieved
- Improves sleep onset, but not necessarily sleep maintenance
- Bad reported rebound insomnia with discontinued use

Benzodiazepine Receptor Agonists

- Fewer hangover symptoms than benzodiazepines
- Claims a more restful night sleep
- Fewer problems with dependency, though still an issue
- Longer half-life than benzodiazepines so help with sleep maintenance
- Some drugs are dose dependent (Eszopiclone)
- Few are approved for long-term use: Eszopiclone
- Drugs in the class include:
  - Zolpidem, Zaleplon, and **Eszopiclone**

Eszopiclone (Lunesta) Mechanism

- Binds at the omega subunit of the $GABA_A$ receptor to increase chloride permeability and decrease excitation of the neuron
- This subunit is found more in the brain as opposed to the spine where the other class of the GABA receptors are found
- Thought to be safer than benzodiazepines, but still have serious potential for abuse, and reported rebound insomnia with discontinued use
- Effectiveness of the drug is dose dependent

Melatonin Receptor Agonists

- Newer class of drug
- Far less potential for abuse and dependency and is the only hypnotic that is not classified as a controlled substance
- Approved for long-term use more readily than other medications
- There have been complains of drowsiness, dizziness, and fatigue in the following days after use
- Only drug in this class thus far is Ramelteon

Ramelteon Mechanism

- This works by selectively binds the Melatonin Receptors $(MT)_1$ and MT_2, that are thought to regulate the sleepiness and readjustment of the circadian rhythms, respectively
- Does not show any addictive or dependency in patients because it does not, nor do any of its metabolites, bind to any large ligand group receptors

Antidepressants/Antipsychotics

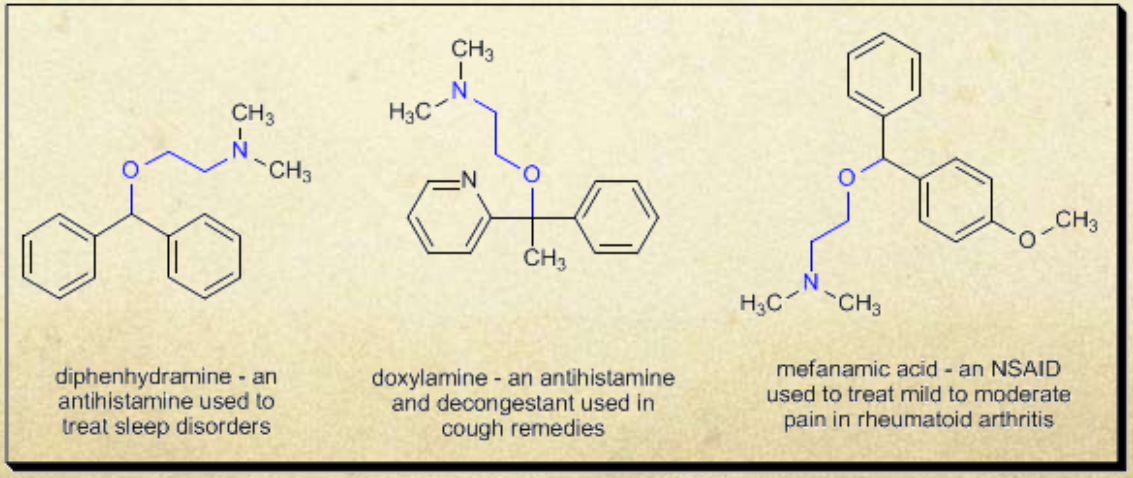
- Some physicians prefer this mode of treatment over benzodiazepines because of the far less potential for dependency
- Can produce anticholinergic effects if used too long:
  - Constipation
  - Weight Gain
- This is mostly used in patients who suffer from comorbid insomnia as a result from depression

Non-Prescription Supplements

- There are certain different non-prescription supplements that are also used an thought to be effective
- These include:
  - Antihistamines
  - Melatonin

Antihistamines

- Used because many people will experience sleep inducing side effects from this kind of medicine
- Typically in patients with acute insomnia who need a “quick fix” for a restless night here and there
- Tolerance can and most often will be gained if used too much



Melatonin

- Naturally produced hormone in the pineal gland
- This hormone keeps the circadian rhythm
- There has not been a minimum dose established
- Not shown to be necessarily effective

Future Treatments

- Most future treatments have to do with other stimulations of the GABA receptor
- There are also trials being done to assess the efficacy of the 5-HT receptor in treating insomnia
  - Different agonists have shown to improve sleep onset and sleep maintenance
- Many other Melatonin Receptor Agonists are also being researched to go alongside Ramelteon in this class of drug

Restless Legs Syndrome

Diagnostic Features

- A sensorimotor, neurological sleep disorder characterized by a desire to move the legs o arms, associated with uncomfortable sensations.
  - Described as creeping, crawling, tingling, burning, itching
- Symptoms are worst at rest
- Diagnostic marker : polysomnography → increased latency to sleep, higher arousal index

Possible Causes

- Iron deficiency anaemia

  43% of patients with iron deficiency may have RLS

- Studies have shown reduced CSF ferritin and raised transferrin levels in idiopathic RLS, suggesting a low brain iron content (Earley *et al.* 2000)

- Using MRIs in five RLS patients, it was reported that iron concentration was significantly lower in the putamen and substantia nigra

- There is some evidence to suggest that serum iron levels have a drop up to 50% at night when symptoms are most obvious (Garcia-Borreguero *et al.* 2002)

Possible Causes

- During pregnancy, RLS has been reported in 11-27% of women, usually during the third trimester (Goodman *et al.* 1988)
- However, RLS often resolves following delivery
- 20-57% of renal dialysis patients have RLS
- May also be associated with hypothyroidism and diabetes mellitus.
- RLS has also been reported in up to 25% of patients with rheumatoid arthritis and Sjogren's syndrome

Pathophysiology

- The underlying cause of RLS during sleep is not known, although the most likely would be central dopaminergic or opioid dysfunction
- The dysfunction of the dopaminergic and/or dopamine linked premotor circuits and the hypothalamic A11 dopamine cells which converge and descend on the spinal flexor reflexes, disinhibit as a result
- The final common pathway is influenced by other supraspinal influences such as the reticulospinal, opioid, and monoamine pathways.

Diagnosis

Restless Legs Syndrome

Diagnostic Criteria — 333.94 (G25.81)

A. An urge to move the legs, usually accompanied by or in response to uncomfortable and unpleasant sensations in the legs, characterized by all of the following:
   1. The urge to move the legs begins or worsens during periods of rest or inactivity.
   2. The urge to move the legs is partially or totally relieved by movement.
   3. The urge to move the legs is worse in the evening or at night than during the day, or occurs only in the evening or at night.

B. The symptoms in Criterion A occur at least three times per week and have persisted for at least 3 months.

C. The symptoms in Criterion A are accompanied by significant distress or impairment in social, occupational, educational, academic, behavioral, or other important areas of functioning.

D. The symptoms in Criterion A are not attributable to another mental disorder or medical condition (e.g., arthritis, leg edema, peripheral ischemia, leg cramps) and are not better explained by a behavioral condition (e.g., positional discomfort, habitual foot tapping).

E. The symptoms are not attributable to the physiological effects of a drug of abuse or medication (e.g., akathisia).

Treatment for RLS

- In many patients simply giving advice on sleep hygiene and avoidance of stimulants or aggravating drugs at night is enough
- In iron deficient patients, iron supplements should be tried first
- Activities such as: walking and stretching, hot or cold bath, relaxation exercises, engaging in discussion or activities during sitting, or massaging the limbs may help during an attack

Treatment for RLS

- Levodopa has been suggested to reduce the effects consistently, but there are adverse side effects
- Opiates such as oxycodone and propoxyphene have been shown to diminish effects

Hypersomnolence Disorder

Diagnostic Features

- Sleeping too much, as well as being drowsy at times when one should be alert
- Characteristics:
  - Excessive quantity of sleep (e.g., extended nocturnal sleep or involuntary daytime sleep),
  - Deteriorated quality of wakefulness (i.e., sleep propensity during wakefulness as shown by difficulty awakening or inability to remain awake when required),
  - Sleep inertia (i.e., a period of impaired performance and reduced vigilance following awakening from the regular sleep episode or from a nap
- Diagnostic markers : nocturnal polysomnography → prolonged sleep duration, shortened sleep latency

Diagnosis

Hypersomnolence Disorder

Diagnostic Criteria — 780.54 (G47.10)

A. Self-reported excessive sleepiness (hypersomnolence) despite a main sleep period lasting at least 7 hours, with at least one of the following symptoms:
   1. Recurrent periods of sleep or lapses into sleep within the same day.
   2. A prolonged main sleep episode of more than 9 hours per day that is nonrestorative (i.e., unrefreshing).
   3. Difficulty being fully awake after abrupt awakening.

B. The hypersomnolence occurs at least three times per week, for at least 3 months.

C. The hypersomnolence is accompanied by significant distress or impairment in cognitive, social, occupational, or other important areas of functioning.

D. The hypersomnolence is not better explained by and does not occur exclusively during the course of another sleep disorder (e.g., narcolepsy, breathing-related sleep disorder, circadian rhythm sleep-wake disorder, or a parasomnia).

E. The hypersomnolence is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication).

F. Coexisting mental and medical disorders do not adequately explain the predominant complaint of hypersomnolence.

Diagnosis

Specify if:

With mental disorder, including substance use disorders

With medical condition

With another sleep disorder

Coding note: The code 780.54 (G47.10) applies to all three specifiers. Code also the relevant associated mental disorder, medical condition, or other sleep disorder immediately after the code for hypersomnolence disorder in order to indicate the association.

Specify if:

Acute: Duration of less than 1 month.

Subacute: Duration of 1–3 months.

Persistent: Duration of more than 3 months.

Specify current severity:

Specify severity based on degree of difficulty maintaining daytime alertness as manifested by the occurrence of multiple attacks of irresistible sleepiness within any given day occurring, for example, while sedentary, driving, visiting with friends, or working.

Mild: Difficulty maintaining daytime alertness 1–2 days/week.

Moderate: Difficulty maintaining daytime alertness 3–4 days/week.

Severe: Difficulty maintaining daytime alertness 5–7 days/week.

Treatment

- Exercise
- Caffeine pills
- Sleep hygiene

Narcolepsy

Diagnostic Features

- Syndrome of abnormal sleep tendencies → excessive daytime sleepiness
- Disturbed nocturnal sleeo
- REM abnormalities
  - Sleep onset REM periods
  - Dissociated REM sleep inhibitory processes, cataplexy, sleep paralysis, hypnagogic hallucinations
- Onset usually 15-20 years old
- Familial risk → 1-2%

Diagnostic Markers

- Polysomnography
- Sleep diary
- Hypocretin in cerebral spinal fluid → dramatic loss in brains & hypothalamus

Diagnosis

Narcolepsy

Diagnostic Criteria

A. Recurrent periods of an irrepressible need to sleep, lapsing into sleep, or napping occurring within the same day. These must have been occurring at least three times per week over the past 3 months.

B. The presence of at least one of the following:

1. Episodes of cataplexy, defined as either (a) or (b), occurring at least a few times per month:

   a. In individuals with long-standing disease, brief (seconds to minutes) episodes of sudden bilateral loss of muscle tone with maintained consciousness that are precipitated by laughter or joking.

   b. In children or in individuals within 6 months of onset, spontaneous grimaces or jaw-opening episodes with tongue thrusting or a global hypotonia, without any obvious emotional triggers.

2. Hypocretin deficiency, as measured using cerebrospinal fluid (CSF) hypocretin-1 immunoreactivity values (less than or equal to one-third of values obtained in healthy subjects tested using the same assay, or less than or equal to 110 pg/mL). Low CSF levels of hypocretin-1 must not be observed in the context of acute brain injury, inflammation, or infection.

Diagnosis

3. Nocturnal sleep polysomnography showing rapid eye movement (REM) sleep latency less than or equal to 15 minutes, or a multiple sleep latency test showing a mean sleep latency less than or equal to 8 minutes and two or more sleep-onset REM periods.

Specify whether:

347.00 (G47.419) Narcolepsy without cataplexy but with hypocretin deficiency: Criterion B requirements of low CSF hypocretin-1 levels and positive polysomnography/multiple sleep latency test are met, but no cataplexy is present (Criterion B1 not met).

347.01 (G47.411) Narcolepsy with cataplexy but without hypocretin deficiency: In this rare subtype (less than 5% of narcolepsy cases), Criterion B requirements of cataplexy and positive polysomnography/multiple sleep latency test are met, but CSF hypocretin-1 levels are normal (Criterion B2 not met).

347.00 (G47.419) Autosomal dominant cerebellar ataxia, deafness, and narcolepsy: This subtype is caused by exon 21 DNA (cytosine-5)-methyltransferase-1 mutations and is characterized by late-onset (age 30–40 years) narcolepsy (with low or intermediate CSF hypocretin-1 levels), deafness, cerebellar ataxia, and eventually dementia.

347.00 (G47.419) Autosomal dominant narcolepsy, obesity, and type 2 diabetes: Narcolepsy, obesity, and type 2 diabetes and low CSF hypocretin-1 levels have been described in rare cases and are associated with a mutation in the myelin oligodendrocyte glycoprotein gene.

347.10 (G47.429) Narcolepsy secondary to another medical condition: This subtype is for narcolepsy that develops secondary to medical conditions that cause infectious (e.g., Whipple's disease, sarcoidosis), traumatic, or tumoral destruction of hypocretin neurons.

Diagnosis

Specify current severity:

Mild: Infrequent cataplexy (less than once per week), need for naps only once or twice per day, and less disturbed nocturnal sleep.

Moderate: Cataplexy once daily or every few days, disturbed nocturnal sleep, and need for multiple naps daily.

Severe: Drug-resistant cataplexy with multiple attacks daily, nearly constant sleepiness, and disturbed nocturnal sleep (i.e., movements, insomnia, and vivid dreaming).

Treatment of Narcolepsy

Pharmacologic treatments

- Excessive daytime sleepiness
- Cataplexy REM related symptoms

Behavioral approaches

Treatment of Narcolepsy

Excessive daytime sleepiness

- Modafinil
- Methylphenidate
- Dextroamphetamine
- Gammahydroxybutyrate (Xyrem)

Treatment of Excessive Sleepiness

Modafinil → eugeroic

- Histaminergic effect along with inhibiting dopamine uptake
- Relative lack of side effects
- No blood pressure effects
- Not addictive

Treatment of Excessive Sleepiness

Methylphenidate

- Wake promoting effect is secondary to dopamine release stimulation and dopamine reuptake inhibition

- Compounds selective for dopaminergic transmission have no effect on cataplexy

Treatment of Excessive Sleepiness

Amphetamines

- Will have joint dopaminergic and adrenergic effects and have cataplectic properties at high doses
- Abuse and dose escalation can occur

Treatment of Cataplexy

Tricyclic Antidepressants → Cholinergic, histaminergic and alpha adrenergic blocking properties

- Imipramine
- Protripyline
- Desipramine

SSRI → Monoamine uptake inhibition

- Fluoxetine

Gammahydroxybutyrate (Xyrem) → sedative anesthetic compound, increasing slow wave and to lesser extent REM sleep, raising brain content of dopamine

Treatment of Narcolepsy

Behavioral approaches

- Scheduled naps
- Regular sleep wake schedule
- Avoidance of frequent time zone changes
- Good sleep hygiene

Breathing-Related Sleep Disorders

- Obstructive Sleep Apnea Hypopnea
- Central Sleep Apnea
- Sleep-related Hypoventilation

Diagnostic Features

- Breathing-Related Sleep Disorders
  - Sleepiness during the day and/or disrupted sleep at night
  - Sleep apnea – Restricted air flow and/or brief cessations of breathing

- Subtypes of Sleep Apnea
  - Obstructive sleep apnea (OSA) – Airflow stops, but respiratory system works
  - Central sleep apnea (CSA) – Respiratory systems stops for brief periods

- Epidemiology
  - More common in males, occurs in 1-2% of population

- Associated Features
  - Persons are usually minimally aware of apnea problem
  - Often snore, sweat during sleep, wake frequently, and have morning headaches
  - May experience episodes of falling asleep during the day

Diagnosis

Obstructive Sleep Apnea Hypopnea

Diagnostic Criteria — 327.23 (G47.33)

A. Either (1) or (2):

1. Evidence by polysomnography of at least five obstructive apneas or hypopneas per hour of sleep and either of the following sleep symptoms:
   a. Nocturnal breathing disturbances: snoring, snorting/gasping, or breathing pauses during sleep.
   b. Daytime sleepiness, fatigue, or unrefreshing sleep despite sufficient opportunities to sleep that is not better explained by another mental disorder (including a sleep disorder) and is not attributable to another medical condition.
2. Evidence by polysomnography of 15 or more obstructive apneas and/or hypopneas per hour of sleep regardless of accompanying symptoms.

Specify current severity:

Mild: Apnea hypopnea index is less than 15.

Moderate: Apnea hypopnea index is 15–30.

Severe: Apnea hypopnea index is greater than 30.

Diagnosis

Central Sleep Apnea

Diagnostic Criteria

A. Evidence by polysomnography of five or more central apneas per hour of sleep.
B. The disorder is not better explained by another current sleep disorder.

Specify whether:

327.21 (G47.31) Idiopathic central sleep apnea: Characterized by repeated episodes of apneas and hypopneas during sleep caused by variability in respiratory effort but without evidence of airway obstruction.

786.04 (R06.3) Cheyne-Stokes breathing: A pattern of periodic crescendo-decrescendo variation in tidal volume that results in central apneas and hypopneas at a frequency of at least five events per hour, accompanied by frequent arousal.

780.57 (G47.37) Central sleep apnea comorbid with opioid use: The pathogenesis of this subtype is attributed to the effects of opioids on the respiratory rhythm generators in the medulla as well as the differential effects on hypoxic versus hypercapnic respiratory drive.

Coding note (for 780.57 [G47.37] code only): When an opioid use disorder is present, first code the opioid use disorder: 305.50 (F11.10) mild opioid use disorder or 304.00 (F11.20) moderate or severe opioid use disorder; then code 780.57 (G47.37) central sleep apnea comorbid with opioid use. When an opioid use disorder is not present (e.g., after a one-time heavy use of the substance), code only 780.57 (G47.37) central sleep apnea comorbid with opioid use.

Note: See the section "Diagnostic Features" in text.

Specify current severity:

Severity of central sleep apnea is graded according to the frequency of the breathing disturbances as well as the extent of associated oxygen desaturation and sleep fragmentation that occur as a consequence of repetitive respiratory disturbances.

Diagnosis

Sleep-Related Hypoventilation

Diagnostic Criteria

A. Polysomnograpy demonstrates episodes of decreased respiration associated with elevated CO_2 levels. (**Note:** In the absence of objective measurement of CO_2, persistent low levels of hemoglobin oxygen saturation unassociated with apneic/hypopneic events may indicate hypoventilation.)

B. The disturbance is not better explained by another current sleep disorder.

Specify whether:

327.24 (G47.34) Idiopathic hypoventilation: This subtype is not attributable to any readily identified condition.

327.25 (G47.35) Congenital central alveolar hypoventilation: This subtype is a rare congenital disorder in which the individual typically presents in the perinatal period with shallow breathing, or cyanosis and apnea during sleep.

327.26 (G47.36) Comorbid sleep-related hypoventilation: This subtype occurs as a consequence of a medical condition, such as a pulmonary disorder (e.g., interstitial lung disease, chronic obstructive pulmonary disease) or a neuromuscular or chest wall disorder (e.g., muscular dystrophies, postpolio syndrome, cervical spinal cord injury, kyphoscoliosis), or medications (e.g., benzodiazepines, opiates). It also occurs with obesity (obesity hypoventilation disorder), where it reflects a combination of increased work of breathing due to reduced chest wall compliance and ventilation-perfusion mismatch and variably reduced ventilatory drive. Such individuals usually are characterized by body mass index of greater than 30 and hypercapnia during wakefulness (with a pCO_2 of greater than 45), without other evidence of hypoventilation.

Specify current severity:

Severity is graded according to the degree of hypoxemia and hypercarbia present during sleep and evidence of end organ impairment due to these abnormalities (e.g., right-sided heart failure). The presence of blood gas abnormalities during wakefulness is an indicator of greater severity.

Treatment

- In mild cases: weight loss, sleeping on one's side, and avoiding hypnotics and alcohol

  (To sleep on side, a tennis ball can be sewn into back of client's sleep wear)
- In more serious cases: a machine that provides continuous positive airway pressure
- Surgery: Few benefits

Circadian Rhythm Sleep-Wake Disorders

Diagnostic Features

- Circadian Rhythm Disorders
  - Disturbed sleep (i.e., either insomnia or excessive sleepiness during the day)
  - Problem is due to brain's inability to synchronize day and night
- Nature of Circadian Rhythms and Body's Biological Clock
  - Circadian Rhythms – Do not follow a 24 hour clock
  - Suprachiasmatic nucleus – The brain's biological clock, stimulates melatonin
- Types of Circadian Rhythm Disorders
  - Jet lag type – Sleep problems related to crossing time zones
  - Shift work type – Sleep problems related to changing work schedules

Diagnosis

Circadian Rhythm Sleep-Wake Disorders

Diagnostic Criteria

A. A persistent or recurrent pattern of sleep disruption that is primarily due to an alteration of the circadian system or to a misalignment between the endogenous circadian rhythm and the sleep–wake schedule required by an individual's physical environment or social or professional schedule.

B. The sleep disruption leads to excessive sleepiness or insomnia, or both.

C. The sleep disturbance causes clinically significant distress or impairment in social, occupational, and other important areas of functioning.

Coding note: For ICD-9-CM, code **307.45** for all subtypes. For ICD-10-CM, code is based on subtype.

Specify whether:

307.45 (G47.21) Delayed sleep phase type: A pattern of delayed sleep onset and awakening times, with an inability to fall asleep and awaken at a desired or conventionally acceptable earlier time.

Specify if:

Familial: A family history of delayed sleep phase is present.

Specify if:

Overlapping with non-24-hour sleep-wake type: Delayed sleep phase type may overlap with another circadian rhythm sleep-wake disorder, non-24-hour sleep-wake type.

307.45 (G47.22) Advanced sleep phase type: A pattern of advanced sleep onset and awakening times, with an inability to remain awake or asleep until the desired or conventionally acceptable later sleep or wake times.

Specify if:

Familial: A family history of advanced sleep phase is present.

307.45 (G47.23) Irregular sleep-wake type: A temporally disorganized sleep-wake pattern, such that the timing of sleep and wake periods is variable throughout the 24-hour period.

Diagnosis

307.45 (G47.24) Non-24-hour sleep-wake type: A pattern of sleep-wake cycles that is not synchronized to the 24-hour environment, with a consistent daily drift (usually to later and later times) of sleep onset and wake times.

307.45 (G47.26) Shift work type: Insomnia during the major sleep period and/or excessive sleepiness (including inadvertent sleep) during the major awake period associated with a shift work schedule (i.e., requiring unconventional work hours).

307.45 (G47.20) Unspecified type

Specify if:

Episodic: Symptoms last at least 1 month but less than 3 months.

Persistent: Symptoms last 3 months or longer.

Recurrent: Two or more episodes occur within the space of 1 year.

Treatment

- Phase delays – Moving bedtime later (best approach)
- Phase advances – Moving bedtime earlier (more difficult)
- Use of very bright light – Trick the brain's biological clock

Parasomnias

The Parasomnias: Nature and General Overview

- Nature of Parasomnias
  - The problem is not with sleep itself
  - Problem is abnormal events during sleep, or shortly after waking
- Two Classes of Parasomnias
  - Those that occur during REM (i.e., dream) sleep
    - nightmare disorder
  - Those that occur during non-REM (i.e., non-dream) sleep
    - sleep terror
    - sleep-walking

The Parasomnias: Nature and General Overview

- Nightmare Disorder
  - Occurs during REM sleep
  - Involves distressful and disturbing dreams
  - Such dreams interfere with daily life functioning and interrupt sleep
- Facts and Associated Features
  - Dreams often awaken the sleeper
  - Problem is more common in children than adults

Diagnosis

Nightmare Disorder

Diagnostic Criteria — 307.47 (F51.5)

A. Repeated occurrences of extended, extremely dysphoric, and well-remembered dreams that usually involve efforts to avoid threats to survival, security, or physical integrity and that generally occur during the second half of the major sleep episode.

B. On awakening from the dysphoric dreams, the individual rapidly becomes oriented and alert.

C. The sleep disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The nightmare symptoms are not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication).

E. Coexisting mental and medical disorders do not adequately explain the predominant complaint of dysphoric dreams.

Specify if:

During sleep onset

Specify if:

With associated non–sleep disorder, including substance use disorders
With associated other medical condition
With associated other sleep disorder

Coding note: The code 307.47 (F51.5) applies to all three specifiers. Code also the relevant associated mental disorder, medical condition, or other sleep disorder immediately after the code for nightmare disorder in order to indicate the association.

Specify if:

Acute: Duration of period of nightmares is 1 month or less.
Subacute: Duration of period of nightmares is greater than 1 month but less than 6 months.
Persistent: Duration of period of nightmares is 6 months or greater.

Specify current severity:

Severity can be rated by the frequency with which the nightmares occur:

Mild: Less than one episode per week on average.
Moderate: One or more episodes per week but less than nightly.
Severe: Episodes nightly.

The Parasomnias: Nature and General Overview

- Sleep Terror Disorder
  - Involves recurrent episodes of panic-like symptoms
  - Occurs during non-REM sleep
- Facts and Associated Features
  - Problem is more common in children than adults
  - Often noted by a piercing scream
  - Child cannot be easily awakened during the episode and has little memory of it
- Treatment
  - Often involves a wait-and-see posture
  - Antidepressants (i.e., imipramine) or benzodiazepines for severe cases
  - Scheduled awakenings prior to the sleep terror can eliminate the problem

The Parasomnias: Nature and General Overview

- Sleep Walking Disorder – Somnambulism
  - Occurs during non-REM sleep
  - Usually during first few hours of deep sleep
  - Person must leave the bed
- Facts and Associated Features
  - Difficult, but not dangerous, to wake someone during the episode
  - Problem is more common in children than adults
  - Problem usually resolves on its own without treatment
  - Seems to run in families
- Related Conditions
  - Nocturnal eating syndrome – Person eats while asleep

Diagnosis

Non–Rapid Eye Movement Sleep Arousal Disorders

Diagnostic Criteria

A. Recurrent episodes of incomplete awakening from sleep, usually occurring during the first third of the major sleep episode, accompanied by either one of the following:
   1. **Sleepwalking:** Repeated episodes of rising from bed during sleep and walking about. While sleepwalking, the individual has a blank, staring face; is relatively unresponsive to the efforts of others to communicate with him or her; and can be awakened only with great difficulty.
   2. **Sleep terrors:** Recurrent episodes of abrupt terror arousals from sleep, usually beginning with a panicky scream. There is intense fear and signs of autonomic arousal, such as mydriasis, tachycardia, rapid breathing, and sweating, during each episode. There is relative unresponsiveness to efforts of others to comfort the individual during the episodes.

B. No or little (e.g., only a single visual scene) dream imagery is recalled.
C. Amnesia for the episodes is present.
D. The episodes cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
E. The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication).
F. Coexisting mental and medical disorders do not explain the episodes of sleepwalking or sleep terrors.

Coding note: For ICD-9-CM, code **307.46** for all subtypes. For ICD-10-CM, code is based on subtype.

Specify whether:

307.46 (F51.3) Sleepwalking type

Specify if:

With sleep-related eating

With sleep-related sexual behavior (sexsomnia)

307.46 (F51.4) Sleep terror type

Diagnosis

Substance/Medication-Induced Sleep Disorder

Diagnostic Criteria

A. A prominent and severe disturbance in sleep.
B. There is evidence from the history, physical examination, or laboratory findings of both (1) and (2):

1. The symptoms in Criterion A developed during or soon after substance intoxication or after withdrawal from or exposure to a medication.
2. The involved substance/medication is capable of producing the symptoms in Criterion A.

C. The disturbance is not better explained by a sleep disorder that is not substance/medication-induced. Such evidence of an independent sleep disorder could include the following:

   The symptoms precede the onset of the substance/medication use; the symptoms persist for a substantial period of time (e.g., about 1 month) after the cessation of acute withdrawal or severe intoxication; or there is other evidence suggesting the existence of an independent non-substance/medication-induced sleep disorder (e.g., a history of recurrent non-substance/medication-related episodes).

D. The disturbance does not occur exclusively during the course of a delirium.
E. The disturbance causes clinically significant distress or impairment in social, occupa-

Diagnosis

Note: This diagnosis should be made instead of a diagnosis of substance intoxication or substance withdrawal only when the symptoms in Criterion A predominate in the clinical picture and when they are sufficiently severe to warrant clinical attention.

Coding note: The ICD-9-CM and ICD-10-CM codes for the [specific substance/medication]-induced sleep disorders are indicated in the table below. Note that the ICD-10-CM code depends on whether or not there is a comorbid substance use disorder present for the same class of substance. If a mild substance use disorder is comorbid with the substance-induced sleep disorder, the 4th position character is "1," and the clinician should record "mild [substance] use disorder" before the substance-induced sleep disorder (e.g., "mild cocaine use disorder with cocaine-induced sleep disorder"). If a moderate or severe substance use disorder is comorbid with the substance-induced sleep disorder, the 4th position character is "2," and the clinician should record "moderate [substance] use disorder" or "severe [substance] use disorder," depending on the severity of the comorbid substance use disorder. If there is no comorbid substance use disorder (e.g., after a one-time heavy use of the substance), then the 4th position character is "9," and the clinician should record only the substance-induced sleep disorder. A moderate or severe tobacco use disorder is required in order to code a tobacco-induced sleep disorder; it is not permissible to code a comorbid mild tobacco use disorder or no tobacco use disorder with a tobacco-induced sleep disorder.

Specify whether:

Insomnia type: Characterized by difficulty falling asleep or maintaining sleep, frequent nocturnal awakenings, or nonrestorative sleep.

Daytime sleepiness type: Characterized by predominant complaint of excessive sleepiness/fatigue during waking hours or, less commonly, a long sleep period.

Parasomnia type: Characterized by abnormal behavioral events during sleep.

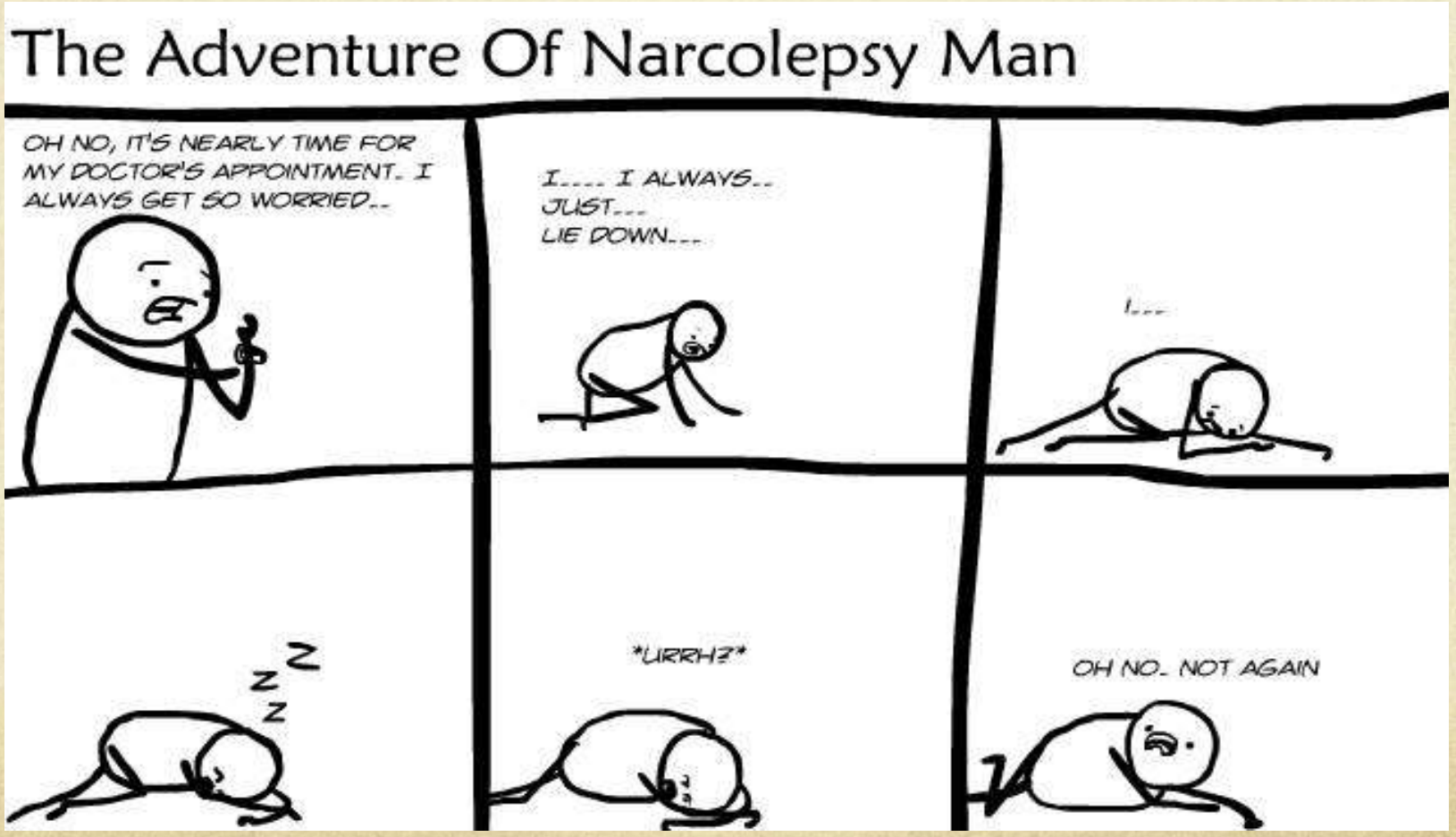
Mixed type: Characterized by a substance/medication-induced sleep problem characterized by multiple types of sleep symptoms, but no symptom clearly predominates.

Specify if (see Table 1 in the chapter "Substance-Related and Addictive Disorders" for diagnoses associated with substance class):

With onset during intoxication: This specifier should be used if criteria are met for intoxication with the substance/medication and symptoms developed during the intoxication period.

With onset during discontinuation/withdrawal: This specifier should be used if criteria are met for discontinuation/withdrawal from the substance/medication and symptoms developed during, or shortly after, discontinuation of the substance/medication.

The End


The Adventure Of Narcolepsy Man
OH NO, IT'S NEARLY TIME FOR MY DOCTOR'S APPOINTMENT. I ALWAYS GET SO WORRIED..
I.... I ALWAYS.. JUST... LIE DOWN...
I...
Z Z Z
URRH?
OH NO. NOT AGAIN