

SD1: Medical Standards for Safety Critical Workers with Sleep Disorders: Definitions and Diagnostic Tests



CLASSIFICATIONS OF SLEEP DISORDERS

1. Sleep related breathing disorders
 - a. Obstructive sleep apnea (OSA)
 - b. Central sleep apnea syndrome (CSAS)
 - c. Mixed central and obstructive sleep apnea
2. Narcolepsy and idiopathic hypersomnia
3. Insomnia disorders
4. Parasomnias
5. Periodic limb movement sleep disorders
6. Circadian rhythm sleep disorders and other sleep disorders

SLEEP APNEA – DEFINITIONS

1. **Apnea** – episode of abnormal breathing with cessation of airflow from upper airways to the lungs lasting at least 10 seconds.
 - a. Obstructive apnea – if during the apnea there is an effort to breathe (suggesting the airway is obstructed, typically from excess tissue obstructing airflow in the pharynx when asleep).
 - b. Central apnea – if during the apnea there is no effort to breathe (suggesting there is a central nervous system defect causing decreased breathing).
2. **Hypopnea** – episode of abnormal breathing with at least 30% reduction, but no cessation, of airflow from upper airways to the lungs lasting at least 10 seconds.

INDICES OF SEVERITY OF SLEEP APNEA

1. **Apnea Hypopnea Index (AHI)** – the average number of apneas and hypopneas per hour during a sleep study. This is used to diagnose and assess severity of abnormal breathing during sleep from obstructive or central sleep apnea.
2. **Respiratory-Effort Related Arousal (RERA)** – sequence of breaths with increasing respiratory effort during sleep, but with low airflow, that result in arousal from sleep and resumption of normal breathing.
3. **Respiratory Disturbance Index (RDI)** – the average number of apneas, hypopneas, and RERAs per hour during a sleep study. Like AHI, this is used to diagnose and assess severity of sleep apneas.

DIAGNOSTIC TESTS FOR SLEEP DISORDERS

1. **Sleep study** – for in these medical standards is an objective diagnostic test used to evaluate sleep disorders, including the tests below.
2. **Polysomnogram (PSG)** – a study to diagnose and assess severity of sleep disorders, and to evaluate effectiveness of treatment. A PSG evaluates sleep patterns while the person is attached to sensors that monitor brain waves, cardiovascular status, breathing, and movement. A PSG is done overnight in a clinical sleep center under the supervision of a sleep medicine physician.
3. **Home sleep apnea test (HSAT)** – an unattended sleep study used to diagnose sleep apnea. The test uses a portable test device that measures some but not all parameters of a PSG; test interpretation is often done remotely. HSAT cannot assess sleep quality or sleep stage and cannot be used to titrate PAP therapy.
4. **Multiple sleep latency test (MSLT)** – assesses the tendency to fall asleep in the absence of alerting factors; the test is based on an assumption that physiological sleepiness decreases sleep latency, which is measured by this test.
5. **Maintenance of wakefulness test (MWT)** – assesses the person's ability to stay awake in a setting with no external alerters. This test is done while sitting in a chair in a dimly lit and quiet room.

THOROUGH EVALUATION BY A SLEEP MEDICINE PHYSICIAN

1. **Sleep medicine physician** – for these medical standards is a physician who is board-certified by the American Board of Sleep Medicine or has equivalent specialty training and qualifications.
2. **Sleep center** – in these medical standards is a medical facility that can provide a full spectrum of sleep medicine evaluations, including in-center overnight PSGs and other sleep studies, under the supervision of a sleep medicine physician.
3. **Thorough evaluation by a sleep medicine physician** – for in these medical standards means an in-person evaluation by a sleep medicine physician, with appropriate diagnostic tests done in a sleep center with a detailed report of the evaluation.
4. **Annual or other periodic evaluations by a sleep medicine physician** – for in these medical standards mean in-person clinical evaluations by a sleep medicine physician, with diagnostic testing as appropriate. For a person treated with PAP therapy for OSA, this evaluation should be at least annually and include a download of the PAP log for the prior 3 months with interpretation by a sleep medicine physician in a clinic note.

MEDICAL RECORDS REQUIRED BY HMS – FOR EMPLOYEES WITH SLEEP DISORDERS

1. Employees having fitness-for-duty evaluations and/or medical monitoring for sleep disorders should send HMS the following medical records:
 - a. All clinical notes and test results of sleep medicine physician evaluations; and
 - b. PAP logs/downloads (these should also be interpreted in clinical notes).

SD2: Medical Standards for Safety Critical Workers with Obstructive Sleep Apnea (OSA)



CLASSIFICATION AND DEFINITIONS

- Obstructive Sleep Apnea (OSA)** – sleep-disordered breathing caused by narrowing of the upper airway (pharynx) that obstructs airflow to the lungs; with frequent apneas and hypopneas. Symptoms may include excessive daytime sleepiness (EDS), fatigue, and impaired concentration. OSA severity based on PSG is: Mild OSA = AHI of 5.0 to 14.9; Moderate OSA = AHI of 15.0 to 29.9; Severe OSA = AHI of 30 or more.
- Positive Airway Pressure (PAP) therapy** – the primary treatment for OSA. Person wears a mask over the mouth and/or nose connected by tubing to a PAP machine providing positive airway pressure (PAP); this opens the collapsed airway during sleep allowing airflow to the lungs. There are several types of PAP.
- Adequate treatment of moderate or severe OSA** – for this medical standard requires all of the following:
 - Confirmation of PAP treatment effectiveness – defined here as PSG study showing that when PAP is adequately titrated, RDI is <10 and REM sleep is not continually interrupted by arousals/awakenings
 - Adequate PAP compliance – is defined as documentation based on a PAP machine download that the person used PAP at least 4 hours per night for 70% of nights for the time period assessed; and
 - Statement in a clinical note by sleep medicine physician that based on a recent in-clinic evaluation the person is compliant with PAP treatment, adequately treated for OSA, and has no EDS.

WORK RESTRICTIONS FOR SUDDEN INCAPACITATION RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
Possible OSA – with symptoms, medical history, or exam or test finding of possible sleep apnea, but no related accident/incident	Individually evaluated Sleep studies may be required
Suspected OSA – with accident, incident, or observation, which raises concern that excessive sleepiness poses safety risk for work	Ongoing work restrictions Until sleep medicine evaluation done
Confirmed mild OSA – with or without PAP therapy	Individually evaluated
Confirmed moderate or severe OSA – treated with PAP therapy – requires periodic evaluation by sleep medicine specialist as below: <ul style="list-style-type: none"> • 2 weeks after starting PAP – review of 2-week PAP log • 3 months after starting PAP – evaluation by sleep medicine physician with review 3-month PAP log • Annual and periodic medical monitoring for OSA – evaluation by sleep medicine physician; review prior 3-month PAP log • If significant change in health status; >10% weight gain; or new accident or incident, or other concern about work safety 	Minimum waiting period 2 weeks: after starting PAP therapy No work restrictions if PAP compliant, OSA adequately treated, and no EDS No work restrictions if PAP compliant, OSA adequately treated, and no EDS No work restrictions if PAP compliant, OSA adequately treated, and no EDS Ongoing work restrictions criteria for return to work individually determined
Confirmed moderate or severe OSA – treated with surgery	Individually evaluated based on PSG
Confirmed moderate or severe OSA – treated with dental appliance and/or medication (as the only treatments for OSA)	Ongoing work restrictions Unacceptable for safety critical work

WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

UPRR work restrictions for sudden incapacitation risk:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

- Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
- Employee must have a recent evaluation by a sleep medicine specialist with appropriate diagnostic assessment (as defined in these medical standards and clinical best practice).
- If after reviewing available information, HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, then HMS may remove the employee's work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee's existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. Employee must be evaluated by a sleep medicine specialist at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

SD3: Medical Standards for Safety Critical Workers with Narcolepsy and Idiopathic Hypersomnia



DEFINITIONS

- Narcolepsy** – a hypersomnia of central origin characterized by rapid onset of excessive daytime sleepiness (EDS) and sudden lapses into sleep, which occur even when the person has adequate sleep. Persons with narcolepsy may have cataplexy (sudden loss of muscle tone), sleep paralysis, or hypnagogic hallucinations (visual or auditory hallucination when falling asleep that may cause the person to jerk and be aroused from sleep). Narcolepsy is diagnosed with PSG and MSLT, and it is an inherited lifelong condition. There is no treatment that will reduce the risk for sudden incapacitation to an acceptable level for safety critical work.
- Idiopathic hypersomnia** – a hypersomnia of central origin disorder characterized by episodes of EDS that often lapse into sleep and difficulty awaking from sleep. Idiopathic hypersomnia is a chronic condition and the specific cause is not known. For a person with idiopathic hypersomnia there is no treatment that will reduce the risk for sudden incapacitation to an acceptable level for safety critical work.

WORK RESTRICTIONS FOR SUDDEN INCAPACITATION RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
<p>Suspected narcolepsy or other hypersomnia disorder If these central hypersomnia disorders are suspected due to symptoms or observations of EDS, falling asleep at inappropriate times, other narcolepsy symptoms, the need for stimulant medication to maintain wakefulness, or due to other reasons.</p>	<p>Ongoing work restrictions Until a thorough evaluation by a sleep medicine physician is done, including PSG and MSLT, and other tests as appropriate; then reassess.</p>
<p>Confirmed narcolepsy If narcolepsy is confirmed by a sleep medicine physician based on sleep studies. These same work restrictions apply to persons with confirmed Kleine-Levin syndrome, which is another inherited hypersomnia of central origin.</p>	<p>Permanent work restrictions Use of stimulant medications and/or other treatments is not sufficiently effective enough to permit safety critical work.</p>
<p>Confirmed idiopathic hypersomnia If idiopathic hypersomnia is confirmed by a sleep medicine physician based on sleep studies.</p>	<p>Ongoing work restrictions Use of stimulant medications and/or other treatments is not sufficiently effective enough to permit safety critical work.</p>

WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

UPRR work restrictions for sudden incapacitation risk:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).

Employees with these conditions require permanent work restrictions for sudden incapacitation risk:

- Employees who have confirmed narcolepsy or idiopathic hypersomnia are given permanent work restrictions for sudden incapacitation risk.
For persons with these conditions, there is no known treatment that is sufficiently effective to permit safety critical work.

SD4: Medical Standards for Safety Critical Workers with Other Sleep Disorders



DEFINITIONS

- Sleep-related breathing disorders of central origin** (and not obstructive sleep apnea – covered in table SD-2)
 - Central sleep apnea syndrome (CSAS) – a sleep-disordered breathing of central nervous system origin, with frequent apneas and hypopneas, but where the person makes no effort to breathe during these episodes and airway obstruction is not prominent.
 - Mixed sleep apnea – combined elements of CSAS and obstructive sleep apnea (OSA)
- Insomnia disorders** – conditions where person has difficulty falling asleep or staying asleep
- Parasomnias** – a group of sleep disorders that involve abnormal movements, behaviors, sensations, emotions, or dreams at various stages of sleep; these can include sleepwalking or sleep terrors.
- Periodic limb movement sleep disorders** – conditions characterized by movements of lower limbs during sleep; often with associated dysesthesias (abnormal or unpleasant sensations) or paresthesias (numbness or tingling) in the lower limbs. This category includes Restless Leg Syndrome.
- Circadian rhythm sleep disorders** – a group of conditions that affect the timing of falling sleep and of awakening, and which may result in insufficient sleep and fatigue
- Stimulant medications for sleep disorders** – includes amphetamines and any other drugs intended to treat a person’s sleep disorder, with a goal of increasing alertness and concentration, and preventing EDS

WORK RESTRICTIONS FOR SUDDEN INCAPACITATION RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
Suspected – central sleep apnea syndrome (CSAS) or mixed sleep apnea (not confirmed)	Individually evaluated Reassess after sleep evaluation done
Confirmed – central sleep apnea syndrome (CSAS) or mixed sleep apnea (based on sleep medicine evaluation)	Individually evaluated Depending on severity, may need permanent work restrictions
Insomnia disorders If suspected or confirmed by sleep medicine evaluation	Individually evaluated
Parasomnias If suspected or confirmed by sleep medicine evaluation	Individually evaluated
Periodic limb movement disorders If suspected or confirmed by sleep medicine evaluation	Individually evaluated
Circadian rhythm sleep disorders and other sleep disorders If suspected or confirmed by sleep medicine evaluation	Individually evaluated
Sleep disorders that require use of stimulant medication to prevent EDS and/or meet other treatment goals	Ongoing work restrictions Use of stimulant medication is not sufficiently effective to permit safety critical work

WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

UPRR work restrictions for sudden incapacitation risk:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

- Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
- Employee must have a recent evaluation by a sleep medicine specialist with appropriate diagnostic assessment (as defined in these medical standards and clinical best practice).
- If after reviewing available information, HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, then HMS may remove the employee’s work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee’s existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. Employee must be evaluated by a sleep medicine specialist at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.