

# Section 8

## Sleep disorders

### Alert box

If a physician believes that a patient is likely to be at risk for driving because of a symptomatic sleep disorder and the patient refuses investigation by a sleep study or refuses appropriate treatment, that patient should not drive any class of motor vehicle.

### 8.1 Overview

Somnolence (sleepiness), with its associated reduction in vigilance, is an important contributor to driver error and motor vehicle crashes. Somnolence can be due to lifestyle issues, a sleep disorder or both.

There are 8 categories of sleep disorders as outlined in the second edition of the *International Classification of Sleep Disorders*.<sup>\*</sup> These are: insomnias, sleep-related breathing disorders, hypersomnias of central origin, circadian rhythm sleep disorders, parasomnias, sleep-related movement disorders, unclassified disorders, and other sleep disorders.

The recommendations that follow relate primarily to obstructive sleep apnea and narcolepsy, the two sleep disorders for which there is a reasonably clear association between the disorder and the risk of a motor vehicle crash.

### 8.2 Assessment

Patients reporting excessive somnolence should be carefully questioned about the adequacy and regularity of their sleep–wake cycle, as attention to this may improve symptoms and reduce driving risk.

Risk factors for sleep-related crashes include

- holding multiple jobs
- working night shift
- nighttime driving (between midnight and 6 am)

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<sup>\*</sup>*International classification of sleep disorders, revised: diagnostic and coding manual, 2<sup>nd</sup> edition, 2005.* American Academy of Sleep Medicine. Available: [www.absm.org/PDF/ICSD.pdf](http://www.absm.org/PDF/ICSD.pdf)

- less than 6 hours of nighttime sleep
- long duration driving or driving after being awake more than 15 hours
- past history of drowsy driving
- daytime sleepiness
- recent (within a year) at-fault motor vehicle crash.

Patients with various sleep disorders may also have one or more of these risk factors and, as a result, have varying levels of sleepiness. This may partly explain observed differences in risk of operating a motor vehicle. The appropriateness of and need for medical intervention in the management of these disorders also varies.

Patients with excessive daytime somnolence should be questioned about the following risk factors for sleep apnea:

- chronic heavy snoring
- nocturnal snorting and gasping
- witnessed apnea
- uncontrolled hypertension
- significant cardiovascular disease
- morning headaches
- craniofacial abnormalities (e.g., macroglossia, retrognathia)
- large neck size ( $\geq 43$  cm [17 inches])
- obesity.

Males and patients over age 40 are also at increased risk of sleep apnea.

Patients with excessive somnolence and one or more risk factors for sleep apnea, or those with persistent sleepiness and a history consistent with another sleep disorder (e.g., narcolepsy), should be considered for assessment in a sleep laboratory, where such resources are available.

### **8.3 Obstructive sleep apnea**

Obstructive sleep apnea (OSA) is characterized by repetitive upper airway obstruction during sleep, leading to recurring episodes of hypoxemia and arousal from sleep, resulting in disturbed sleep patterns. The relative risk for motor vehicle crashes for patients with symptomatic OSA is about 2 to 3 times that of control groups. In severe cases of OSA, the risk of a motor vehicle crash may be increased as much as 10-fold. However, determining individual risk remains difficult due to individual variations in susceptibility to sleepiness, use of countermeasures or driving avoidance.

Treatment of OSA with continuous positive airway pressure (CPAP) or uvulopalatopharyngoplasty (UPPP) has been successful in reducing crash risk to control levels. Reassessment of patients using CPAP, with a compliance-metering device on the CPAP unit,

should be done 1–2 months after diagnosis. The effectiveness of UPPP is less clear and patients treated by this method may require re-evaluation by sleep study.

Some patients with mild cases of sleep apnea may be treated through behavioural modification (e.g., weight reduction, modifying sleeping position, eliminating alcohol and sedatives before sleep or through the use of oral appliances). These interventions may be sufficient, but patients require reassessment for efficacy of treatment before resumption of driving.

### ***Driving recommendations for patients with OSA***

The following recommendations should only be made by physicians familiar with the interpretation of sleep studies.

- Regardless of apnea severity, all patients with OSA are subject to sleep schedule irregularities and subsequent sleepiness. Because impairment from sleep apnea, sleep restriction and irregular sleep schedules may be interactive, all patients should be advised about the dangers of driving when drowsy.
- Patients with mild OSA without daytime somnolence who report no difficulty with driving are at low risk for motor vehicle crashes and should be safe to drive any type of motor vehicle.
- Patients with OSA, documented by a sleep study, who are compliant with CPAP or who have had successful UPPP treatment, should be safe to drive any type of motor vehicle.
- Patients with moderate to severe OSA, documented by sleep study, who are *not* compliant with treatment and are considered at increased risk for motor vehicle crashes by the treating physician, should not drive any type of motor vehicle.
- Patients with a high apnea-hypopnea index, especially if associated with right heart failure or excessive daytime somnolence, should be considered at high risk for motor vehicle crashes.
- Patients with OSA who are believed to be compliant with treatment but who are subsequently involved in a motor vehicle crash in which they were at fault should not drive for at least 1 month. During this period, their compliance with therapy must be reassessed. After the 1-month period, they may or may not drive depending on the results of the reassessment.

## **8.4 Narcolepsy**

Narcolepsy is characterized by recurrent lapses into sleep that are often sudden, irresistible and typically last 10–15 minutes. Narcolepsy may be accompanied by cataplexy (sudden bilateral loss of muscle tone) during wakefulness, sleep paralysis (generalized inability to move or to speak during the sleep–wake transition) and vivid hallucinations at sleep onset.

Although there is a clear association between crash risk and narcolepsy, this association is not as well studied as that between crash risk and OSA.

Up to 40% of people with narcolepsy may report sleep-related motor vehicle crashes. Their risk for crashes is about 4 times that of control groups. Patients with cataplexy and sleep paralysis are believed to be at greatest risk for crashes, based on the relative unpredictability of these symptoms. In one study of narcoleptic patients with cataplexy, 42% reported having experienced cataplexy while driving and 18% reported sleep paralysis while driving. There is little information on the effect of treatment on risk for crashes.

### ***Driving recommendations for narcoleptic patients***

- Patients with a diagnosis of narcolepsy supported by a sleep study and with uncontrolled episodes of cataplexy during the past 12 months (with or without treatment) should not drive any type of motor vehicle.
- Patients with a diagnosis of narcolepsy supported by a sleep study and with uncontrolled daytime sleep attacks or sleep paralysis in the past 12 months (with or without treatment) should not drive any type of motor vehicle.
- Generally, patients with narcolepsy should not drive commercial vehicles, as long distance driving can be difficult for these patients to manage without significant hypersomnolence. However, people with narcolepsy who are able to maintain a regular sleep–wake cycle may be able to drive commercial vehicles during the day, over short routes.

## **8.5 Other sleep disorders**

Although short- and long-term insomnia may be the most common category of sleep disorder, there are no data linking increased motor vehicle crashes with insomnia.

Circadian rhythm sleep disorders, which are related to sleep loss from disruption of the daily sleep cycle as seen with shift work or “jet lag” experienced with transmeridian flights, are common and might easily be associated with a large number of crashes.

However, there are again no clear data linking them with crashes.

Accordingly, physicians can only make general recommendations about the hazards of drowsy driving due to sleep disorders.