



## The Impact of Hypnotic Medications on Driving

By Matthew D. Krasowski and Jerrod Brown

Hypnotic medications, commonly known as sleeping pills, are widely used in the United States as prescription sleep aids. Three of the most widely prescribed sleeping pills are closely related medications (zolpidem/Ambien, zopiclone/Lunesta, and zaleplon/Sonata) often referred to as “Z-drugs” because of their generic names. Hypnotic medications have been linked to increased risk of motor vehicle accidents including crashes resulting in serious injury or death. In 2007, the U.S. Food and Drug Administration (FDA) issued a warning to physicians and the public about persons engaging in strange or potentially dangerous behaviors after taking prescription hypnotic medications. This was followed in 2013 by a specific FDA warning regarding zolpidem (the most widely prescribed of the hypnotic medications) and the risk of next-morning impairment of activities such as driving. Although recent attention has focused on the widely used Z-drugs, other classes of hypnotic agents (e.g., benzodiazepines) also carry risk of impairment. In light of these issues, medical, forensic, and law enforcement professionals should be aware of three key factors.

**1. Residual impact of hypnotic medications:** The effects of hypnotic medications often extend for eight hours or more. In the case of zolpidem, over half of an ingested dose may still be present after four hours. As such, product (package) inserts typically recommend sleeping at least four hours after taking a hypnotic medication dose. Some of the benzodiazepines used for treatment of anxiety (e.g., diazepam/Valium, clonazepam/Klonopin) have even longer duration of action than the Z-drugs. The concurrent use of other central nervous system depressants (especially alcohol) amplifies the effects of hypnotic medications.

**2. Association with motor vehicle accidents:** Despite the fact that the medication packaging for hypnotic medications includes warnings against driving motor vehicles and operating heavy machinery, patients may underestimate the effects of driving performance after use of these drugs. Impairments are often worse if medications are taken in the middle of the night. Forensic investigations have shown that

higher blood concentrations of hypnotic medications are associated with increased risk of motor vehicle deaths. Standard screening for drugs of abuse will usually detect benzodiazepines but will currently not detect the Z-drugs. Instead, more sophisticated laboratory analyses are required for the detection of Z-drugs. This shortcoming means that many cases of impaired driving due to Z-drugs are likely going unrecognized. To protect against this, law enforcement professionals should be aware of the possibility that hypnotic medications could contribute to impaired driving but may go undetected by standard drug screening tests.

**3. Hypnotic medications may be associated with bizarre behaviors:** Hypnotic medications have been associated with unusual behaviors that may impact driving. Zolpidem in particular has been linked to cases of sleep driving, which is a sleep disorder described as a variant of sleepwalking. Sleep driving occurs when an individual takes a hypnotic medication, falls asleep, and then arises to drive in a partially awake state. Unsurprisingly, sleep driving confers a high risk of motor vehicle accidents due to impairments in coordination and reaction time. Bizarre behaviors resulting from hypnotic medications are probably relatively uncommon, but many events likely do not get reported to public authorities. Unusual effects of hypnotic medications can get mistaken for mental illness (e.g., psychosis or mania) or acute intoxication from drugs of abuse.

In conclusion, it is important to consider hypnotic medication as a possible underlying factor in situations of impaired driving or motor vehicle accidents. Health providers and pharmacists should take a proactive role in alerting patients to the potential dangers of hypnotic medications, especially next-morning impairment. Ideally, the lowest effective dose of the hypnotic medication should be used. Family members should also be aware of the potential risks and assist with driving if possible.

## Biography

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