

Alcohol and Health

# Alcohol and Sleep



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## Introduction

Insufficient sleep can affect the quality of our lives. Regular loss of sleep can affect our health and safety, brain function, mood, and relationships with others. Scientists have found that not only do we need enough sleep, but we also need enough of the right kind of sleep.

Sleeping does much more than provide rest: it recharges both the mind and body. It allows us to repair physical and psychological damage and function well. People who regularly get enough good-quality sleep are likely to learn better, recall information better, be better protected from physical and mental illness, and live longer.

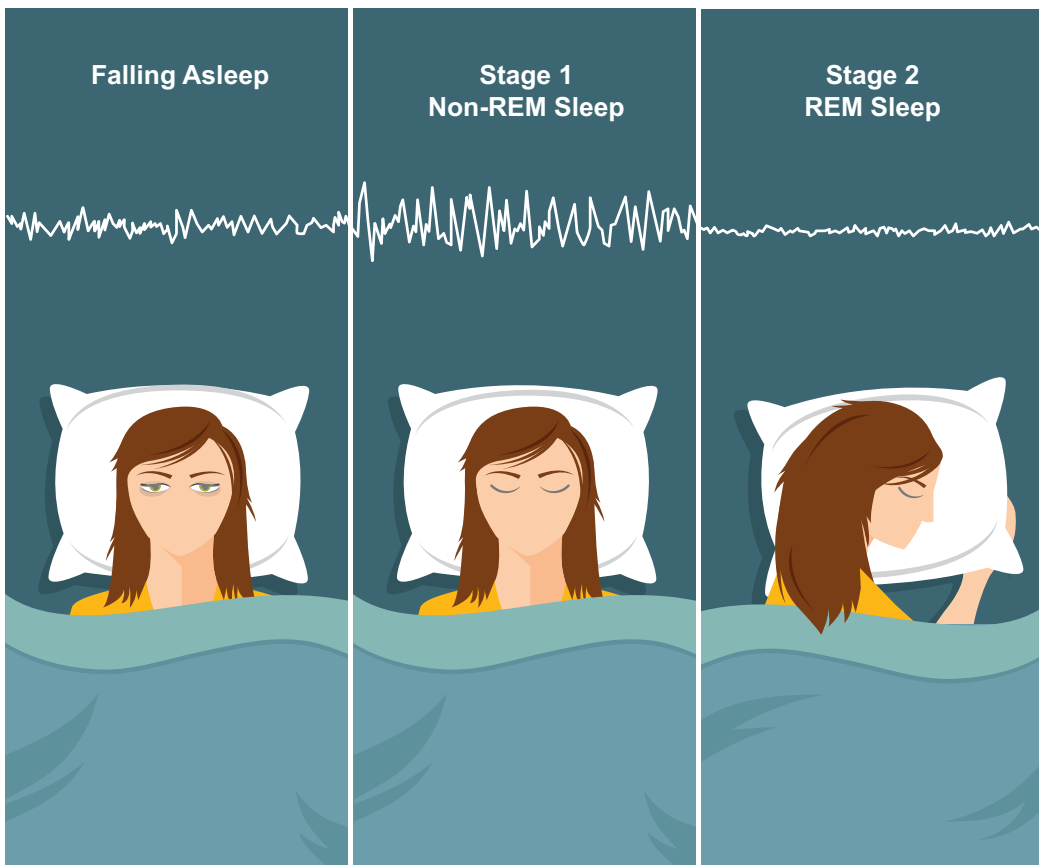
Drinking alcohol can change both the length and quality of a person's sleep. This resource will explore the relationship between alcohol and sleep.

## The Stages of Sleep

Sleep has two distinct stages. The first is non-rapid eye movement (non-REM) sleep, or slow-wave sleep, which includes periods of both light and deep sleep. Non-REM sleep is characterized by initial slower brain activity during which sleep is lighter, followed by deeper sleep. The deeper sleep is a restorative time when the body repairs physical damage. It has been proposed that during non-REM sleep, skin is repaired, bones are renewed, toxins are eliminated, and various hormones, which contribute to tissue repair and muscle building, are produced.

The second stage is REM sleep (also called paradoxical sleep). Periods of REM sleep occur approximately every 90 minutes for five to 30 minutes. REM sleep, and periods of dreaming, alternate with non-REM sleep. While REM sleep is deep sleep, it is also characterized by irregular breathing, rapid eye movements and brain activity similar to that observed when one is awake—hence the term “paradoxical.” Although several theories have been proposed to explain the function of REM sleep, its specific biological purposes are still not fully known.

Of our total sleeping hours, 75% to 80%—about six hours of an eight-hour night—is non-REM sleep. The remaining 20% is REM sleep.





## Alcohol and the Physiology of Sleep

Alcohol depresses the central nervous system, which affects sleep in a variety of ways.

It is often believed that alcohol promotes sleep, but the research as a whole shows that although alcohol is a sedative and may initially help people to fall asleep more quickly, overall it disturbs the sleep cycle, exacerbates certain sleep problems, and consequently creates negative repercussions during waking periods.

Studies looking at the effects of alcohol on sleep have found that alcohol reduces the time required to fall asleep (sleep onset latency), increases the amount of deep sleep, and reduces the amount of REM sleep. In addition, prolonged drinking can lead to tolerance of some of the effects of alcohol. For example, research has found that within three consecutive days of drinking, people develop a tolerance to the sedative and sleep-stage effects of alcohol.

### Falling Asleep

In general, alcohol helps people fall asleep more quickly regardless of the amount of alcohol consumed. Researchers have also found that the sedative effect of the alcohol lasts through the first part of the night. In fact, people who have consumed alcohol wake up less frequently and for shorter periods of time during the first hours of sleep.

However, while alcohol generally helps people fall asleep and not wake up during the first hours of sleep, it has a disruptive effect on the rest of the night, which is marked by more fragmented sleep and frequent waking. These effects are due to the metabolism of alcohol during the second part of the night.

## Non-REM Sleep

During the first part of the night, alcohol increases the amount of non-REM sleep, regardless of the amount of alcohol consumed. Over the whole night, however, the impact of alcohol on the amount of non-REM sleep is directly related to the amount of alcohol consumed. No clear trend has been observed among those who drink lightly, but among those consuming a moderate amount of alcohol; researchers observe a trend towards increased non-REM sleep. Larger amounts of alcohol significantly increase the amount of non-REM sleep.

## REM Sleep

There is a well-established link between alcohol and reduced REM sleep. When people drink lightly or moderately, studies show no change in the amount of REM sleep during the first part of the night. By contrast, people who drink heavily experience a significant reduction in REM sleep during the same period.

When the whole night is considered, it appears that both moderate and heavy drinking reduce the total percentage of REM sleep. This effect is not observed among people who drink lightly (less than two drinks), thus researchers have concluded that a reduction in REM sleep is related to the amount of alcohol consumed.

## Alcohol and Night Time Hormonal Function

A number of pituitary hormone secretions are at their maximum during sleep. This is particularly true for the human growth hormone, which is secreted by the pituitary gland and reaches a peak during non-REM sleep. However, studies show that when

people drink alcohol before sleeping, growth hormone secretions decrease, despite the fact that drinking causes an increase in non-REM sleep. In fact, researchers have observed that the more someone drinks, the less growth hormone is secreted.

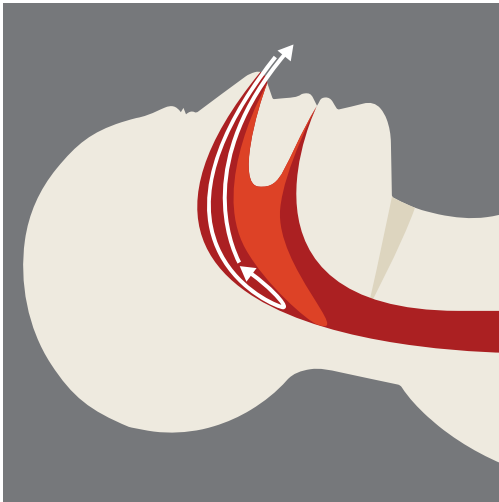
# Alcohol and Sleep Disorders

Drinking alcohol can exacerbate certain sleep disorders, notably obstructive sleep apnea and insomnia.

## Obstructive Sleep Apnea

Obstructive sleep apnea is a sleep disorder characterized by frequent pauses in breathing during sleep. These pauses, or apneas, usually last 10 to 30 seconds and may occur several times during the night. Often, the nighttime obstruction occurs when the soft tissue at the back of the throat collapses and closes the airway. Relaxed throat muscles, a narrow respiratory tract, a large tongue or excess fatty tissue in the throat can also block the airway.

Alcohol disrupts breathing during sleep by relaxing the throat muscles. Alcohol can also reduce the brain's ability to wake and detect a lack of oxygen in the body, and this can lead to longer and more frequent breathing pauses. As such, it is recommended that people with sleep apnea either avoid drinking alcohol altogether or at least cut back on their drinking.







## Insomnia

Insomnia may include the following symptoms: difficulty falling asleep, waking frequently during the night, difficulty falling asleep again after waking, waking too early and daytime sleepiness. People with insomnia sometimes use alcohol to self-medicate. Studies have found that approximately 30% of people with ongoing insomnia have used alcohol within the past year as a sleep aid. Insomnia and alcohol abuse are strongly linked; estimates of insomnia in people with alcohol dependency range from 36% to 67%.

Because alcohol consumption can result in frequent waking, changes to the sleep stages and a reduction in the amount of REM sleep, it is likely that alcohol exacerbates insomnia and its use as a sleep aid is not recommended.

# Alcohol, Sleep and Daytime Function

Researchers have examined next day performance and attentiveness in healthy people who drink alcohol before going to bed. The day after an episode of heavy drinking, participants' ability to accomplish divided-attention tasks was impaired and they scored lower on performance tests. It is generally agreed that excessive drinking can indirectly affect next day attentiveness or functioning due to alcohol's disruptive impact on the sleep cycle. While the impairments observed in these studies are generally minor, the impact can nonetheless be significant when the tasks involved are complex or dangerous.

Studies have also documented the cumulative effect of alcohol and the lack of sleep on attentiveness, judgment and motor function, and on the risk of falling asleep or having an accident while driving.

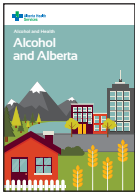


## Conclusion

Regular, uninterrupted sleep is important for our health and well-being. Sleeping recharges us for our day-to-day activities and contributes to our ability to function productively. Drinking alcohol can change both the length and quality of our sleep: it can disturb the sleep cycle, and can have repercussions during waking periods. People with sleep disorders should pay particular attention to how alcohol can affect their sleep and overall health.

Alberta Health Services offers a wide range of services for individuals looking for help for someone they care about, or for themselves. For more information, and to find an addictions services office near you, call the Addiction Helpline at 1-866-332-2322. It's free, confidential and available 24 hours a day.

## Alberta Health Services' (AHS) Alcohol and Health series



Alcohol and Alberta



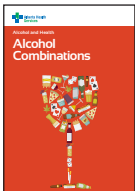
Alcohol and Sleep



Alcohol and Adolescents



Low-Risk Drinking



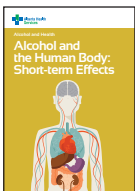
Alcohol Combinations



Talk to Your Children About Alcohol



Alcohol Hangover



Alcohol and the Human Body: Short-Term Effects



Alcohol and Mental Illness



Alcohol and Seniors

### More information means informed decisions

Well-informed people will be more conscious of the harmful effects of excessive drinking, and will be aware that if they choose to drink alcohol, drinking in moderation is a healthier choice.

#### For copies:

AHS staff and allied health professionals can download digital copies from under the "Resources" tab at: [www.albertahealthservices.ca/amhresources](http://www.albertahealthservices.ca/amhresources). Allied health professionals should contact their local Addiction and Mental Health office to access hard copies.

### Thank you

AHS would like to thank our allied health professionals at Éduc'alcool for their contribution to this series.

Alberta Health Services offers a wide range of addiction and mental health services.

For individuals looking for help for someone they care about, or for themselves the Addiction Helpline and the Mental Health Helpline are available.

**Addiction Helpline**  
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**Mental Health Helpline**  
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Both helplines are free, confidential and available 24 hours a day.

