

SLEEP AND HEART HEALTH

*Sleep and heart health are intertwined.
When your heart isn't functioning
properly, you can't sleep properly.*

AASIM
American Academy of
SLEEP MEDICINE™



And when you don't sleep properly, your heart health worsens.

Your heart during sleep

Sleep is an important time of rest for the entire body. Although your heart works both day and night, it naturally slows down at night. There are two main types of sleep, and each impact your heart differently:

1. **Rapid-eye-movement (REM) sleep** (about 20% of your total sleep time). During this type of sleep, your heart rate and blood pressure go up and down at somewhat variable intervals.
2. **Non-rapid-eye-movement (NREM) sleep** (about 80% of your total sleep time). During this stage, your heart rate, breathing, and blood pressure drop lower than they do when you're awake.

Each time you wake from sleep, even briefly, your heart rate and blood pressure climb and your heart has to work harder. When you wake up in the morning, your heart rate and blood pressure go up, and stay up at higher levels during the day.

Many researchers believe that one of the main functions of sleep is to allow the heart to rest from the demands it faces during the waking hours. When your heart is not working properly, it is harder for you to have restful sleep. Conversely, some sleep disorders can cause or worsen heart problems.

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How Sleep Disorders Can Affect the Heart

Obstructive sleep apnea and central sleep apnea are sleep-related breathing disorders that can greatly increase your risk of heart disease and complications of heart disease.

OBSTRUCTIVE SLEEP APNEA (OSA)

In OSA, the airway in the back of the nose, mouth and throat collapses during sleep, narrowing the breathing passage and repeatedly blocking the airway. When your airway collapses, air cannot get to the lungs. Your brain wakes you up to breathe. This leads to a brief arousal that causes sleep fragmentation and poor sleep quality. This cycle can repeat hundreds of times in one night, but typically these events are not remembered in the morning.

If you have OSA, you should familiarize yourself with the following conditions that pose particular risks for you:

- » **HYPERTENSION (High Blood Pressure):** Many people with OSA have hypertension. Additionally, having OSA may cause a person to develop hypertension, as the nightly increases in blood pressure eventually cause elevated blood pressure during the day.

If you develop hypertension, it is important to treat it, as hypertension increases your risk of developing other forms of cardiovascular disease such as heart attack, heart failure, and stroke. Make sure that your healthcare provider investigates all of the possible causes for your hypertension, including sleep disorders like OSA, as typical hypertension treatments may not work if you have an untreated sleep disorder. Many people who have had difficulty treating their hypertension are later found to have untreated

OSA. Diagnosing and treating OSA, if present, can greatly improve hypertension and your heart health.

- » **CORONARY ARTERY DISEASE:** In coronary artery disease, the blood vessels that supply the heart with oxygen and nutrients become damaged or diseased. People with OSA have higher rates of coronary artery disease, likely due to the increased stress on the heart that happens during the repetitive nightly arousals. Having OSA also increases the risk of death from coronary artery disease. However, the risk of death from coronary artery disease is reduced if OSA is recognized and treated.
- » **CONGESTIVE HEART FAILURE:** Congestive heart failure occurs when the heart is damaged and is unable to pump blood effectively. Sleep-related breathing disorders can cause heart failure and can also develop as a result of heart failure. Studies have shown that having OSA is a significant risk factor for developing congestive heart failure. In addition, if you already have heart failure from another condition (such as hypertension or coronary artery disease) and then develop OSA, your congestive heart failure can worsen. The weakened heart muscle is less able to handle the additional stress caused by the OSA. Treating OSA can improve heart function in patients who have congestive heart failure.
- » **STROKE:** OSA can directly and indirectly cause strokes. During a stroke, the supply of blood and oxygen is reduced or cut off, and the brain is injured. OSA may directly contribute to stroke when the level of oxygen drops off when the airway collapse. OSA may indirectly cause strokes by contributing to hypertension, is a risk factor for stroke.
If you have a stroke, it is more likely for you to have abnormal breathing patterns (such as

OSA) during sleep after the stroke. Other effects of OSA, such as excessive sleepiness from disrupted sleep and impaired thinking, may hamper a person's recovery from a stroke.

- » **ARRHYTHMIAS:** Your heart normally beats with a regular rate and rhythm. If your heart is diseased, it may develop irregular rhythms known as "arrhythmias." A common example is atrial fibrillation. Arrhythmias are more common in patients with OSA. This may be due to the direct effects of OSA on the heart or may be an indirect relationship through the associations of OSA with hypertension, coronary heart disease, and congestive heart failure. Treating your OSA may help decrease your arrhythmias.

CENTRAL SLEEP APNEA (CSA)

If you have CSA, your breathing is repetitively interrupted during sleep, just like in OSA. The difference is that in CSA, the problem is not caused by a blockage of the airway; it is a result of a problem in the brain or heart. In CSA, just like in OSA, air cannot get to the lungs, and your brain wakes you up to breathe.

In both disorders, the frequent awakenings increase heart rate and blood pressure, and the fluctuating oxygen levels create stress and extra work for the heart. It is therefore not surprising that there are documented links between these sleep disorders and heart disease. If you have OSA or CSA, it is important to be aware of your risk, so you can prevent and appropriately treat heart disease.

If you have CSA, you should familiarize yourself with the following condition, which poses a particular risk for you:

- » **CONGESTIVE HEART FAILURE:** About 40% of people with congestive heart failure also have CSA. The frequent awakenings caused by CSA increase heart rate and blood pressure, which can worsen heart failure. Increased heart rate and blood

pressure in turn leads to more CSA and causes a cycle that decreases your heart function. CSA can be prevented if heart failure is treated thoroughly. If CSA is still present, treatments are available to correct the CSA. Treating CSA can improve your heart function and your sleep quality.

Heart disease can affect sleep

As outlined above, sleep disorders can cause heart disease. Conversely, heart disease can also cause sleep problems. For instance:

Patients with congestive heart failure often report difficulty falling asleep and staying asleep, possibly due to the shortness of breath that often accompanies heart failure. This shortness of breath is often worse when the patient lies down because blood in the legs flows back into the heart and can overwhelm its ability to pump.

Patients with heart failure may also experience shortness of breath when they lie down or may wake up short of breath. Patients who experience these symptoms may feel like they have insomnia since their sleep is interrupted.

In addition to experiencing these complications from heart disease, patients often worry about the long-term consequences of a heart attack or chronic heart disease. Anxiety by itself can lead to the development of chronic sleep problems.

The relationships between heart conditions and sleep-related breathing disorders are complex. If you have a heart condition, take special care to ensure that you are sleeping well. If you are not sleeping well, or constantly feel fatigued, seek medical attention.

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Good sleep, healthy heart

Many things can be done to maintain a healthy heart: eat a healthy diet, maintain a healthy weight, exercise regularly, get regular medical check-ups, and get adequate amounts of good quality sleep.

If you have any kind of heart condition, it is important to watch for signs that you may have a sleep-related breathing disorder such as OSA or CSA, which could add additional stress to your heart.

If your healthcare professional thinks that you have a sleep disorder, he or she may refer you to a board-certified sleep medicine physician at an American Academy of Sleep Medicine accredited sleep facility. The board-certified sleep medicine physician will be able to determine whether you have any abnormalities in the quality of your sleep and recommend the best course of treatment. Sleep disorders are treatable, and treatment can lead to a more healthy heart.

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To maintain a healthy heart: Get adequate amounts of good quality sleep.

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