



**WRH PHYSICIANS, INC.**

## SLEEP APNEA

Sleep apnea is a disorder characterized by a reduction or pause of breathing (airflow) during sleep. It is common among adults but rare among children. Although a diagnosis of sleep apnea often will be suspected on the basis of a person's medical history, there are several tests that can be used to confirm the diagnosis. The treatment of sleep apnea may be either surgical or nonsurgical.

An apnea is a period of time during which breathing stops or is markedly reduced. In simplified terms, an apnea occurs when a person stops breathing for 10 seconds or more. If you stop breathing completely or take less than 25% of a normal breath for a period that lasts 10 seconds or more, this is an apnea.

This definition includes complete stoppage of airflow. Other definitions of apnea that may be used include at least a 4% drop in oxygen in the blood, a direct result of the reduction in the transfer of oxygen into the blood when breathing stops.

Apneas usually occur during sleep. When an apnea occurs, sleep usually is disrupted due to inadequate breathing and poor oxygen levels in the blood. Sometimes this means the person wakes up completely, but sometimes this can mean the person comes out of a deep level of sleep and into a more shallow level of sleep. Apneas are usually measured during sleep (preferably in all stages of sleep) over a two-hour period. An estimate of the severity of apnea is calculated by dividing the number of apneas by the number of hours of sleep, giving an apnea index (AI in apneas per hour); the greater the AI, the more severe the apnea.

A hypopnea is a decrease in breathing that is not as severe as an apnea. Hypopneas usually occur during sleep and can be defined as 69% to 26% of a normal breath. Like apneas, hypopneas also may be defined as a 4% or greater drop in oxygen in the blood. Like apneas, hypopneas usually disrupt the level of sleep. A hypopnea index (HI) can be calculated by dividing the number of hypopneas by the number of hours of sleep.

The apnea-hypopnea index (AHI) is an index of severity that combines apneas and hypopneas. Combining them gives an overall severity of sleep apnea including sleep disruptions and desaturations (a low level of oxygen in the blood). The apnea-hypopnea index, like the apnea index and hypopnea index, is calculated by dividing the number of apneas and hypopneas by the number of hours of sleep.

Another index that is used to measure sleep apnea is the respiratory disturbance index (RDI). The respiratory disturbance index is similar to the apnea-hypopnea index; however, it also includes respiratory events that do not technically meet the definitions of apneas or hypopneas, but do disrupt sleep.

Sleep apnea is formally defined as an apnea-hypopnea index of at least 15 episodes/hour in a patient if they do not have medical problems that are believed to be caused by the sleep apnea. This is the equivalent of approximately one episode of apnea or hypopnea every 4 minutes. High blood pressure, stroke, daytime sleepiness, congestive heart failure (low flow of blood to the heart), insomnia, or mood disorders can be caused or worsened by sleep apnea. In the presence of these conditions, sleep apnea is defined as an apnea-hypopnea index of at least five episodes/hour. This definition is stricter because these individuals may be already experiencing the negative medical effects of sleep apnea, and it may be important to begin treatment at a lower apnea-hypopnea index.