



## UNDERSTANDING YOUR SLEEP STUDY RESULTS

**Lights Out/Lights On Times** – “Lights Out” means the time that the lights are first turned out and you are attempting to sleep. The time that the study ends is termed “Lights On”. At this time, you are awakened, the lights are turned on and the study is over.

**TRT** (Total Recording Time) – Total time of study from “lights out” to “lights on”.

**TST** (Total Sleep Time) – Total time asleep after lights out.

**Sleep Latency**- How long it takes you to fall asleep after “lights out”. 15-20 minutes is a normal sleep latency. A shorter sleep latency could mean you are sleep-deprived and/or have a sleep disorder.

**WASO** (Wake after Sleep Onset) – This is the total amount of time that you spend awake during the night after you first fall asleep. Being awake during the night affects your sleep quality and is often associated with some type of sleep disorder.

**Stages of Sleep:** During sleep, you cycle between Non-REM (NREM) and REM Sleep (4 total stages). You should move through NREM and REM several times throughout the night and each stage of sleep is important to your overall health. Obstructive Sleep Apnea can cause some of these stages to be shortened or absent.

**NREM sleep (Non-REM sleep):** There are 3 stages –each stage is deeper than the last.

Stage N1 (NREM 1) - The first stage of sleep. This is the transition from awake to asleep. During this time, your breathing becomes more regular and your heart rate begins to slow down, but you can be easily awakened. You may experience muscle twitches and jerks. (Stage 1 sleep is about 5-8% of total sleep time)

Stage N2 (NREM 2) – Conscious awareness of your surroundings fades away. Your muscles are more relaxed. (Stage 2 sleep is about 50% of your total sleep time)

Stage N3 (NREM 3) - “Deep sleep” or “slow wave sleep”. You are very difficult to awaken during this time and unaware of your surroundings. Your blood pressure becomes low and your breathing rate will be slow. Deep sleep is very important because this is when your body regenerates and heals itself. (Stage 3 sleep is about 20% of your total sleep time but decreases as you age).

**REM sleep (Rapid Eye Movement sleep):** Most dreaming occurs in REM sleep. Your heart rate and blood pressure increase, and your mind is very active. Your breathing becomes more rapid, shallow and irregular. Although your eyes are closed, they dart back and forth quickly, creating rapid eye movements (REM). Your body moves into a state of paralysis, which keeps you from acting out your dreams (REM sleep is about 25% of your total sleep time).

**Sleep position** – During a sleep study, the way you sleep will be recorded as supine (on your back), prone (on your stomach) or side sleeping. This information is used to identify relationships between apnea episodes and the position you are sleeping in. Often, obstructive sleep apnea events become much worse when lying in a supine position.

**Arousal**- An arousal is an interruption of your brainwaves which causes you to move into a lighter stage of sleep or completely wake up. You may or may not be aware you are having an arousal, but some arousals may cause you to wake up and roll over. The more arousals you have, the more tired and unrefreshed you will feel during the day.

**Apneas**-An apnea means that you stop breathing. On a sleep study, apneas are events where your breathing is paused for 10 seconds or longer and the oxygen level in your blood drops. Apneas cause arousals and awakenings and are very disruptive to your sleep and overall health.

Obstructive apnea - Your chest and abdomen are still moving in and out trying to get air in and out, but the airflow is completely blocked by the tongue or tissues of the upper airway.

Central apnea - Your chest and abdomen are not moving because your brain doesn't send a signal to your breathing muscles to move. Your airway is open but there is no air moving in or out.

**Hypopneas** –A hypopnea is a partial closure of your upper airway for 10 seconds or longer that causes less air to get into your lungs. Your chest and abdomen are still moving, but your breaths are shallower and less oxygen is getting into your blood. Hypopneas also cause arousals and awakenings and are disruptive to your overall health.

**RERA** (respiratory effort related arousal) - A RERA is similar to an apnea or hypopnea in that it causes an arousal and disrupts sleep, but does not meet criteria to be called an apnea or a hypopnea. If you have a lot of RERAs, you will still wake up in the morning feeling unrefreshed.

**Oxygen Desaturations** -The oxygen levels in your blood will be monitored (SpO<sub>2</sub>) for desaturations while you sleep. Normal oxygen levels are usually around 95%. A “desaturation” is any decrease in your oxygen level from normal. Apneas and hypopneas can cause your oxygen levels to drop below 90%, which is abnormally low. Low oxygen levels are unhealthy and can cause short and long term damage to every part of your body.

**AHI** (Apnea-Hypopnea Index) – This is recorded as one number. It is a summary of how many times each hour your breathing either stopped (apneas) or significantly decreased (hypopneas). The AHI index is commonly used to rate the severity of your obstructive sleep apnea.

\*Mild – AHI 5-14

\*Moderate – 15 to 29

\*Severe- >30

**RDI** (Respiratory Disturbance Index) - This index is the same as the AHI except that it also includes RERAs. This index can also be used to measure the severity of your OSA. Some insurance companies may want to look at this number instead of your AHI.