NOTES

Your doctor or therapist has given you this patient education handout to further explain or remind you about an issue related to your health. This handout is a general guide only. If you have specific questions, discuss them with your doctor or therapist.

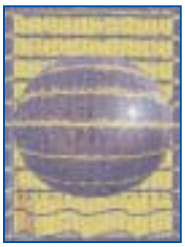
Testing for a Good Night's Sleep

By Debra Yemenijian

A sleep study is a recording of data about your sleep and breathing patterns that's helpful in the diagnosis of sleep disorders. Many people who have sleep disorders are unaware of their problem, and in some cases a family member will notice the signs before the patient does.

Your physician may choose to evaluate you for a sleep disorder through polysomnography (PSG) if you show any of the following symptoms: snoring, restless sleep, daytime sleepiness, difficulty concentrating, anxiety or depression, and morning headaches. PSG is a low-risk assessment of sleep cycles and sleep stages through use of continuous recordings of brain waves, muscle activity, eye movement and respiratory rate.

TESTING PROCEDURE



Sleep studies sometimes include an overnight PSG with a multiple sleep latency test (MSLT) the next day. An MSLT records multiple naps and helps determine if a person is abnormally sleepy during the day. MSLTs are only standard for diagnosing narcolepsy or daytime sleepiness not related to obstructive sleep apnea.

Although diagnosing sleep disorders on the basis of a single-night recording is common, more than one night of testing may be necessary to ensure accurate results. Multiple-night testing allows the patient to become more comfortable in unfamiliar surroundings and sleep more naturally. Also, intermittent events may be missed on a one-night recording.

PSGs usually are conducted in a sleep lab. A sleep technologist will place electrodes on your skin and scalp, and sensors to record your heart rate and respiratory rate will be attached to your chest. Sometimes other tests will be performed to determine breathing problems during sleep. Although this is a painless procedure, some patients may find the sensors uncomfortable at first.

By international standards, a PSG must have a minimum of four neurophysiologic channels. One electroencephalography (EEG) channel will monitor the sleep stage. Two electrooculography (EOG) channels will monitor horizontal and vertical eye movements. A fourth channel, for electromyography (EMG), will record rapid eye movement (REM) sleep. Patients may be monitored for other parameters, such as airflow, electrocardiogram (ECG), pulse oximetry, respiratory effort and periodic limb movements. Sound recordings also may be conducted to measure snoring.

After the sensors have been put in place, you'll be asked to lie on a bed in the test center and to fall asleep. The sensors will record wake and sleep patterns. The time taken to fall asleep is measured, as well as the time to enter REM sleep. Sometimes the sleep test is recorded by video camera.

INTERPRETING RESULTS

Once your physician reviews your results, he or she will determine which therapeutic options are best for you.

For example, EEG and EOG monitoring that shows abnormal transitions in and out of sleep may be a sign of narcolepsy. Narcolepsy is a sleep disorder associated with uncontrollable sleepiness and frequent daytime sleeping. It can be treated with prescription medicines or through lifestyle adjustments.

PSG results that reveal reduced airflow through the nose and mouth, accompanied by a fall in oxygenation of the blood, may indicate you're experiencing apneas or hypopneas during sleep. Apnea is the temporary absence of breathing, and hypopnea is unusually slow or shallow breathing.

If apnea is accompanied by ECG irregularities or elevations in blood pressure, this could mean that your sleep apnea is more harmful. Sleep apnea can be treated with oral devices and mechanical devices, such as continuous positive airway pressure, which make breathing easier by keeping a patient's airway open.

In many cases, one night of PSG testing can lead to a lifetime of better sleep. ■

Editor's note: Information adapted from the National Institutes of Health, Sleep Services of America, and eMedicine's Polysomnography: Overview and Clinical Application by William J. Nowack, MD, accessed via www.emedicine.com/neuro/topic566.htm.

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