

ACCQ SLEEP LABS

THE HYPNOS NEWS

OPTIMAL SLEEP = OPTIMAL PERFORMANCE

SLEEP HYGIENE TIPS TO GET OPTIMAL SLEEP

Good hygiene is anything that helps you to have a healthy life. The idea behind sleep hygiene is to develop good sleeping habits. Good sleeping habits help you stay healthy by keeping your mind and body rested and strong.

Your body regenerates muscle cells in the deep phase of sleep, when growth hormone is released. High-quality sleep therefore amplifies and expedites the benefits of an exercise and nutrition program. Growth hormone released during deep sleep, helps to renew skin cells resulting in greater elasticity, which in turn creates softer, more supple skin.

Growth hormone also stimulates the breakdown of fat cells, which results in body fat loss. High quality sleep also reduces the desire to overeat.

Lack of high quality sleep causes premature aging.

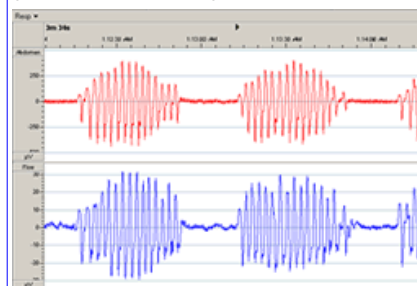
We need deep quality sleep in order to repair our body, regenerate muscle cells, keep our immune system strong and stay alert. We all have the desire to perform at our optimal level professionally, athletically and academically it may be as simple as a good nights sleep.

See page 2 for "[Twelve Simple Steps to Improve Your Sleep](#)"

Cheyne-Stokes Respiration

What is Cheyne-Stokes respiration (CSR)?

Cheyne-Stokes respiration occurs when periods of hyperventilation with waxing and waning tidal volume alternate with periods of central apnea.



Among heart failure patients, CSR may be diagnosed¹ when respiratory monitoring demonstrates:

- At least three consecutive cycles of a cyclical crescendo and decrescendo change in breathing amplitude; cycle length is most commonly approximately 60 seconds, although the length may vary one or both of the following:

⇒ Five or more central sleep apneas or hypopneas per hour of sleep

⇒ At least 10 consecutive minutes of the cyclic crescendo and decrescendo change breathing amplitude

What are the indicators of CSR?

Heart failure patients with CSA/CSR may report paroxysmal nocturnal dyspnea and excessive daytime somnolence and generally exhibit low arterial CO₂ pressures (PaCO₂).

OSA in heart failure patients may be associated with excessive daytime somnolence, snoring, witnessed apneas, obesity, and morning headaches.

What are the consequences of CSR?

Nocturnal CSR is associated with increased mortality² in heart failure patients and is also an independent risk

factor for cardiac transplantation.³

CSA/CSR is expected to accelerate the progression of heart failure by causing:

- Repetitive hypoxia
- Increased afterload
- Increased sympathetic activity³
- Oscillations in heart rate and blood pressure.

The sleep fragmentation resulting from CSA/CSR also diminishes quality of life by causing fatigue and daytime sleepiness.

(continued on page 2)



Complex Sleep Apnea

What is complex sleep apnea?

Complex sleep apnea (CompSA) is a form of sleep apnea in which central apneas persist or emerge during attempts to treat obstructive events with a continuous positive airway pressure (CPAP) or bilevel device.

CompSA is characterized by the following:

- The persistence or emergence of central apneas or hypopneas upon exposure to CPAP or bilevel when obstructive events have disappeared
- CompSA patients have predominately obstructive or mixed apneas during the diagnostic sleep study, occurring at least 5 times per hour
- With use of a CPAP or bilevel, they show a pattern of central apneas and hypopneas that meets the Centers for Medicare Services (CMS) definition of CSA (described below)

A diagnosis of central sleep apnea (CSA) requires all of the following:

- An apnea index > 5
- Central apneas/hypopneas > 50% of total apneas/hypopneas
- Central apneas or hypopneas occurring at least 5 times per hour
- Symptoms of either excessive sleepiness or disrupted sleep

The difference between central, mixed and complex sleep apnea

CSA is a form of sleep-disordered breathing (SDB) caused by the temporary absence of a signal from the brain's respiratory center. Without this signal, there is no effort to breathe. Mixed sleep apnea is fairly common and consists of both central and obstructive components. On the other hand, CompSA consists of all or predominantly obstructive apneas which convert to all or predominantly central apneas when treated with a CPAP or bilevel devices.

The challenge to treat CompSA

Patients with CompSA cannot be adequately treated with CPAP or bilevel device. The clinical consequences are residual symptoms (fatigue, sleepiness, depressed mood) and intolerance to therapy.

Patients with CompSA may be seen as those who cannot tolerate conventional CPAP or bilevel therapy both during lab titration and at home. Neither CPAP nor bilevel therapy seems to alleviate their sleep disorders. For CompSA patients, treatment with CPAP or bilevel therapy will leave them with a somewhat elevated AHI, and their disorder will not be completely resolved.

How does the Adaptive Servo Ventilation treat CompSA?

Adaptive Servo Ventilation is the first FDA-cleared device designed to treat CSA, CompSA, mixed apnea and periodic breathing. VPAP Adapt SV uses adaptive servo-ventilation to adapt to a patient's ventilatory needs on a breath-by-breath basis.

Twelve Simple Steps to Improve Your Sleep

1. Avoid caffeine, alcohol, nicotine and other chemicals that may interfere with your sleep. Caffeine, alcohol and nicotine are all stimulants that can keep you awake. Try to avoid 4-6 hours before bedtime.
2. Turn your bedroom into a sleep inducing Environment. A quiet dark, cool environment can help promote sleep.
3. Establish a Soothing Pre-Sleep routine. Warm bath, read a book.
4. Go to bed when you truly tired.
5. Don't be a nighttime clock watcher.
6. Try to get outside each day for natural sunlight. Natural sunlight keeps your internal clock on a healthy sleep wake cycle.
7. Keep a consistent Sleep Schedule. Going to bed and waking at the same time helps regulate your bodies internal clock.
8. Nap early or not at all.
9. Lighten up on evening meals.
10. Balance fluid intake: Not too much fluid before bedtime
11. Exercise early: Exercise can help us to fall asleep faster and more soundly, try if you can to exercise early in the day. Exercise releases a stress hormone cortisol which helps activate the alert mechanism in the brain.
12. Follow through. Some of these tips may be easy to include in your daily and nightly routine. Try to stick to them and you may improve your quality of sleep.

What is Cheyne-Stokes respiration (CSR)?

(Continued from page 1)

What are the benefits of adaptive servo-ventilation treatment for CSA/CSR?

If CSA/CSR persists, despite optimal pharmacological therapy, positive airway pressure (PAP) treatment is indicated.

Various methods have been used to treat CSA/CSR—oxygen therapy, continuous positive airway pressure therapy (CPAP), bilevel ventilatory support and, most recently, a highly evolved form of PAP: Adaptive Servo-Ventilation (ASV). A study⁷ comparing the effects of one night of each of these therapies demonstrated superior results with ASV technology (right). Several studies have shown the long-term advantages of ASV technology in treating patients with stable heart failure:

- Fewer respiratory events
- AHI reduced from a pretreatment mean value of 49 to 6 events/hr at three months in one study⁴ and from 26.9 to 4.3 at four months in another study⁵
- Central RDI reduced from a pretreatment mean value of 37.3 to 0.9 at three months⁶
- RDI reduced from a pretreatment mean value of 49 to 9 at two years⁷
- Improved sleep quality (arousals/sleep time reduced from a pretreatment mean value of 275 to 40 at three months⁴ and from 275 to 53 at two years⁶)
- Higher average left ventricular ejection fraction (increased from a mean value of 36.4% at baseline to 45.8% at three months⁶)
- Increased exercise capacity (6MWD^{7,8} and O₂ max⁴ increased by about 20%)

What are the benefits of Adaptive Servo Ventilation treatment for patients with CSA/CRS and coexisting OSA?

With ASV technology has been designed specifically to treat patients with CSA/CSR and coexisting OSA.

VPAP Adapt SV therapy rapidly converts CSR to normal ventilation. By adjusting the magnitude

of positive pressure at end expiration, Adapt SV therapy will maintain a patent airway in heart failure patients with moderate coexisting OSA. This novel therapy utilizes ASV technology and has demonstrated the ability to improve clinical outcomes and quality of life in heart failure patients.

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Narcolepsy and Cataplexy

What causes narcolepsy?

There have been major breakthroughs in understanding the cause of narcolepsy. We know that most cases of narcolepsy in humans are due to a lack of a chemical in the brain called hypocretin. This chemical was unknown before 1998, so this is very new research. Most patients with narcolepsy do not produce hypocretin in a deep part of the brain called the hypothalamus. If you don't produce hypocretin, it would appear that other chemicals that cause alertness cannot function properly.

Research studies have shown that most narcoleptic patients don't have hypocretin in their spinal fluid, and it is possible that this may become a diagnostic test for narcolepsy in the not-too-distant future. What we don't know is why patients with narcolepsy don't produce hypocretin. We think this is probably due to an attack of the body's immune system against the cells that produce it, but this is still speculative. But we are engaged in research projects to try to establish this.

What are the warning signs?

The most important symptom of narcolepsy is sleepiness. Of course, there are many causes of sleepiness, including sleep deprivation, the effect of medications or obstructive sleep apnea, and narcolepsy is not the most common cause. But in any young person who develops sleepiness,

narcolepsy has to be considered. Sleepiness is not a specific symptom of narcolepsy.

The most specific symptom is cata-



plexy, a sudden weakness of the muscles of the body, especially the legs but also the face and neck, that is brought on by strong emotion, especially laughing. Patients with narcolepsy may also have strange dream-like experiences before falling asleep or waking up in the morning, and they may also have temporary paralysis of the body at the same time. However, these two symptoms are common in the general population and by themselves do not make one a narcoleptic.

Who is affected by narcolepsy?

The frequency of narcolepsy in North America has been quite uncertain. It varies from country to country. It is

most common in Japan, and rare in Israel. We embarked on a study to get good epidemiological data on the occurrence of narcolepsy in the US. What we found is that narcolepsy is

not uncommon. In a million people, we would expect about 550 narcoleptics and approximately 14 new cases of narcolepsy a year. What we found was that the first symptoms start most frequently between the ages of 10 and 20.

The second most frequent time of onset was the decade between ages 20 and 30, and the third most frequent was before the age of 10 and between the ages of 30 and 40. So narcolepsy is a disorder that frequently starts in young people, and physicians who look after adolescents should be especially aware of it. We found that it is slightly more common in men than in women, a ratio of 1.5 to 1. We have no explanation for this phenomenon at present. We also

found that one doesn't have to have cataplexy in order to have narcolepsy. About 1/3 of narcolepsy patients don't develop cataplexy.

How is it treated?

A sleep physician will take a careful history from the patient and his or her bed partner. A diagnosis is confirmed with an overnight sleep study and then a series of nap studies the following day, conducted every two hours. From this we will be able to see how quickly the patient falls asleep and whether they go quickly into rapid eye movement (REM) sleep. The propensity to go quickly into REM sleep is a marker for narcolepsy.

At present, we treat the symptoms; we don't treat the cause of the condition. We give medications that increase chemicals in the brain that are responsible for alertness.

There are a number of such medications available. Most narcoleptics are able to achieve 80% or more of their potential alertness with proper medication. We also have medications to treat cataplexy. Eventually we hope to have medications that act on the hypocretin system to treat the underlying cause, but that may be quite a while in the future.

—Michael H. Silber, MD, is a neurologist and sleep disorders specialist at the Mayo Clinic who recently conducted the first definitive epidemiologic study of narcolepsy in the United States. The study was published in the journal SLEEP.

CO2 Monitoring within the Sleep Lab

The sleep lab presents a unique opportunity to measure CO₂ (carbon dioxide) concentrations against the stages of sleep. Respiration is often compromised during sleep, most notably in REM (rapid eye movement) sleep.

End-tidal CO₂ monitoring is a noninvasive technique used to directly monitor the concentration of CO₂ in respiratory gases at the end of expiration. The result is an indirect representation of arterial CO₂ concentration. Monitoring CO₂ levels during sleep is particularly important for patients with conditions presenting increased CO₂ levels, such as:

- obesity hypoventilation
- COPD (chronic obstructive pulmonary disease)
- restrictive diseases, such as kyphoscoliosis
- neuromuscular diseases, such as ALS (amyotrophic lateral sclerosis)

CO₂ retention occurs when not enough CO₂ is removed by the lungs. Elevated arterial CO₂ levels can result in reduced respiratory effort, a reduced level of consciousness, and a rapid heart rate (tachycardia). Severely elevated CO₂ levels can lead to respiratory arrest.

Elevated CO₂ levels during sleep can be better controlled with Bi-level positive airway pressure therapy. Bi-level is a therapy prescribed by the sleep lab that reduces the work-of-breathing, thus reducing arterial CO₂ concentration. Bi-level titrations are most successful when completed in conjunction with CO₂ monitoring, allowing the patients work-of-breathing to be monitored.

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ACCQ SLEEP LABS are licensed Independent Health Facilities (IHF) specializing in the diagnosis and treatment of patients suffering from a wide variety of sleep disorders, including Obstructive Sleep Apnea Syndrome (OSAS), Periodic Limb Movement Disorder (PLMD), Narcolepsy, Parasomnias (Sleepwalking, Sleep Terrors, Nightmares, etc.), Chronic Fatigue Syndrome (CFS), and Fibromyalgia.

We offer medical consultative, diagnostic, and treatment services for patients of all ages (adult and pediatric). We perform both overnight sleep studies as well as daytime Multiple Sleep Latency Test (MSLT) and Maintenance of Wakefulness (MWT) studies.

The K-W Sleep Lab, Owen Sound Sleep Lab, and Paris Sleep Lab are Ontario Ministry of Health, ADP (Assistive Devices Program) Registered Facilities.

We are dedicated to providing the highest quality of care to each patient assessed in our facilities. Our goal is to make your experience in the sleep laboratory as pleasant and as comfortable as possible.



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Sleep apnea among children

Sleep apnea is not only common among adults, many kids have it too!

In most cases, children with sleep apnea are left undiagnosed, because its symptoms maybe too feint for the parents to identify. According to Dr. Jonathan Schwartz of the Integris Sleep Disorders Center, children need to wear a continuous positive airway pressure (CPAP) machine to be treated properly.

Dr. Schwartz says that the rise of childhood obesity cases have been met by an increase in childhood sleep apnea incidence. He says that if this sleep disorder is left undiagnosed, it can lead to heart problems for children.

"Even in kids, there was a study done looking at kids that snore and have sleep apnea and it showed changes in the heart by echocardiogram," explained Dr. Schwartz.

Dr. Schwartz even identified some notable symptoms of children who may have sleep apnea. It included hyperactivity, irritability, lack of concentration, irregular breathing patterns during sleep, and black spots under the eyes.

If your child is experiencing more than one of these symptoms, it is best to take him for a check-up in your nearest sleep clinic.

Source: Meg Alexander on May 28, 2010, Reporting for KFOR.com



Sleep Disorders May Be Under diagnosed in Children

Rate of diagnosis by primary care providers lower than rates found in epidemiological studies

The rate of sleep diagnoses for children given by primary care providers is lower than prevalence rates reported in epidemiological studies, suggesting that these providers may be under-diagnosing sleep disorders in pediatric patients, according to research published online May 10 in Pediatrics.

Lisa J. Meltzer, Ph.D., of the Children's Hospital of Philadelphia, and colleagues reviewed the medical records for 154,957 pediatric patients (aged 0 to 18 years) to gather information on demographics, sleep disorder diagnoses (as defined by the International Classification of Diseases, Ninth Revision [ICD-9]), attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorders (ASD), provider type, and medications.

Overall, the researchers found that 3.7 of the patients had a sleep disorder diagnosis, most commonly an unspecified one (1.4 percent), followed by nocturnal enuresis (1.2 percent) and sleep-disordered breathing (1.0 percent). The leading predictors for a sleep disorder diagnosis included smaller head circumference in infants; ASD in toddlers; higher body mass index in preschool and school-age children and adolescents; and ADHD or ASD in school-age children and adolescents. Provider type was a predictor for most age groups. Just 6.1 percent of subjects were prescribed potential sleep-related medications.

"The 3.7 percent of patients with ICD-9 sleep diagnoses is significantly lower than prevalence rates reported in epidemiological studies, which suggests that primary care providers may be under-diagnosing sleep disorders in children and adolescents. Because sleep disorders are treatable when recognized, the results from this study suggest a significant need for additional education and support for primary care providers in the diagnosis and treatment of pediatric sleep disorders," the authors write.

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