

# Sleep HealthCenters® Newsletter

November 2003

Dear Colleague,

In this issue of the Newsletter, we discuss the importance of promoting effective therapy for Obstructive Sleep Apnea (OSA). The most common therapy for OSA, Continuous Positive Airway Pressure (CPAP), has been demonstrated to reduce sleepiness, improve performance and cognitive function, reduce systemic hypertension and improve cardiac function. However, it is vital to maximize patient compliance to achieve these important outcomes. To address this, we have added a specially-trained nurse practitioner to follow patients on CPAP. We hope that this information and our unique CPAP Management Program will help you provide long-term care for these patients.

Sincerely,

David P. White, MD  
Corporate Medical Director  
Sleep HealthCenters®, LLC

## Promoting Effective CPAP Therapy for Obstructive Sleep Apnea

Lawrence Epstein, M.D.

Dr. Epstein is board certified in Internal Medicine, Pulmonary and Critical Care Medicine and Sleep Medicine. He is an Instructor in Medicine at Harvard Medical School and Regional Medical Director of Sleep HealthCenters®.

Obstructive sleep apnea (OSA) is a disorder characterized by repetitive collapse of the upper airway during sleep that results in fragmentation of sleep and episodic oxyhemoglobin desaturation. OSA is a common disorder, affecting 4% of middle aged men and 2% of middle aged women (Young et al NEJM 1993;328:1230-35). Clinical consequences include excessive daytime sleepiness, cognitive impairment and increased rates of cardiovascular disease. OSA has been shown to be an independent risk factor for the development of hypertension. Fortunately, effective therapy is available and has been shown to reverse symptoms and improve blood pressure. The difficulty has been getting patients to use effective therapy in a reliable fashion.

The first line therapy for OSA is nasal Continuous Positive Airway Pressure (CPAP), a device that uses air pressure as a pneumatic splint, preventing collapse of the airway. CPAP treatment of OSA has been demonstrated to eliminate sleepiness, improve performance and cognitive function, reduce systemic hypertension and improve cardiac function. Becker et al (Circulation 2003; 107:68-73) randomized 32 patients to either effective or nontherapeutic CPAP for more than 2 months. They demonstrated an almost 10 mm Hg drop in mean, systemic and diastolic blood pressure. Bradley et al (NEJM 2003;348:2233-41) showed that, in patients with congestive heart failure, treating concurrent OSA reduced systolic blood pressure and improved left ventricular systolic function. Twenty four patients with left ventricular ejection fraction (LVEF) < 45% were treated with CPAP. After one month their daytime systolic blood pressure was reduced and LVEF was increased from  $25 \pm 3$  to  $34 \pm 2\%$ .

Although effective, the success of CPAP therapy is often limited by poor compliance. Early studies of subjective compliance reported success rates of 70-80%. However, studies of objective compliance, utilizing time meters placed in the CPAP machines, revealed much lower rates. Kribbs et al (Am Rev Respir Dis 1993;147:887-895) demonstrated that only 45% of patients used CPAP at least 70% of the time. The same investigators also showed that sleepiness and performance decrements returned to baseline levels after as little as one night off of CPAP (Kribbs et al. Am Rev Respir Dis 1993; 147:1162-68). Thus, the secret to successful CPAP therapy is to maximize patient compliance. (continued on page 2)

Sleep HealthCenters® Newsletter  
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## In this issue of the Sleep HealthCenters® Newsletter...

- ▶ Promoting Effective CPAP Therapy for Obstructive Sleep Apnea
- ▶ CPAP Compliance: A Case Study
- ▶ Sleep HealthCenters® CPAP Management Program

### Locations:

- ▶ Newton, MA - affiliated with Brigham & Women's Hospital
- ▶ Bedford, MA - affiliated with McLean Hospital
- ▶ Malden, MA - affiliated with Hallmark Health
- ▶ Boston, MA - affiliated with Beth Israel Deaconess Medical Center
- ▶ Jamaica Plain, MA - affiliated with Faulkner Hospital

For more information, please contact our scheduling office at:  
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(continued from page 1) The key to improving CPAP compliance is maximizing success in the early treatment period. Multiple studies have shown that CPAP usage pattern is established very early in treatment. A recent study showed that patients whose sleep improved the most on their first CPAP night had the highest levels of CPAP compliance (Drake CL et al Sleep 2003;26:308-11.). Weaver et al (Sleep 1997;20:278-83) reported that differences in duration and pattern of CPAP use between compliers and noncompliers could be distinguished by the fourth night of treatment and McArdle et al (Am J Respir Crit Care Med 1999;159:1108-14) demonstrated that average nightly use during the first 3 months was highly predictive of long-term CPAP use.

A successful program for maximizing CPAP compliance should include the following activities:

**Maximize comfort with the patient-device interface.** Identify the best mask for the patient. Styles include nasal masks, oral/nasal masks and masks that allow the patient to breathe through their mouth only. Other comfort features include a ramp function, where pressure builds up gradually after the patient falls asleep.

**Optimize the patient's experience with CPAP during the early treatment period.** Patients should receive anticipatory guidance, extensive education on what to expect and how to use CPAP. Frequent follow-up provides support and troubleshoots problems. Sedative medication may help patients to relax and sleep when first starting on CPAP.

**Treat side effects.** Humidification reduces nasal and pharyngeal dryness, improving tolerance. Congestion and rhinorrhea typically resolve after a short period of adaptation but may require nasal steroids, anticholinergic nasal sprays or decongestants. Bi-level PAP may be helpful for people complaining of high pressure and leaks.

**Provide long-term support.** This includes follow-up with medical personnel and patient support groups.

Programs utilizing these features have been shown to improve CPAP compliance. Hoy et al (Am J Respir Crit Care Med 1999;159:1096-1100) evaluated the impact of intensive support on CPAP compliance. Eighty patients were randomized to either regular physician follow-up, or a regimen of intensive education and ongoing support that included multiple nights of supervised sleep, educational counseling, mask fitting sessions, family counseling and frequent early follow-up with sleep-trained nurses and physicians. Intensive support increased CPAP use an average of 1.5 hours per night and resulted in a greater reduction in symptoms and improvement in performance. Sin et al (Chest 2002;121:430-35) enrolled 296 OSA patients on CPAP in an intensive follow-up program in which patients were contacted daily by phone for the first week and were seen in clinic at 2 and 4 weeks and 3 months. They reported a 6-month compliance rate of 85%. Finally, Likar et al (Chest 1997; 111:1273-77) showed that a CPAP support group that provided education, support, symptom treatment and equipment monitoring maintained and even improved long-term CPAP compliance.

CPAP is an effective therapy for OSA, alleviating symptoms and improving performance and cardiovascular function. As with most chronic therapies, compliance is the major obstacle to successful CPAP therapy. Comprehensive programs that maximize the comfort of the patient-device interface, optimize the early treatment period, treat any side effects, and provide long-term follow-up can improve compliance with CPAP therapy.

## Sleep HealthCenters® CPAP Management Program

Sleep HealthCenters® has developed a unique management program to provide the key features identified to improve CPAP compliance. The program offers intensive patient counseling, education, monitoring and follow-up to maximize the patient's early treatment experience and comfort with the device.

In order to fully implement this program **Margaret Trussler, APRN**, has just joined Sleep HealthCenters®. Margaret is a nurse practitioner with over 20 years of nursing experience. She specializes in long-term case management and will coordinate the CPAP compliance program.

Sleep HealthCenters® specially trained sleep clinicians work with the patient throughout the entire process. Typically, the process begins during a consultation with one of our sleep physicians. They educate the patient about OSA, discuss treatment options, then intro-

## CPAP COMPLIANCE: A CASE STUDY

Lawrence Epstein, M.D.

Mr. G is a 55 y.o. male diagnosed with OSA 7 years ago. He tried CPAP but stopped using it after 3 weeks because of a chronic runny nose and inability to get comfortable wearing a mask on his face. He then had a septoplasty and uvulopalatopharyngoplasty. This reduced his loud snoring but he noticed only mild reduction in his chronic sleepiness. He has had no further treatment for OSA. His sleepiness has gradually increased and over the last 6 months, his co-workers have complained that he is falling asleep during meetings and he has had difficulty staying awake during his 35 minute commute home from work. His weight has gradually increased and he now weighs 25 lbs more than he did at the time of his initial evaluation. He was recently started on a beta blocker for hypertension, which

has not yet come under control. He decided to seek assistance after his wife complained that his snoring had returned, was disturbing her sleep and often forced her to leave the bedroom.

The patient was evaluated in the sleep clinic and underwent an overnight sleep study that showed moderate OSA. He had a Respiratory Disturbance Index (RDI) of 33 obstructive events/hr and a low oxyhemoglobin saturation level of 81%. CPAP at 11 cm H<sub>2</sub>O pressure eliminated the OSA. In the sleep clinic, he again complained of nasal congestion and discomfort with wearing the CPAP mask. After other treatment options were explained, including further surgery, use of an oral appliance or weight loss, Mr G. decided to give CPAP another try. He met with a CPAP therapist who showed him multiple mask

styles. He felt less constrained and more comfortable with the nasal pillow style. He was also given a humidifier to reduce dryness and instructed in how to care for his machine. After one week he was still having nasal congestion and was using the device only 3 hours/night. The sleep physician started him on nasal steroids for his congestion, while the CPAP therapist reviewed how to adjust the humidifier to improve comfort and encouraged Mr. G to continue with therapy. At one month he was up to 5.5 hours/night and reported feeling more alert and having more energy during the day. His wife was also happy to sleep with him again. He is now eager to continue with CPAP and bought a second device for his beach house so he wouldn't have to take it with him each weekend.

duce the patient to a CPAP therapist for immediate set-up, without the patient leaving the office. During the set-up appointment the therapist ensures that the patient begins with the most appropriate interface and is educated about expectations for their initial experience. The patient returns for a follow-up visit one week later with the nurse practitioner or CPAP therapist to review their comfort, compliance, and to address any side effects. Patients are then seen at intervals of one month, three months, six months and one year by a member of the CPAP team, either the physician, nurse practitioner, or respiratory therapist. CPAP compliance is tracked and progress reports are sent to the ordering physician to keep them informed.

Our CPAP team includes the following staff members (from left to right): **Pam Gaffney, CRT, CPAP Therapist**, brings to Sleep HealthCenters® experience as both a respiratory therapist and as a polysomnographic technologist. **Margaret Trussler, APRN, Nurse Practitioner.** **Paul Urman, CRT, CPAP Therapist** is a respiratory therapist who spent several years providing CPAP services through a home care company and brings an understanding of the advantage of coordinated care delivered in the clinic. **Don Ordway, CRT, CPAP Therapist**, has over ten years experience caring for sleep disorders patients and almost 30 years as a respiratory therapist. Don has been working at Sleep HealthCenters® for over five years and is the Manager of Ancillary Services. **Lisa Palmisano** is our Administrative Manager for Ancillary Services. Lisa ensures that CPAP patients are set-up as quickly as possible and that patient updates are continuously forwarded to referring physicians.

