

Don't Start Celebrating—CPAP Adherence Remains a Problem

Commentary on:

Lettieri and Walter. Impact of group education on continuous positive airway pressure adherence. *J Clin Sleep Med* 2013;9:537-541.
Parthasarathy et al. A pilot study of CPAP adherence promotion by peer buddies with sleep apnea. *J Clin Sleep Med* 2013;9:543-550.

Terri E. Weaver, Ph.D., R.N., FAAN

University of Illinois at Chicago College of Nursing, Chicago, IL

It is well recognized that the effectiveness of continuous positive airway pressure (CPAP) has been limited due to the prevalence of non-adherence to this therapy.^{1,2} Although the pattern of non-adherence was first described in 1993,³ approaches employed to date to address this issue, such as education and telephone follow-up calls, have had limited success.¹ Unfortunately, 29% to 83% use their devices less than 4 hours/night, less than the nightly duration required to improve daytime sleepiness and quality of life.⁴ The most promising intervention, a combination of extended hospital stay, education, and home visits, would be prohibitive in our system of healthcare reimbursement.⁵

Interventions to improve disease-specific self-efficacy, or the patient's confidence in applying CPAP, have demonstrated increased nightly use.⁶ Such studies have employed group cognitive behavioral therapy, which may require expertise not common in most sleep laboratories. In this issue, two articles describe alternative approaches to delivering patient education and support as a means to increase disease-specific self-efficacy. Lettieri and colleagues applied group education in a predominantly military population primarily to enhance the efficiency of the sleep laboratory while promoting treatment adherence.⁷ This study conducted a post hoc comparison of CPAP adherence with group versus individual education. In a pilot study, Parthasarathy and coworkers paired patients receiving care at a Veterans Administration hospital with trained peer buddies to provide support and education compared to usual care that also included individual education.⁸

The interventions delivered in both of these investigations improved CPAP adherence. Receiving education in a group setting in addition to an individual meeting with the provider resulted in higher levels of adherence at 1 month than those only receiving instruction individually (3.5 ± 1.9 vs 3.1 ± 2.6 h/day, $p = 0.04$, respectively) and higher proportion of nights used (67.2 ± 30.8 vs 62.1 ± 37.0 , $p = 0.02$, respectively). Across the 3-month study period, overall buddy peer support was well received by patients and enhanced CPAP adherence compared to usual care ($p = 0.04$) (first week of treatment, 5.2 ± 2 vs 4.0 ± 2.4 h/day, $p = 0.08$, respectively).

Although these data are promising, don't start celebrating yet. A close examination of the results suggests that CPAP non-adherence remains a problem. Unfortunately, neither study achieved levels of adherence that would restore nor-

mal functioning.⁹ The mean use in both studies was less than 6 h/night; leaving an unprotected airway the remainder of the sleep period. Moreover, what remains unclear is the underlying mechanism that promoted adherence. Both studies indicate that their interventions were based on the need for education and improved self-efficacy. However, only one of the studies systematically measured self-efficacy and did not find statistically reliable differences between intervention groups. However, this may be due to the small sample size and lack of power for this outcome as well as the timing of the assessment. Although Parthasarathy and colleagues employed a validated metric, self-efficacy was not evaluated until after 3 months of treatment when the initial intervention effect may have dissipated. It has been shown that the pattern of adherence is established during the first week of treatment.^{10,11}

We still are at a loss as to how to promote CPAP adherence to levels that will prevent comorbidities and enhance quality of life. Indeed, we do not know whether singular or multiple approaches work best, what type of knowledge—written, oral, video, experiential, or a combination—has the greatest impact and if individual or group-delivered intervention delivers the highest effect. Comparative effectiveness research is needed, employing different interventions to promote CPAP adherence, to determine which method(s) work(s) best and in which patient population, is cost-effective, and easily incorporated into clinical practice. Moreover, it is insufficient to identify what works, we also need to understand the underlying mechanism(s) by which adherence is improved.

As a field, we have yet to develop the comprehensive self-care management and individual-centered care that incorporates interventions to promote adherence for optimal outcomes. Successful with other chronic illnesses, a self-management program addresses patient access to information, continuity and coordination of care across specialties, appropriate infrastructure (home vs in-laboratory studies; short wait time to study), ideal provider mix, and symptom management.^{12,13} Recent studies, such as the two published in this issue, are enriching our understanding of salient components to enhance CPAP adherence. Although further research is needed, what we learn will have limited utility if we fail to develop a comprehensive inter-professional approach to the care of patients with OSA that is designed to build self-management skills.

CITATION

Weaver TE. Don't start celebrating—Cpap adherence remains a problem. *J Clin Sleep Med* 2013;9(6):551-552.

REFERENCES

1. Sawyer AM, Gooneratne NS, Marcus CL, Ofer D, Richards KC, Weaver TE. A systematic review of CPAP adherence across age groups: Clinical and empiric insights for developing CPAP adherence interventions. *Sleep Med Rev* 2011;15:343-56.
2. Weaver T, Grunstein R. Adherence to continuous positive airway pressure therapy: The challenge to effective treatment. *Proc Am Thorac Soc* 2008;173-8.
3. Kribbs NB, Pack AI, Kline LR, et al. Objective measurement of patterns of nasal CPAP use by patients with obstructive sleep apnea. *Am Rev Respir Dis* 1993;147:887-95.
4. Weaver TE, Grunstein RR. Adherence to continuous positive airway pressure therapy: The challenge to effective treatment. *Proc Am Thorac Soc* 2008;5:173-8.
5. Hoy CJ, Vennelle M, Kingshott RN, Engleman HM, Douglas NJ. Can intensive support improve continuous positive airway pressure use in patients with the sleep apnea/hypopnea syndrome? *Am J Respir Crit Care Med* 1999;159:1096-100.
6. Richards D, Bartlett DJ, Wong K, Malouff J, Grunstein RR. Increased adherence to CPAP with a group cognitive behavioral treatment intervention: A randomized trial. *Sleep* 2007;30:635-40.
7. Lettieri CJ, Walter RJ. Impact of group education on continuous positive airway pressure adherence. *J Clin Sleep Med* 2013;9:537-41.
8. Parthasarathy S, Wendel C, Haynes PL, Atwood C, Kuna S. A pilot study of CPAP adherence promotion by peer buddies with sleep apnea. *J Clin Sleep Med* 2013;9:543-50.

9. Weaver TE, Maislin G, Dinges DF, et al. Relationship between hours of CPAP use and achieving normal levels of sleepiness and daily functioning. *Sleep* 2007;30:711-9.
10. Weaver TE, Kribbs NB, Pack AI, et al. Night-to-night variability in CPAP use over the first three months of treatment. *Sleep* 1997;20:278-83.
11. Budhiraja R, Parthasarathy S, Drake CL, et al. Early CPAP use identifies subsequent adherence to CPAP therapy. *Sleep* 2007;30:320-4.
12. Lorig KR, Ritter P, Stewart AL, et al. Chronic disease self-management program: 2-year health status and health care utilization outcomes. *Med Care* 2001;39:1217-23.
13. Holman H, Lorig K. Patient self-management: A key to effectiveness and efficiency in care of chronic disease. *Public Health Rep* 2004;119:239-43.

SUBMISSION & CORRESPONDENCE INFORMATION

Submitted for publication April, 2013

Accepted for publication April, 2013

Address correspondence to: Terri E. Weaver, Ph.D., R.N., FAAN, Dean, College of Nursing, Professor, Biobehavioral and Health Science University of Illinois at Chicago College of Nursing, 845 South Damen Ave. MC 802, Chicago, IL 60612; Tel: (312) 996-7808; Fax: (312) 413-4399; E-mail: teweaiver@uic.edu

DISCLOSURE STATEMENT

Dr. Weaver has received use of research equipment from Philips Respironics, Inc.; grant support from TEVA, Inc.; has FOSQ License Agreements with Nova Som, GlaxoSmithKline, Philips Respironics, Cephalon, Inc., and Nova Nordisk; and is a non-salaried member of the Board of Directors for ViMedicus, Inc.