

Continuous Positive Airway Pressure Therapy for Obstructive Sleep Apnea Maximizing Adherence Including Using Novel Information Technology–based Systems

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KEYWORDS

- Sleep-disordered breathing • Sleep apnea • OSA • Untreated sleep apnea • Adherence
- Compliance • Positive airway pressure • PAP • CPAP

KEY POINTS

- Sleep apnea is a form of sleep-disordered breathing that is associated with an increase in disease comorbidities, mortality risks, health care costs, and traffic accidents.
- Sleep apnea is most commonly treated with positive airway pressure (PAP).
- PAP can be difficult for patients to tolerate.
- This leads to initial and long-term noncompliance.

Approximately 42 million American adults have sleep-disordered breathing.¹ This disease prevalence is similar to both asthma and diabetes combined.¹ Obstructive sleep apnea (OSA) is the most common form of sleep-disordered breathing. OSA occurs when the muscles in the back of the throat fail to keep the airway open, despite efforts to breathe. OSA occurs in all age groups and both sexes.² Untreated OSA is associated with an increase in disease comorbidities, mortality risks, health care costs, and traffic accidents.¹ Although it is estimated that 75% of severe sleep-disordered breathing cases remain undiagnosed,¹ over the past 5 to 10 years, the sleep industry's focus has shifted from diagnosing sleep apnea to managing the patient's sleep apnea treatment. There are multiple methods to treat sleep apnea, and medically appropriate methods should be

embraced. However, positive airway pressure (PAP), a treatment that uses mild air pressure to keep the airways open, is the most common method currently used to treat sleep apnea.

In 2004, a quantitative review of 50 years of research on variations in patients' adherence to medical recommendations showed adherence rates of approximately 70% for most medical conditions.³ The poorest rates of adherence were related to human immunodeficiency virus and sleep disorders.³ PAP compliance or adherence is commonly defined as using the therapy for an average of 4 hours a night for at least 70% of the nights queried. Most insurance companies follow Centers for Medicare and Medicaid Services (CMS) guidelines and define PAP compliance or adherence as the use of PAP 4 or more hours per night on 70% of nights during any consecutive

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30-day period during the initial 90 days of use.⁴ Empiric studies suggest that PAP compliance ranges from 30% to 60%.⁵

Most insurance companies require compliance with PAP treatment to cover ongoing reimbursements for the device and related disposable supplies. Reimbursement rates have been steadily declining for some time. This decrease in reimbursement and the increase in adherence outcomes require the industry to take a businesslike approach in order to sustain service businesses. Therefore, the business of PAP compliance has been created. An applicable holistic business approach to transform industry's focus is to apply the organizational model of people, process, and technology. Using the data that have been gathered and the skills of the people in sleep medicine, new technology and processes can be applied to efficiently and effectively solve the PAP adherence problem.

In order to create PAP adherence, one must embrace everything known about creating behavioral change. There are some consistent components of the behavioral change process that are included in accepted theory-based methods, like the comprehensive Transtheoretical Model of Health Behavior (Fig. 1) or Optum's more recent model, The ASM Model (awareness, skill building, and maintenance).^{6,7} There are a plethora of

published experiences where researchers have applied these behavioral change models to health conditions like smoking cessation, weight control, treatment adherence, and others. These models can be studied to see how PAP patients may move through or between the stages of behavioral change. Then, the behavioral change processes can be applied to facilitate an increase in PAP adherence within the sleep apnea patient population. As these processes are applied, population cohorts that are positively affected by the interventions and other cohorts that are not will be discovered. These experiences can then be used to apply a more customized approach at the right time, providing an efficient and effective standardized methodology to create increased understanding, tolerance of PAP therapy, and adherence to PAP therapy within a population.

Patients who have been diagnosed with sleep apnea and who have been prescribed continuous positive airway pressure (CPAP) or bilevel therapy will begin a process of behavioral change that it is hoped will lead to adherence to PAP therapy. In some patients, lasting change occurs overnight; in some, change takes much longer, and unfortunately, some never change or are unable to maintain change.

According to the Transtheoretical Model, the first stage is the precontemplation change.

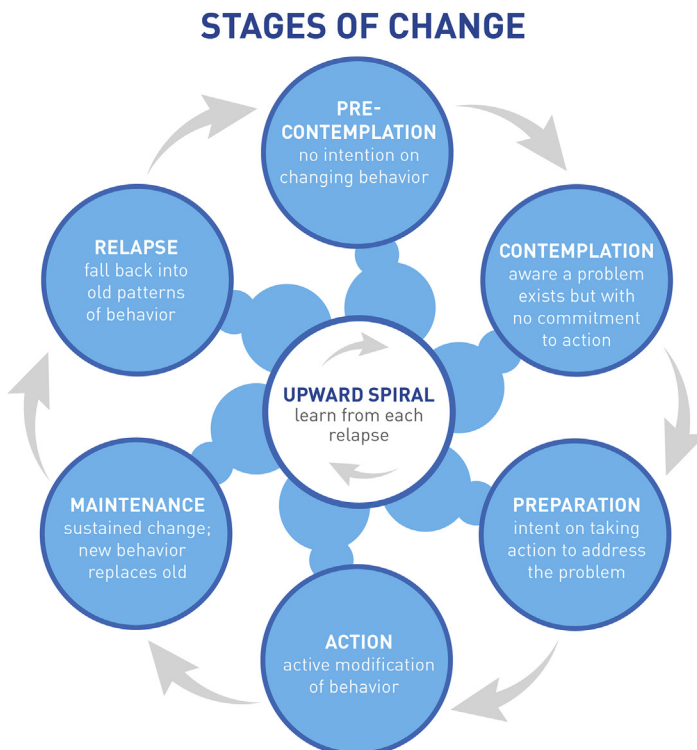


Fig. 1. Transtheoretical model of behavioral change.

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