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Although data are limited, studies suggest on average lower positive airway pressure use in Black, indigenous, and people of color (BIPOC) compared with Whites in most but not all studies. Most of these observational studies are certainly limited by confounding by socioeconomic status and other unmeasured factors that likely contribute to differences. The etiology of these observed disparities is likely multifactorial, due in part to financial limitations, differences in sleep opportunity, poor sleep quality due to environmental disruptions, and so forth. These disparities in sleep health are likely related to chronic inequities, including experiences of racism, neighborhood features, structural, and contextual factors. Dedicated studies focusing on understanding adherence in BIPOC are lacking. Further research is needed to understand determinants of PAP use in BIPOC subjects and identify feasible interventions to improve sleep health and reduce sleep apnea treatment disparities.

**Outcomes Data for Continuous Positive Airway Pressure Treatment: What Do We Really Know?** 551

Steven H. Feinsilver

Obstructive sleep apnea is one of the most common chronic respiratory illnesses, causing daytime sleepiness and cognitive and cardiovascular morbidity. The most successful treatment has been with positive airway pressure (continuous positive airway pressure or bilevel positive airway pressure). It has been surprisingly difficult to demonstrate improvement in these outcomes with continuous positive airway pressure treatment. This may be because of difficulty quantifying the illness, and heterogeneity in pathophysiology and clinical presentations. This article reviews what has been proven about clinical outcomes, and what is likely if not completely proven.

**Cost-Effectiveness of Continuous Positive Airway Pressure Therapy Versus Other Treatments of Obstructive Sleep Apnea** 559

Jeremy A. Weingarten

Obstructive sleep apnea (OSA) is a common disorder that is increasing in prevalence, both in the United States and worldwide. Continuous positive airway pressure (CPAP), the gold-standard treatment for OSA, is cost-effective from both a payer and societal perspective. Alternative treatments of OSA, including oral appliance therapy, various surgeries, and hypoglossal nerve stimulation have also been evaluated from a cost-effectiveness perspective although results are less consistent. Some studies directly compare these alternative therapies with CPAP. This review will discuss the available literature for cost-effectiveness analysis in the treatment of OSA.

**Clinical Decision-making for Continuous Positive Airway Pressure Mask Selection** 569

Jeane Lima de Andrade Xavier, Mariana Delgado Fernandes, Geraldo Lorenzi-Filho, and Pedro R. Genta

Continuous positive airway pressure is the gold standard treatment for obstructive sleep apnea. Different interfaces with distinct characteristics, advantages, and disadvantages are available, which may influence long-term adherence. Oronasal masks have been increasingly used. However, recent evidence suggest that nasal masks are more effective when continuous positive airway pressure is used to treat obstructive sleep apnea. The main objective of this review is to describe the basis for the selection of the interface for the treatment of obstructive sleep apnea with continuous positive airway pressure.

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Annie C. Lajoie and Marta Kaminska

The treatment of chronic hypoventilation usually requires noninvasive ventilation. However, upper airway obstruction can lead to hypoventilation in conditions such as obesity-hypoventilation syndrome, or chronic obstructive lung diseases (overlap syndrome). In these situations, continuous positive airway pressure can be an effective therapeutic option. This article reviews the pathophysiology of sleep-related hypoventilation, discusses situations where treatment with continuous positive airway pressure is feasible and briefly outlines noninvasive ventilation modes and settings for the treatment of common sleep-related hypoventilation disorders.

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Terri E. Weaver

About half of continuous positive airway pressure (CPAP)-treated patients are adherent, substantially affecting efficacy. A limitation to understanding predictors of adherence is the lack of a singular definition. Univariate analyses have suggested an array of factors that are statistically significant and reflect disease pathophysiology, clinical features, demographic characteristics, device-related variables, and psychological factors, but whether differences are clinically meaningful is unclear. There have been limited applications of multiple regression to compare the relative influence of multiple variables. This review article considers categories of variables that have been explored and suggests those that may be labeled “best” predictors in understanding CPAP use.

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Alexander Sweetman, Leon Lack, Megan Crawford, and Douglas M. Wallace

Comorbid insomnia and sleep apnea (COMISA) is a highly prevalent and debilitating condition that is more difficult to treat compared with insomnia alone or sleep apnea alone. Approximately 30% to 50% of sleep clinic patients with sleep apnea report comorbid insomnia symptoms. Comorbid insomnia is associated with lower adherence to positive airway pressure therapy for obstructive sleep apnea. Management approaches that include targeted treatments for both insomnia and sleep apnea lead to the best treatment outcomes for patients with COMISA. Therefore, sleep clinics should incorporate insomnia and COMISA management pathways including access to cognitive behavioral therapy for insomnia.

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Daniel A. Barone and Alan Z. Segal

Obstructive sleep apnea (OSA) is characterized by repetitive episodes of complete or partial upper airway obstruction during sleep, with a worldwide estimate of 936 million sufferers. Treatments of OSA include continuous positive airway pressure (CPAP), weight loss, positional therapy, oral appliances, positive upper airway pressure, oro-maxillofacial surgery, hypoglossal nerve stimulation, and bariatric surgery, and others, with CPAP being the most commonly prescribed treatment. In this review, the neurologic conditions of stroke, cognitive decline, epilepsy, and migraines will be discussed as they relate to OSA. Additionally, the literature regarding improvement in these conditions following treatment with CPAP will be explored.

**Continuous Positive Airway Pressure Use for Obstructive Sleep Apnea in Pediatric Patients** 629

Temitayo Oyegbile-Chidi

Pediatric obstructive sleep apnea is becoming more common and better diagnosed and treated. It is seen in children with obesity, genetic disorders, neuromuscular disorders, and congenital malformations. After adenotonsillectomy, continuous positive airway pressure (CPAP) is a major mode of treatment. CPAP is traditionally initiated by titrating in the laboratory. However, auto-CPAP titration in the home environment is becoming more accepted as an option. When children are adherent to CPAP, there are significant benefits to treatment, both short-term and long-term. The short-term benefits include improved behavior, focus, attention, and improved sleep. The long-term benefits include improved cardiovascular and metabolic comorbidities.

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Nitin K. Sethi

Both epilepsy and obstructive sleep apnea are common conditions and hence frequently coexist in a given patient. A complex bidirectional relationship exists between the 2 conditions where the presence of one affects the other. Treatment of obstructive sleep apnea with continuous positive airway pressure may improve seizure control in medically refractory epilepsy patients, leading to improved quality of life. Understanding of this complex relationship between epilepsy, sleep, and sleep disorders such as obstructive sleep apnea continues to evolve.

**Cognitive Complaints and Comorbidities in Obstructive Sleep Apnea** 647

Michelle Vardanian and Lisa Ravdin

Obstructive sleep apnea (OSA) is highly prevalent sleep disorder that causes sleep fragmentation, frequent awakenings, and intermittent hypoxia. Both OSA and cognitive decline increase in prevalence with factors such as increasing age and body mass. Multiple areas of cognition can be affected, including attention, executive function, memory, as well as emotional functioning through direct effects on brain health. Although positive airway pressure therapy has shown to improve some aspects of cognitive functioning, it does not fully alleviate all cognitive complaints. Inclusion of complementary approaches to comorbidities associated with OSA could potentially enhance treatment outcomes.