

UR 72: CPAP Titration in a Sleep Center Medical Necessity Criteria

Department: Non-Behavioral Health

Number: UR 72

Section: KPNW Region

Effective: 01/2020

Applies to: KPNW Region

Last Reviewed/Approved: 1/23, 1/30/24

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CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) TITRATION IN A SLEEP CENTER MEDICAL NECESSITY CRITERIA

POLICY AND CRITERIA

For Medicare Members

Source	Policy
CMS Coverage Manuals	None
National Coverage Determinations (NCD)	None
Local Coverage Determinations (LCD)	L34040 "Polysomnography and Other Sleep Studies"
Local Coverage Article	A57698 "Billing and Coding: Polysomnography and Other Sleep Studies"
Kaiser Permanente Medical Policy	For Medicare members, follow the criteria in the LCD.

For Non-Medicare Members

CPAP sleep center titration may be indicated for **1 or more** of the following:

- 1) Adult with central sleep apnea syndrome due to congestive heart failure
- 2) Adult with obesity hypoventilation (shallow breathing) syndrome, as indicated by **ALL** of the following
 - A. BMI (body mass index) greater than 30
 - B. Daytime hypercapnia (excess carbon dioxide in the blood) with PaCO₂ (partial pressure of carbon dioxide) greater than 45 mm Hg/ 6.0 kPa (kPa is a unit of pressure) without other etiology (eg, kyphoscoliosis, lung parenchymal disease, myopathy, severe hypothyroidism)
 - C. Sleep-disordered breathing or hypoventilation on polysomnography (sleep study), as indicated by **1 or more** of the following:
 - i. Apnea-hypopnea index of 5 or greater
 - ii. Increase in PaCO₂ during sleep by more than 10 mm Hg/ 1.3 kPa above value while awake
 - iii. Significant oxygen desaturation (ie, less than 90%) not explained by obstructive apneas or hypopneas
 - D. TSH level does not demonstrate hypothyroidism.
- 3) Adult with obstructive sleep apnea, as indicated by **ALL** of the following:
 - A. Appropriate testing situation, as indicated by **1 or more** of the following:
 - i. Initial full-night CPAP titration study

- ii. Repeat full-night CPAP titration study, as indicated by **1 or more** of the following:
 - a. Greater than 10% body weight gain or loss, and need to adjust pressure settings
 - b. Inadequate initial CPAP titration study, and need to perform further pressure titration
 - c. Insufficient response to CPAP therapy due to inadequate pressure or pressure leaks
 - d. Return of symptoms after initial adequate response to CPAP therapy, and need to adjust pressure settings
- B. Obstructive sleep apnea, as indicated by **1 or more** of the following:
 - i. Mild obstructive sleep apnea (ie, apnea-hypopnea index or respiratory disturbance index between 5 and 15, determined with polysomnography) and **1 or more** of the following:
 - a. Cardiovascular disease documented (eg, hypertension, ischemic heart disease, heart failure, stroke)
 - b. Excessive daytime sleepiness (eg, Epworth Sleepiness Scale score of 10 or greater in adult patient)
 - c. Fibromyalgia-like symptoms
 - d. Headaches upon awakening
 - e. Heartburn and reflux
 - f. Impaired cognition
 - g. Mood disorder
 - h. Night sweats
 - i. Nocturia or nocturnal enuresis
 - j. Observed apnea or choking episodes
 - k. Patient is commercial vehicle driver
 - l. Snoring
 - ii. Moderate or severe obstructive sleep apnea (ie, apnea-hypopnea index or respiratory disturbance index 15 or greater, determined with polysomnography)
 - iii. Upper airway resistance syndrome associated with unexplained excessive daytime sleepiness
- C. Performed as full-night CPAP titration study

4) Child, infant, or adolescent with obstructive sleep apnea and **ALL** of the following:

- A. Appropriate testing situation, as indicated by **1 or more** of the following:
 - i. Initial full-night CPAP titration study
 - ii. Repeat full-night CPAP titration study, as indicated by **1 or more** of the following:
 - a. Greater than 10% body weight gain or loss, and need to adjust pressure settings
 - b. Inadequate initial CPAP titration study, and need to perform further pressure titration
 - c. Insufficient response to CPAP therapy due to inadequate pressure or pressure leaks
 - d. Return of symptoms after initial adequate response to CPAP therapy, and need to adjust pressure settings
- B. Polysomnography demonstrates obstructive sleep apnea (ie, apnea-hypopnea index of 1 or greater in child younger than 18 years)

- C. Signs and symptoms consistent with obstructive sleep apnea, including **1 or more** of the following:
- i. Daytime sleepiness
 - ii. Enuresis
 - iii. Failure to thrive (weight less than fifth percentile for age)
 - iv. Hyponasal speech
 - v. Mouth breathing
 - vi. Nocturnal pauses in breathing
 - vii. Nonspecific behavioral problems (eg, hyperactivity, developmental delay, aggression, poor school performance)
 - viii. Pulmonary hypertension
 - ix. Signs of increased respiratory effort (ie, nasal flaring)
 - x. Snoring
- D. No tonsillar or adenoid enlargement (or tonsillar or adenoid enlargement and contraindication to surgical intervention), or failure of tonsil or adenoid removal to change symptoms
- E. Performed as full-night CPAP titration study

RATIONALE

EVIDENCE BASIS

MCG reviewed the evidence on CPAP in 2022.¹ Their findings are provided below:

“For adults with central sleep apnea due to congestive heart failure, evidence demonstrates at least moderate certainty of at least moderate net benefit. A systematic review identified 16 articles that studied treatment of central sleep apnea syndromes related to congestive heart failure and concluded that CPAP therapy can normalize the apnea-hypopnea index and improve left ventricular ejection fraction.²

For adults with obesity hypoventilation syndrome, evidence demonstrates at least moderate certainty of at least moderate net benefit. CPAP has been shown to be effective for the treatment of the majority of patients with obesity hypoventilation syndrome, particularly in the subgroup with severe obstructive sleep apnea.³

For adults with obstructive sleep apnea, evidence demonstrates at least moderate certainty of at least moderate net benefit. In adults, mild obstructive sleep apnea is defined as an apnea-hypopnea index or respiratory disturbance index of 5 to 15, moderate as 15 to 30, and severe as greater than 30.⁴ Systematic reviews, prospective cohort studies, and randomized trials have concluded that CPAP is an effective treatment, with improvement in objective and subjective sleepiness, quality of life, and clinical measures such as blood pressure (in patients who are hypertensive) and cardiovascular mortality.⁵⁻⁹ A randomized trial evaluating the effects of CPAP on prehypertension and masked hypertension in males with severe obstructive sleep apnea found that the use of CPAP promotes significant reductions in blood pressure.¹⁰ Another randomized trial of male and female patients with resistant hypertension and obstructive sleep apnea found that the use of CPAP for greater than 5.8 hours at a time resulted in significant blood pressure reductions.¹¹ For patients with obstructive sleep apnea and heart failure, studies have demonstrated improved left ventricular ejection fraction and cardiac remodeling, and a trend toward decreased mortality when treatment consists of CPAP in addition to optimal medical therapy for heart failure.¹²⁻¹⁴ A study of nocturnal CPAP in obese patients

with obstructive sleep apnea found that the use of CPAP increased exercise tolerance and improved dyspnea in these patients.¹⁵ With appropriate titration, positive airway pressure devices resolve most sleep-disordered breathing regardless of the disease severity level;¹⁶ goals of CPAP titration include achieving a respiratory disturbance index less than 5, a pulse oximetry greater than 90%, and tolerable air leak at the mask.¹⁷ Performance of a split-night study may be indicated if the diagnosis of moderate or severe obstructive sleep apnea can be made within the first 2 hours of recorded sleep, and at least 3 hours of CPAP titration is demonstrated, including the ability of CPAP to eliminate respiratory events during both rapid eye movement sleep and non-rapid eye movement sleep.^{18, 19} Specialty society practice parameters note that a repeat CPAP titration study may be appropriate when the initial CPAP titration fails to resolve obstructive sleep apnea findings sufficiently, when the response to therapy is inadequate despite good adherence and adequate interface fit, when symptoms return after a period of adequate response to CPAP therapy, or when greater than 10% body weight gain or loss necessitates adjustment of pressure settings.^{20, 21}

For children, infants, or adolescents with obstructive sleep apnea, evidence demonstrates at least moderate certainty of at least moderate net benefit. The criteria for interpreting pediatric polysomnograms typically define mild obstructive sleep apnea as an apnea-hypopnea index of 1 to 5, moderate as 6 to 10, and severe as greater than 10.²²⁻²⁴ A specialty society recommended using the pediatric scoring rules for children younger than 18 years of age; however, studies indicated that some of the adult scoring rules may be used in adolescents 13 to 18 years of age.²⁵⁻²⁹ Specialty society clinical guidelines recommend that pediatric patients with symptoms of obstructive sleep apnea who are not candidates for adenotonsillectomy or who have persistent obstructive sleep apnea after adenotonsillectomy should be referred for CPAP management.^{24, 30, 31} Although there is limited evidence for its use, a specialty society recommends using polysomnography when titrating CPAP in infants.³² Performance of a split-night study may be indicated if the diagnosis of moderate or severe obstructive sleep apnea can be made within the first 2 hours of recorded sleep, and at least 3 hours of CPAP titration is demonstrated, including the ability of CPAP to eliminate respiratory events during both rapid eye movement sleep and non-rapid eye movement sleep.^{18, 19} An evidence-based specialty society guideline is unable to recommend split-night CPAP titration for children younger than 12 years due to a lack of data.²⁰ A review article noted that obstructive sleep apnea in children may manifest as hyperactivity, emotional difficulties, decreased academic performance, and difficulty concentrating; in contrast, daytime sleepiness, morning headache, memory impairment, and daytime fatigue are more common symptoms in adults.³³ Specialty society guidelines note that repeat CPAP titration testing may be appropriate when the initial CPAP titration study fails to achieve optimal results, when symptoms return after an initial adequate CPAP therapy response, after 10% body weight gain or loss, and with growth in children using CPAP therapy for obstructive sleep apnea.^{20, 24, 31¹}

The United States Preventive Services Task Force (USPSTF) issued updated recommendations on screening for obstructive sleep apnea in asymptomatic adults in November 2022.³⁴ The supporting evidence review examined the benefits, effectiveness, and harms of treatment with positive airway pressure in adults with obstructive sleep apnea and reports that, compared to inactive control, positive airway pressure was associated with a significant improvement in Epworth Sleepiness Scale score from baseline, sleep-related quality of life, and general health-related quality of life.³⁴ Additionally, the review summarizes evidence from other systematic reviews that show a small but statistically significant association of positive airway pressure with reduced blood pressure.³⁴ No included trials in this review

found significant benefits of treatment with positive airway pressure on mortality, cardiovascular events, or motor vehicle crashes.³⁴

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