Cohere Medical Policy - Positive Pressure Ventilation

Clinical Guidelines for Medical Necessity Review

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Guideline Information:

Specialty Area: Sleep Medicine
Guideline Name: Cohere Medical Policy - Positive Pressure Ventilation

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Type: [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17 yo)

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Service: Positive Pressure Ventilation

Recommended Clinical Approach

Positive pressure ventilation (PPV) can be delivered via noninvasive positive pressure ventilation (NIPPV) using a tight-fitting mask that covers the patient's nose or both the nose and mouth. NIPPV is administered via continuous positive airway pressure (CPAP), automatic positive airway pressure (APAP), or bilevel positive airway pressure (BiPAP). CPAP is used to treat obstructive sleep apnea (OSA); BiPAP is used for patients with OSA and obesity-hypoventilation syndrome (OHS).[1]

Medical Necessity Criteria

Indications

- ➔ **Positive pressure ventilation (PPV)** is considered appropriate if **ANY** of the following is **TRUE**:
  - ◆ For continuous positive airway pressure (CPAP) or automatic positive airway pressure (APAP) with **ANY** of the following:
    - Obstructive sleep apnea (OSA)* and **ANY** of the following[2]:
      - ○ Adults (age 18 or older) with **ANY** of the following[3-4]:
        - ◆ Apnea hypopnea index (AHI) or respiratory event index (REI) is **ANY** of the following[5]:
          - 5–14.9 events per hour (mild OSA) with a condition and/or symptoms (e.g., cardiovascular, metabolic, renal, pulmonary, neuropsychiatric)[6]; **OR**
          - 15–29.9 events per hour (moderate OSA)[7]; **OR**
          - Greater than or equal to 30 events per hour (severe OSA)[7]; **OR**
        - ◆ Preoperative preparation that is intended to improve or optimize the patient's perioperative physical status[8]; **OR**
      - ○ Children (age 17 and under) with **ALL** of the following:
        - ◆ AHI or REI is **ANY** of the following[9-10]:

- 1-4 events per hour (mild OSA) with a condition and/or symptoms (e.g., cardiovascular, metabolic, renal, pulmonary, neuropsychiatric); **OR**
- 5-9 events per hour (moderate OSA); **OR**
- 10 or more events per hour (severe OSA); **AND**

◆ **ANY** of the following:

- Persistent OSA and the patient does not qualify for site-specific upper airway treatment[11]; **OR**
- Persistent OSA with **ANY** of the following (including post-adenotonsillectomy)[12]:
  - Frequent snoring (3 times or more per week); **OR**
  - Labored breathing during sleep; **OR**
  - Gasps, snorting noises, or observed episodes of apnea; **OR**
  - Sleep enuresis (especially secondary enuresis) following at least 6 months of continence; **OR**
  - Sleeping in a seated position or with the neck hyperextended; **OR**
  - Cyanosis; **OR**
  - Headaches on awakening; **OR**
  - Daytime sleepiness; **OR**
  - Attention deficit hyperactivity disorder (ADHD); **OR**
  - Learning problems; **OR**
  - Underweight or overweight; **OR**
  - Tonsillar hypertrophy; **OR**
  - Adenoidal facies; **OR**
  - Micrognathia/retrognathia; **OR**
  - High-arched palate; **OR**
  - Failure to thrive; **OR**
  - Hypertension; **OR**

- Upper airway resistance syndrome (UARS) with **ALL** of the following[13]:
  - A CPAP device is to be used nightly[13]; **AND**

        - **ALL** of the following[14]:
            - AHI less than 5 events per hour; **AND**
            - A minimum SpO of greater than or equal to 92%, the presence of airflow limitation during sleep for greater than or equal to 5% of total sleep time; **AND**
            - Daytime sleepiness and/or fatigue; **OR**
- For bilevel positive airway pressure (BiPAP) with **ANY** of the following:
    - Failure of CPAP with **ANY** of the following:
        - The device is uncomfortable; **OR**
        - The patient is intolerant; **OR**
        - The patient has a contraindication; **OR**
        - CPAP was ineffective; **OR**
    - **ANY** of the following:
        - Central sleep apnea (CSA) with **ALL** of the following[15]:
            - **ANY** of the following:
                - CSA is related to congestive heart failure (CHF); **OR**
                - Initial treatment with CPAP therapy is to normalize the apnea-hypopnea index (AHI); **AND**
            - An adaptive servo-ventilation (ASV) device is to be used nightly[16]; **AND**
        - Chronic obstructive pulmonary disease (COPD) for **ALL** of the following:
            - **ANY** of the following:
                - Prevention of acute respiratory acidosis (normal or elevated arterial CO_2 tension [$PaCO_2$] with normal pH)[7,17]; **OR**
                - Prevention of endotracheal intubation and invasive mechanical ventilation in a patient with mild to moderate acidosis and respiratory distress, with the aim of preventing deterioration to a point when invasive ventilation would be considered[17]; **OR**

- An alternative to invasive ventilation in a patient with severe acidosis and more severe respiratory distress[17]; **OR**
- The patient has sleep-associated hypoventilation (nocturnal hypoxemia); **AND**

◆ A BiPAP device is to be used nightly; **OR**

○ Obesity hypoventilation syndrome (OHS) and **ALL** of the following:

◆ **ANY** of the following:

- For the initial treatment of a stable ambulatory adult patient with OHS[18]; **OR**
- Concurrent severe OSA (AHI greater than or equal to 30 events per hour) presenting with chronic stable respiratory failure; **AND**

◆ A BiPAP device is to be used nightly; **AND**

○ Progressive neuromuscular disease with **ALL** of the following[19]:

◆ **ANY** of the following:

- Chronic respiratory failure; **OR**
- Sleep-related breathing disorders; **AND**

◆ A BiPAP device is to be used nightly or more often as needed as the disease progresses; **AND**

○ Thoracic cage abnormality with **ALL** of the following:

◆ **ANY** of the following[20]:

- An arterial blood gas PaCO2, done while awake and breathing the beneficiary's prescribed FIO2 is greater than or equal to 45 mm Hg; **OR**
- Sleep oximetry demonstrates oxygen saturation less than or equal to 88% for greater than or equal to 5 minutes of nocturnal recording time (minimum recording time of 2 hours), done while breathing the beneficiary's prescribed recommended FIO2; **OR**

- If the patient has neuromuscular disease, **ANY** of the following:
    - Maximal inspiratory pressure is less than 60 cm H20; **OR**
    - Forced vital capacity is less than 50% predicted; **OR**
- COPD does not contribute significantly to the patient's pulmonary limitation; **AND**

◆ A BiPAP device is to be used nightly; **OR**

◆ For continued coverage of BiPAP or CPAP beyond the initial 90-day period, and **ALL** of the following are **TRUE**:

- Documentation stating that a re-evaluation demonstrated improvement by the patient and continued use will likely provide additional improvement; **AND**
- The patient is compliant and uses the device for at least 4 or more hours a night for at least 70% of 30 consecutive nights[21]; **AND**
- **ANY** of the following**:
    - The current device is useable and the patient does not require another device; **OR**
    - Replacement of the current device for **ANY** of the following:
        - Change in the structure of the patient's mouth; **OR**
        - The appliance is worn due to excessive use and unable to be repaired; **OR**
        - The appliance has reached a 5-year reasonable useful lifetime (RUL)[22]; **OR**
        - Repairs, maintenance, or replacement are not covered under a manufacturer's warranty.

** NOTE: The patient's plan determines whether a device should be rented or purchased. General guidance is that when the rental cost exceeds the cost to purchase a device, consideration shall be given to purchase the device. The total covered cost cannot exceed the purchase or rental price.

Non-Indications

➔ **Positive pressure ventilation (PPV)** is not considered appropriate if **ANY** of the following is **TRUE**[23]:

- The need for intubation; **OR**
- Encephalopathy or altered mental status; **OR**
- Hemodynamic instability; **OR**
- Facial trauma or facial defects; **OR**
- Airway obstruction secondary to a mass; **OR**
- Anticipated need for prolonged mechanical ventilation; **OR**
- Gastrointestinal bleeding.

Level of Care Criteria

Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
94660	Continuous positive airway pressure ventilation (CPAP), initiation and management
E0470	Respiratory assist device, bi-level pressure capability, without backup rate feature, used with noninvasive interface, e.g., nasal or facial mask (intermittent assist device with continuous positive airway pressure device)
E0471	Respiratory assist device, bi-level pressure capability, with back-up rate feature, used with noninvasive interface, e.g., nasal or facial mask (intermittent assist device with continuous positive airway pressure device)
E0601	Continuous positive airway pressure (CPAP) device

Definitions

Apnea Hypopnea Index (AHI): number of apneas and hypopneas per total sleep time[5]

Respiratory Disturbance Index (RDI): number of apneas and hypopneas and respiratory effort-related arousals (RERAs) per total sleep time[5]

Respiratory Event Index (REI): number of apneas and hypopneas per monitoring time[5]

Medical Evidence

Patil et al. (2024) discuss a systematic review by the Agency for Healthcare Research and Quality (AHRQ) of long-term outcomes and obstructive sleep apnea (OSA). Patients who received CPAP therapy showed "stronger, statistically significant associations between CPAP treatment for OSA and reduced all-cause mortality, which remained when analyses included randomized control trials (RCTs) and non-RCTs. The studies also address excessive daytime sleepiness (EDS), which can increase symptoms of OSA. Therapy with CPAP has short-term benefits, and symptoms return when treatment is discontinued. The American Academy of Sleep Medicine (AASM) conducted a systematic review and meta-analysis of 33 RCTs. Overall, there is a high level of evidence for CPAP therapy for patients with EDS; the AASM also strongly recommends CPAP therapy.[24]

Masa et al. (2020) conducted an RCT on obesity hypoventilation syndrome (OHS) and cardiac dysfunction. The focus of the secondary analysis was the Pickwick Project, the largest multicenter RCT on OHS. A total of 196 patients with OHS and severe OSA were included; a 3-year timeframe was used to determine the efficacy of noninvasive ventilation (NIV) and CPAP. Of the patients, 102 received CPAP therapy, and 94 received NIV (two levels of pressure). Both therapies showed similar improvement, specifically left ventricular diastolic dysfunction and reduced left atrial diameter. Respiratory function and dyspnea also improved, thus demonstrating the efficacy of both CPAP and NIV. (ClinicalTrials.gov Identifier: NCT01405976).[25]

Wang et al. (2019) investigated the use of noninvasive positive pressure ventilation (NIPPV) for adults with chronic respiratory failure due to chronic obstructive pulmonary disease (COPD), thoracic restrictive disorders (TRD), neuromuscular disease (NMD), and obesity hypoventilation syndrome (OHS). The systematic review included 68 studies with a total of 53,733 patients. For all conditions, NIPPV demonstrated a significant reduction in mortality (statistically and clinically). Patients with COPD demonstrated decreased hospitalizations, intubations, and dyspnea. Patients with TRD, NMD, OHS, and other lung diseases demonstrated increased exercise tolerance, quality of life, and sleep quality; dyspnea and hospitalizations decreased.[26]

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