



American Academy of Sleep Medicine (AASM) definitions for optimal, good, adequate, and unacceptable titration:

1. Optimal titration reduces the Apnea Hypopnea Index (AHI)  $< 5$  for at least 15 minutes' duration and should include supine Rapid Eye Movement (REM) sleep at the selected pressure that is not continually interrupted by spontaneous arousals or awakenings.
2. A good titration reduces the AHI  $< 10$  or by 50% if the baseline AHI is  $< 15$  and should include supine REM that is not continually interrupted by spontaneous arousals or awakenings at the selected pressure.
3. An adequate titration does not reduce the AHI  $\leq 10$  but reduces the AHI by 75% from baseline (especially in severe OSA patients) or one in which the titration grading criteria for optimal or good are met with the exception that Supine REM did not occur at the selected pressure.
4. An unacceptable titration is one that does not meet any of the above definitions.

**Training** – If the patient has been on CPAP or BPAP, then it is up to the technician to assess whether BPAP-ST training is necessary, although generally it is recommended. Patients with a poor prior experience will typically benefit from training. Patient education and BPAP-ST training shall be performed in the same manner as specified by the **CPAP Titration Procedure**. During training, the EPAP setting shall be maintained at its lowest level (i.e. 4 cm H<sub>2</sub>O), while IPAP pressure shall begin at 8 cm H<sub>2</sub>O, and be gradually increased to 10 cm H<sub>2</sub>O at the end of the training session.

#### Workflow

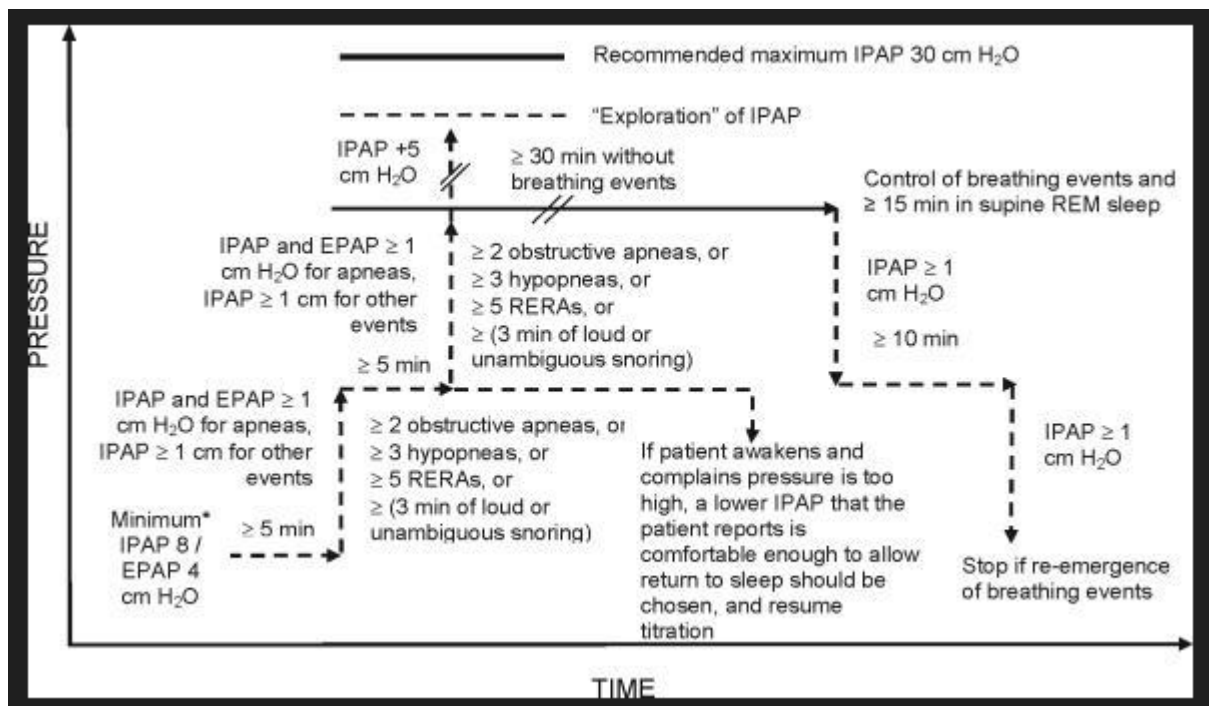
1. Explain test/expectations to the patient.
2. Fit the patient with an interface and headgear.
3. Allow patient to test/feel pressure prior to starting hook-up.
4. Back-up rate is 2-4 breaths per minute (bpm) below the resting respiratory rate.
5. Refer to the attached algorithm, AASM Bi-Level titration for patients greater than or equal to 12 years of age.
  - Recommended minimum starting IPAP should be 8 centimeters of water pressure (cm/H<sub>2</sub>O)
  - Recommended minimum starting pressure EPAP should be 4 cm/H<sub>2</sub>O
  - Recommended maximum IPAP 30 cm/H<sub>2</sub>O
  - Recommended minimum IPAP-EPAP differential is 4 cm/H<sub>2</sub>O with the maximum differential being 10 cm/H<sub>2</sub>O
6. If oxygen saturation levels are still low despite pressure support and respiratory rate having been optimized:
  - If the room air baseline SpO<sub>2</sub> is  $\leq 88\%$  for a cumulative 10 minutes **in the absence of sleep disordered breathing events (including snoring)**, increase EPAP and/or IPAP pressure by 1 cm H<sub>2</sub>O every  $\geq 5$  minutes until SpO<sub>2</sub>  $\geq 90\%$  is achieved. Pressure increases to improve baseline SpO<sub>2</sub> levels may be performed twice during the titration process and should be guided by the technician's assessment of the patient's ability to tolerate the increased pressure.
  - If PAP pressure increase of 1 or 2 cm H<sub>2</sub>O does not sufficiently improve the baseline SpO<sub>2</sub> level, gradually return the pressure to the levels that controlled the obstructive and central events, and apply oxygen. Refer to the Sleep Lab policy titled Oxygen Administration.
7. If the patient complains that the pressure is too high, reduce the pressure, choosing a pressure that will allow the patient to fall back asleep.

## Components:

1. Patient education
2. Patient hook-up
  - a. International 10-20 hook-up
  - b. Chin Electromyograph (EMG)
  - c. Eye Electrooculogram (EOG)
  - d. Anterior Tibialis leads right and left
  - e. Chest Respiratory Inductance Plethysmography (RIP) belts
  - f. Abdomen RIP belt
  - g. Oximeter
  - h. Snore microphone
3. Patient to bed
4. Lights out
5. Impedance check
6. Machine calibration
7. Patient calibration
8. Machine calibration
9. Lights on
10. Disassemble PAP device and remove all electrodes and process each for disinfection or disposal per policy.

## Reference:

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See Procedure Clinical Guidelines for Manual Titration of Positive Airway Pressure using Bilevel Spontaneous Timed (BPAP-ST)

