BiLevel or APRV (Airway Pressure Release Ventilation) is a mode of ventilation intended to allow patients to breathe spontaneously over intermittent (freq rate or F) and alternating levels of CPAP.

CPAP at alternating levels, termed appropriately at the higher level (Peep high), and with an alternating time-cycled releases (F) to a lower set pressure, (Peep low).

The intermittent alternating levels of CPAP helps with CO2 elimination. The pressure gradient creates tidal volume ventilation (release volume). In the example, the pressure difference is 15 cm H2O (25-10).

Pressure Support may be used at both levels of CPAP to support spontaneous breaths.

BiLevel is a ventilatory support mode that allows the patient to breathe spontaneous breathing at any point during the alternating levels of CPAP. The spontaneously breathing patient will also demonstrate a reduced sedation and analgesia requirement. When we allow for spontaneous breathing there is a corresponding enhanced ventilation of dependent areas. Spontaneous breathing decreases atelectasis and improves ventilation perfusion relationships. Additionally, the decrease in intrathoracic pressures during spontaneous breathing enhances venous return. This may improve cardiac output and the potential for oxygen delivery.

One of the clinical advantages of BiLevel is during the alternating levels of CPAP a stable inflation time is created (Time High or TH). The majority of time is spent at Peep high.

**RE-CAP:**

- BiLevel includes two pressure levels of CPAP: Peep high and Peep low.
- The gradient between these two pressures will determine the potential for tidal volume (release volume).
- BiLevel has a time interval: Time High.
- The time spent at Peep high has the potential for increased alveolar recruitment and improved oxygenation.
- Pressure support can be added to assist spontaneous breaths at both peak levels.
- Spontaneous breathing has shown a decrease in atelectasis and improve oxygenation.
- BiLevel ventilation has a reduced sedation requirement.

In this example, the pt’s inflation time at Peep High is 5.0 seconds. The expiratory time to Peep Low would be 1 second.

**Time spent at Peep High creates the potential for alveolar recruitment and improved oxygenation.**

The expiratory phase (time spent at Peep low), is only long enough to allow for an expiratory pressure release (Release tidal volume).