

COMPARISON OF CPAP VERSUS APAP

By Krystle Minkoff, RPSGT, RST

As we delve into the specifics of PAP (positive airway pressure) treatments for obstructive sleep apnea (OSA), this article begs to relay the differences in efficacy of continuous positive airway pressure (CPAP) vs. automatic positive airway pressure (APAP).

We shall begin with a review of obstructive sleep apnea.

Obstructive sleep apnea is a condition in which an obstruction to the flow of air (and oxygen) occurs during sleep, resulting in poor nighttime sleep and consequent daytime sleepiness. When sleep apnea is uncontrolled, it may contribute to elevated blood pressure, and an increased risk of stroke and heart attack. The treatment of choice for OSA has primarily and historically been CPAP, which is the only 100 percent effective therapy for treatment of OSA.

We shall now investigate the differences, pros & cons, and efficacy of treatment between CPAP and APAP therapy. CPAP devices are titrated to a single set pressure by a sleep technologist. The titration study is generally conducted after a traditional in-lab polysomnogram for diagnosis of OSA and is intended to determine the CPAP pressure setting needed to alleviate or eliminate the majority, if not all, respiratory events occurring during the night.

Contrary to the delivery of a single set pressure, APAP machines have a complex algorithm that detects on a breath-by-breath basis what pressure the patient needs at that moment and adjusts accordingly when respiratory events occur (or do not occur). In essence, the APAP device finds the ideal pressure for any given moment.

It could be argued that one of the “cons” of CPAP is that a single set pressure may be cumbersome to tolerate (especially at higher settings), and this therapy does not adjust to varying pressure needs throughout the night. More and more frequently APAP devices are being prescribed in lieu of CPAP devices because of their versatility and ability to adapt to patient needs over the course of the night.

While APAP machines are costlier, APAP devices can also be set to a single pressure. If for some reason APAP therapy is not working well for the patient, they would not need to get a different machine because

APAP can be set to a straight CPAP mode. CPAP devices on the other hand are unable to be adjusted to have varying pressure settings.

APAP machines may be better suited for those that toss and turn during the night. Due to gravity, supine sleepers or patients in rapid eye movement (REM) generally have the highest number of respiratory events vs. being lateral or prone. This allows the APAP to automatically adjust the pressure upward when more severe events are detected and lower the pressure accordingly when positional changes that reduce event occurrence are apparent.

CPAP also machines do not allow for physical changes, such as weight loss. It is recommended that following a 10 percent increase or decrease in body weight the CPAP patient should undergo another evaluation to determine if a pressure increase or decrease is warranted. APAP devices can help eliminate the need for additional expensive in-lab sleep testing.

Those who are diagnosed using a home sleep apnea test (HSAT) will often be prescribed an APAP device. This is because a HSAT cannot determine stages of sleep and as previously discussed, CPAP devices are calibrated for breathing needs when events are at their worst (supine or during REM sleep). HSAT evaluate respiratory events that occur through the course of the night, which may include wake time. APAP can be used to determine the range of CPAP needed over the night and that range can later be fine-tuned using remote monitoring.

There are pros and cons to both therapies – the technologist needs to be aware of these to assess the efficacy of patient therapy for various types of patients

APAP therapy is swiftly becoming the go-to machine for treating OSA as the technology becomes better developed. However, there are some instances where a CPAP device may be the better choice:

- This may make it difficult for some physicians to determine the best machine for their patients.
- Changes in pressure settings can be slow to react to ideal pressure needs.
- APAP machines are not ideal for patients who, once starting treatment, are discovered to have central sleep apnea; in which case an adaptive servo ventilation (ASV) or bilevel positive airway pressure (BiPAP) machine may be the better choice.
- APAP machines are not recommended for patients with certain comorbidities. These include conditions such as chronic heart failure or obesity hypoventilation syndrome.
- While APAP therapy fluctuates between high and low pressure settings; the range of settings may need to be fine-tuned over time. ❖



KRYSTLE MINKOFF, RPSGT, RST

Krystle Minkoff, RPSGT, RST, is a veteran sleep expert with more than 15 years of experience, who brings vast knowledge and authority as a consultant and published author to the sleep industry. Krystle shares her experience by continually producing new industry related articles.