How Does BiPAP for COPD Work?

by RUSSELL WINWOOD

BiPAP for COPD

There are a growing number of devices on the market to help us manage COPD. One device becoming more widely used in some countries for the treatment of COPD is bilevel positive airway pressure (BiPAP). In this article, I'll discuss BiPAP, BiPAP for COPD, including risks and BiPAP vs. CPAP.

What Is a BiPAP Machine?

BiPAP machines have two pressure settings. One for the prescribed pressure for inhalation and one for a lower pressure for exhalation. BiPAP is a type of Non-invasive Ventilation (NIV), which means the application of pressure while commonly wearing a mask. BiPAP was originally created in the 1990s for the treatment of sleep apnea.

BiPAP machines were often used in sleep apnea patients when the traditional CPAP (continuous positive airway pressure) machines were not working. The two pressure settings of the BiPAP machine can make exhaling easier for some patients who had difficulty exhaling with the continuous pressure of a CPAP machine.

BiPAP and COPD

One of the main benefits of using a BiPAP machine for COPD is to ease the burden of breathing on patients. The use of two pressure settings available in BiPAP machines assists patients in both inhaling and exhaling. This assistance reduces the pressure on the respiratory muscles, which can give patients relief.

BiPAP can reduce both hypercapnia, also known as hypercarbia and CO2 retention, as well as hypoxemia, an abnormally low concentration of oxygen in the blood.

In a 2017 study into the use of BiPAP for COPD the authors' concluded "data from good quality randomized controlled trials show that NIV is beneficial as a first-line intervention in conjunction with usual care for reducing the likelihood of mortality and endotracheal intubation in patients admitted with acute hypercapnic respiratory failure secondary to an acute exacerbation of chronic obstructive pulmonary disease (COPD)".

While more studies are needed, there is evidence to support the use of BiPAP in patients with respiratory failure. The use of BiPAP in patients with COPD has also shown improvements in pulmonary rehabilitation outcomes and quality of life.

The authors' discussion notes from a 2016 study titled *Home Non Invasive Ventilation (NIV) treatment for COPD patients with a history of NIV-treated exacerbation; a randomized, controlled, multi-center study*, reported previous studies of long-term non-invasive ventilation had shown conflicting results. We believe the treatment can reduce mortality and readmissions when applied in patients with previous need of acute ventilatory support, regardless of persistent hypercapnia.

Risks of Using BiPAP for COPD

BiPAP therapy is generally safe with very few risks, and the most common complaint is often to do with irritation from the face masks. Some other risks can include stomach bloating, dry mouth, leaking from the mask, causing less pressure being delivered, eye irritation and sinus pain or sinus congestion.

Selecting a mask that fits well and is comfortable can solve some of these issues.

BiPAP vs. CPAP: What's the Difference?

BiPAP and CPAP (continuous positive airway pressure) are commonly used non-invasive ventilation therapies (NIV). Which therapy is used for a particular patient will depend on many things your doctor will access? Symptoms and previous history of exacerbations can be two primary considerations when your doctor is deciding on which therapy to use.

Comorbidities such as sleep apnea, congestive heart failure/coronary artery disease, and pulmonary or neurologic medical disorders can dictate the type of therapy required. A patient’s pressure settings are also considerations for the types of therapies used. As I mentioned earlier, CPAP is the delivery of continuous pressure, and for patients with severe sleep apnea or those requiring higher pressures, this can be a problem.

If higher pressure is required for the therapy to work effectively, this pressure can become very uncomfortable, especially when exhaling. In this scenario, BiPAP therapy can be more beneficial as the pressure from the machine can be reduced when a patient is exhaling.

BiPAP and CPAP are very similar in size, and both use tubing and masks as part of their setup. There are a variety of masks available when using either device, which gives the patient a greater chance of a comfortable fit.

Conclusion

I have used both BiPAP and CPAP devices in the past, but not because I needed them. I wanted to have an idea of what they felt like. This article is more about what I have researched rather than my own personal experience.

The main thing to remember is these therapies are there to help you. When researching for this topic, I found some conflicting views, mainly stemming from previous studies on NIV for COPD patients. It’s important not to become overwhelmed and be guided by your doctor’s recommendation.