

Improving Rehabilitation While Saving Costs In Skilled Nursing Facilities – A Case Study

Chris Campbell

Case Study Background

The word “independence” means different things to different people. For a healthy person, it’s likely something taken for granted. We don’t even think about putting on a pair of shoes and hitting the gym. For Chris, independence means simply being able to go into his garage to tinker with his tools without his wife having to supervise for fear he could suffer great harm. At the age of 79, Chris has a long history of pulmonary compromise, with comorbidities that include pulmonary HTN and pulmonary embolus. Despite the convenience of living in a single-storey house, even climbing the 5 steps required to enter his home had become a barrier that was both humiliating and frustrating. And then there were the falls. Chris has a history of falls, some doing damage to more than just his ego. As a result of a fall, Chris ended up hospitalized.

Chris was admitted to CareOne at Evesham in Marlton, New Jersey — a skilled nursing facility that provides sub-acute rehabilitation, typically after a hospital stay. Many residents stay for a short term, receiving therapy and nursing services before returning to their prior living situation.

After assessing Chris’ history of damaging falls and severe limits to a meaningful lifestyle, the CareOne team developed a plan to use the Breathe Technologies’ NIOV System in order to improve all aspects of his life — in effect, giving him a measure of independence.

Treatment Plan

When Chris was admitted, he was on 8L of continuous O₂ at home, with saturation at rest 74% (sitting); HR 100 bpm; RR 20 (on initial evaluation); unable to ambulate upon evaluation due to O₂ saturation and dyspnea on exertion.

With standard O₂ concentration via nasal cannula at such a high flow volume, Chris was limited to moving up to 25 feet — the length of O₂ tubing. Chris occasionally ventured out in the community with his wife on portable O₂, but was unable to tolerate extended periods of time away from home as it compromised his energy demands. The CareOne team saw the Breathe NIOV System as a viable way to get Chris mobile.

NIOV consists of a one-pound portable device that can be mounted on a belt clip, making it easy to carry. A four-hour battery duration allows for extended trips. NIOV detects a

patient’s spontaneous breathing via sensor ports located in the nasal pillow interface and delivers synchronized volumes of air and oxygen that augments a patient’s own breath at rates of up to 40 breaths per minute. When the patient inhales, a set volume of oxygen gas is delivered — all customized for that patient. Volume delivery settings ranging from 50 mL to 250 mL can be quickly programmed to 3 levels of patient activity — low, medium and high. In addition to the volume of oxygen gas that is preset, using the venturi effect, ambient air is also entrained through two entrainment ports located on the interface, resulting in a higher delivery volume.

Chris was educated on the use of the system and was able to seamlessly alternate between NIOV and commercial-sized O₂ tanks at rest. No significant adjustments were required. The therapy treatment with the NIOV resulted in O₂ saturation 87%; HR 100 bpm; RR 20 while ambulating. Chris was able to ambulate 20 feet with rolling walker, with assistance, upon introduction of the new system.

The Results

According to Chris’ CareOne primary therapist Ernestine Williams, with the use of the NIOV System, positive results were “immediate.” Chris was able to progress and improve his ambulation distance on a daily basis. Chris then expressed a desire to resume working in his workshop on some carpentry projects, with future goals to be able to garden and travel. He felt that he could now do it while using the NIOV System — plus applying a few energy conservation strategies.

While using the NIOV System, Chris is now able to ambulate 120 feet with a rollator independently, climb up and down 5 steps independently, and maintain O₂ sats at rest and with activity between 89% to 90%.

According to Williams, “with NIOV, the patient may be able to realistically resume some of these past interests, giving him a feeling of physical improvement, more balance to his life, and camaraderie with his wife. A positive outlook on one’s life/circumstances often translates to improved physical ability and greatly improves rehabilitation outcomes.”

The CareOne administration also reports that the facility found a cost savings through using the NIOV System because it reduces acute transfers, and patients are able to tolerate more physical therapy and pulmonary rehabilitation, and heal faster, allowing them to return home in a shorter period of time.

Chris Campbell is the Senior Editor of Respiratory Therapy.