A Retrospective Real-World Cohort Study Demonstrating the Impact of HFCWO Therapy on Patients with Neuromuscular Disorders

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INTRODUCTION

The progressive muscle weakness caused by neuromuscular disorders makes it challenging for patients to get mucus out of the lungs leading to either mucus plugging in the airways and/or chest congestion. Mucus secretion clearing and mobilization techniques play a critical role and can be helpful in maintaining overall well-being to minimize breathing problems and prevent further decay of health status.

There are relatively few large-scale studies on the relationship between utilization of high frequency chest wall oscillation (HFCWO) therapy and clinical outcomes in this patient population.[1,2] To address this, the aim of this study was to characterize hospitalization claims data before and after initiation of HFCWO with air-powered vests.

Objective

To determine if HFCWO therapy in patients with neuromuscular disorders is associated with decreases in healthcare use.

Questions Asked

- Is there a reduction in all-cause hospitalizations after initiation of HFCWO therapy in patients with neuromuscular disorders?
- Is there a reduction in respiratory-related hospitalizations after initiation of HFCWO therapy in patients with neuromuscular disorders?

METHODS

A retrospective pre/post-cohort design and data from the Optum healthcare claims repository were employed. The study population included all patients who had at least one medical claim with Healthcare Common Procedure Coding System (HCPCS) code E0483 for the use of air-powered HFCWO devices on or between January 1, 2008 and April 30, 2018. Of these, the cohort was limited to those with continuous health plan enrollment >= 12 months pre- and >=12 months post from the first usage of HFCWO therapy; no major comorbidities indicating end of life; patients with neuromuscular disorders (e.g., Amyotrophic Lateral Sclerosis (ALS), cerebral palsy, multiple sclerosis, muscular dystrophy, spinal muscular atrophy, paraplegia, or quadriplegia); and patients aged >= 18. Statistical comparisons were made using a paired-samples t-test of the 12-month pre and 12-month post periods, examining both respiratory-related and all-cause hospitalizations as well as ambulatory visits.

RESULTS

The study population included 1080 patients diagnosed with a blend of neuromuscular disorders. Of these, 65% were female; age distribution was 14% age 18-39, 19% age 40-59, 50% age 60-79, 17% age 80 and over; and the mean Charlson Comorbidity Index was 2.75+ 1.9.

Our analysis comparing pre and post periods indicate a reduction in all-cause and respiratory-related hospitalization in the year after initiating HFCWO therapy. Specifically, average all-cause hospitalizations were reduced by 21.7% (1.008 vs. 0.790, p=0.0030) while respiratory-related hospitalizations were reduced by 24.7% (0.498 vs. 0.375, p=0.0018).

DISCUSSION

This cohort study of HFCWO users derived from a large commercial database of cleared insurance claims, demonstrates that, across a large group of patients with varied neuromuscular diseases, all-cause and respiratory-related hospitalizations were lower in the period after prescription of HFCWO than in the period beforehand. In addition, there was a modest increase in all-cause ambulatory visits. Based on these collective findings, it is plausible that improved airway clearance, by reducing the rate of severe exacerbations, helps to transition patients away from acute care to more convenient ambulatory settings.

CONCLUSION

In a retrospective analysis of claims data, hospitalization rates were reduced for one year after initiation of HFCWO therapy in a blended group of patients with neuromuscular conditions. Such real-world data on healthcare costs in this patient population provides additional insight into the value provided by vest therapy in this chronic condition.

REFERENCES

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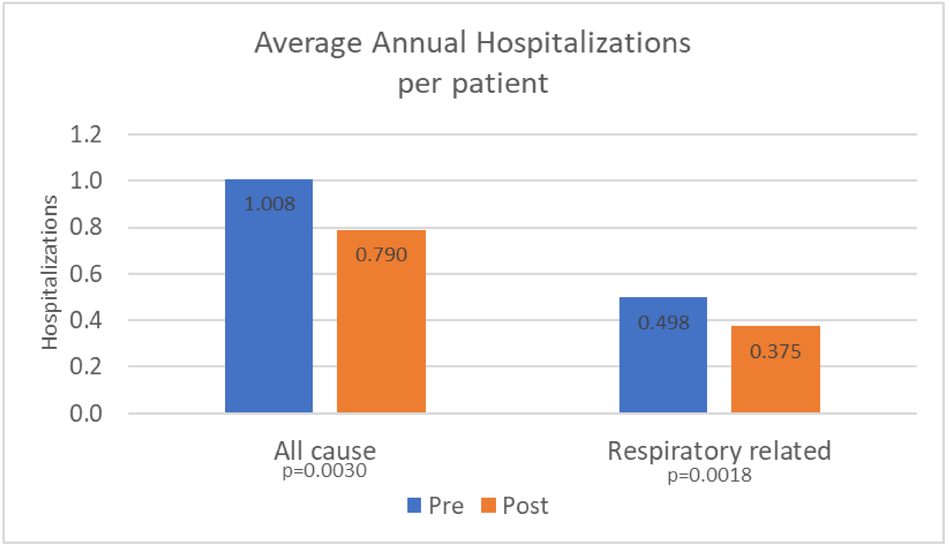

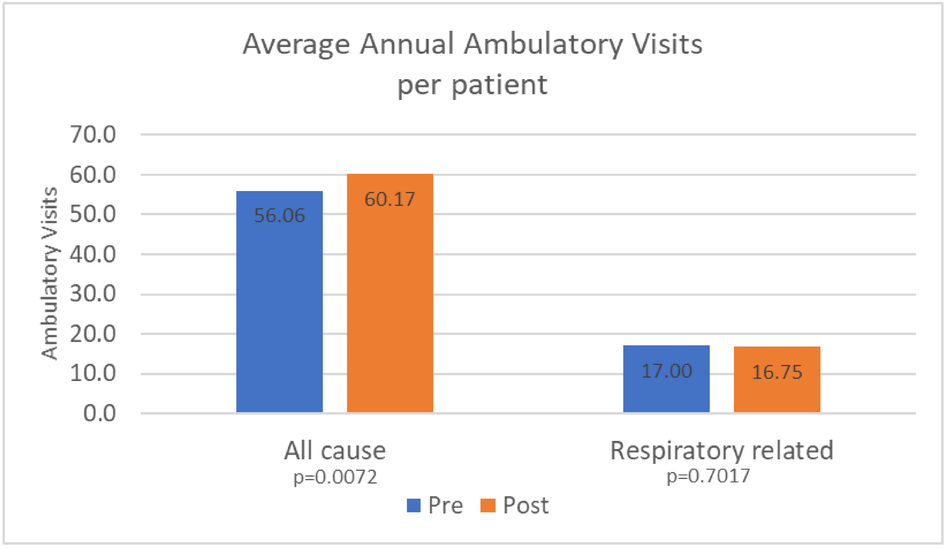

This study was sponsored by RespirTech, a Philips company. Gary Hansen and Pritesh Pandya are employed by RespirTech. Charlene McEvoy serves on the Clinical Advisory Board of RespirTech. Derek Weycker works as a consultant to RespirTech.