Outcomes with High-Frequency Chest Wall Oscillation among Patients with COPD using a Large Claims Database

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INTRODUCTION
High-Frequency Chest Wall Oscillation (HFCWO) is increasingly used for airway clearance therapy in patients with comorbid bronchiectasis and chronic obstructive pulmonary disease (COPD). Several recent studies1,2 have evaluated the impact of HFCWO on healthcare utilization, but the need exists for larger studies that encompass patients who have COPD without evidence of bronchiectasis.

METHODS
A retrospective pre/post-cohort design and data from the Optum healthcare claims repository were employed. The study population included all patients having 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 >= 12 months pre- and >=12 months post-index continuous medical insurance eligibility from the first usage of HFCWO therapy; no major comorbidities indicating end of life; patients with a COPD diagnosis and no record of bronchiectasis (COPD-only); and patients >= age 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 1172 patients with COPD-only who had initiated HFCWO therapy during the study period. Of these, 62% were female; age distribution was 4% age <40, 14% age 40-59, 61% age 60-79, 21% age 80 and over; and the mean Charlson Comorbidity Index was 2.78 + 1.9. Comparing pre and post periods, mean respiratory-related and all-cause hospitalizations were lowered by 17.1% (0.495 vs. 0.410, p=0.025) and 13.6% (0.87 vs. 0.75, p=0.031) respectively. Mean respiratory-related ambulatory visits increased by 2.3% (18.28 vs. 18.7, p=0.458) while all-cause ambulatory visits increased by 9.7% (49.37 vs. 54.18, p=<0.0001).

CONCLUSION
For patients with COPD in the absence of bronchiectasis, health care utilization moves from acute to more convenient ambulatory settings.

DISCUSSION
This study shows that HFCWO users can be identified in a large commercial database of cleared claims, allowing the analysis of healthcare utilization trends associated this therapy. The year following initiation of HFCWO saw a reduction in both all-cause and respiratory hospitalizations, with a modest but statistically significant increase in all-cause ambulatory visits. It is theorized that improved airway clearance, by reducing the rate of severe exacerbations, helps to move patients away from acute care to more convenient ambulatory settings.

INTRODUCTION
2. Weycker D, Hansen GL, Seifer FD. Outcomes with High-Frequency Chest Wall Oscillation Among Patients with Non-CF Bronchiectasis or COPD. American Thoracic Society Conference, May 21-25, 2017:
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