

Obstructive Lung Diseases

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TWO YEAR CLINICAL OUTCOMES AND HEALTHCARE RESOURCE UTILIZATION IN ADULT PATIENTS WITH HIGH-RISK NONCYSTIC FIBROSIS BRONCHIECTASIS ON HIGH FREQUENCY CHEST WALL OSCILLATION

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PURPOSE: In current clinical practice, High Frequency Chest Wall Oscillation (HFCWO) is prescribed for patients with moderate to severe Non-CF bronchiectasis. This study aimed to evaluate the clinical and economic outcomes of adult bronchiectasis patients with a high five-year morbidity and mortality risk, using HFCWO for airway clearance.

METHODS: A Pre-Post study was conducted using the PharMetrics Health Plan Claims Database. Adult patients with bronchiectasis and a claim for HFCWO in 2009 to 2018 were included in the study. High risk status was determined by a Bronchiectasis Aetiology and Comorbidity Index (BACI) score of >6 . All-cause and disease-specific healthcare care resource utilization and costs, as well as clinical outcomes, were measured at one and two-year follow-up periods, and compared to baseline. McNemar's test was used for categorical variables, while Wilcoxon signed-rank test was used for continuous variables.

RESULTS: Eighty patients met inclusion criteria. The mean age was 58 [13] years; 66.3% were female. Fifty-one percent of patients were diagnosed by a pulmonologist, who also prescribed 31.3% of devices. The proportion of all-cause oral antibiotic use reduced by 13% ($P=0.03$) in year two compared to baseline. IV antibiotic use trended down. All cause ER visits reduced by 37% in the second year compared to baseline ($P=0.01$). Laboratory use reduced by 5% in both years ($P=0.05$). Use of chest X-ray reduced by 21% in one-year follow-up ($P=0.02$) and 24% in year two ($P=0.01$). Bronchoscopy use reduced by 63% in one-year follow-up ($P<0.01$) and 68% in year two ($P<0.001$). There was a downward trend in all-cause hospitalizations in both years, compared to baseline. The proportion of disease specific physician office visits reduced by 13% ($P=0.02$) in one-year follow-up and 21% ($P<0.01$) in year two, compared to baseline. Laboratory use reduced by 33% in one-year follow-up ($P=0.02$) and 60% ($P<0.001$) in year two. Radiology use reduced by 43% in one-year follow-up ($P<0.01$) and 31% in year two ($P<0.01$). Bronchoscopy use reduced by 82% in one-year follow-up ($P<0.01$) and 91% in year two ($P<0.01$). Ancillary services use increased in year one by 19% ($P<0.01$) but reduced in year two by 17% ($P=0.04$). There was a trend towards reduced disease-specific hospitalizations in both the first and second year, compared to baseline. A trend towards reduced total all-cause costs in one-year and two-year follow-up was seen, compared to baseline. Disease-specific costs increased from a baseline of \$4,811 to \$11,633 in the first year ($P<0.0001$), likely due to device costs, then reduced significantly in the second year to \$2,793 ($P=0.04$).

CONCLUSIONS: In patients with bronchiectasis at high risk of morbidity and mortality, initiation of HFCWO therapy results in improvement in clinical and economic outcomes.

CLINICAL IMPLICATIONS: Our findings lend support to the routine use of HFCWO in high risk bronchiectasis patients.

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