

Obstructive Lung Diseases

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CLINICAL OUTCOMES AND HEALTHCARE RESOURCE UTILIZATION IN ADULT HIGH-RISK PATIENTS WITH NONCYSTIC FIBROSIS BRONCHIECTASIS USING HIGH FREQUENCY CHEST WALL OSCILLATION AND POSITIVE EXPIRATORY PRESSURE THERAPY

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PURPOSE: In current clinical practice, airway clearance therapy is important in the overall management of patients with bronchiectasis. We aimed to compare healthcare resource utilization (HCRU) and costs among adults with high risk bronchiectasis after initiation of high frequency chest wall oscillation (HFCWO) and positive expiratory pressure (PEP) therapy.

METHODS: A pre-post analysis of two mutually exclusive cohorts was conducted using the PharMetrics Health Plan Claims Database. Adult patients with Non-CF bronchiectasis, a high-risk Bronchiectasis Aetiology and Comorbidity Index (BACI) score of >6, and a claim for HFCWO or PEP between 2009 - 2018 were included. Clinical outcomes, HCRU and costs were measured in the 12-months pre- and post-index periods in each cohort. Comparisons to baseline data were conducted using McNemar's test for categorical and Wilcoxon signed-rank test for continuous variables.

RESULTS: In the HFCWO cohort (N=147), the mean age was 56.4 years (SD=14); 64% were females. COPD (88%) and asthma (72%) were common comorbidities. At one-year follow-up from initiation of HFCWO therapy, there was a statistically significant reduction in mean all-cause (22%, P=0.04) and disease-specific hospitalizations, (73%, P=0.01) compared to baseline. All-cause and disease-specific bronchoscopies reduced by 69% (P<0.0001) and 75% (P<0.001), respectively. Chest X-ray use reduced by 25% (P<0.001) and 38% (P=0.02), respectively. Disease-specific laboratory use decreased by 31% (P<0.01). Oral and IV antibiotics use reduced by 8% (P=0.03) and 63% (P=0.01), respectively. Pulmonologist visits reduced by 11% (P<0.01). Disease-specific ED visits trended down. All-cause inpatient costs decreased significantly from \$23,774 to \$12,028 (P<.01). In the PEP cohort (N=138), mean age was 63.7 years (SD=14); 59% were females. COPD (74%) and asthma (58%) were common comorbidities. At one-year follow-up from initiation of PEP therapy, mean all-cause and disease-specific hospitalizations trended up. Physician office visits increased by 17% (P=0.03). Use of hypertonic saline nebulization increased (P=0.01). Oral antibiotic use reduced by 11% (P=0.02) while IV antibiotic use did not change. All-cause and disease-specific bronchoscopies trended down. Disease-specific ED visits, chest X-ray, and laboratory use all trended up. Mean disease specific outpatient costs increased (P=0.04). Median disease-specific total costs increased significantly (P=0.04)

CONCLUSIONS: In high risk bronchiectasis patients, HFCWO significantly improves clinical outcomes by reducing hospitalizations, antibiotics use and other health care resource utilization measures. High risk bronchiectasis patients started on PEP therapy had less favorable outcomes.

CLINICAL IMPLICATIONS: In bronchiectasis patients with a high risk BACI score, HFCWO therapy should be considered for airway clearance as it has been shown to improve clinical and economic outcomes.

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