

Incidence of Bronchiectasis Related Exacerbation Rates after Long-Term Treatment with High Frequency Chest Wall Oscillation (HFCWO)

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INTRODUCTION

Researchers and clinicians continue to pursue effective airway clearance therapies for patients with non-cystic fibrosis bronchiectasis (BE) to reduce associated exacerbations. High frequency chest wall oscillation (HFCWO) has been proven to reduce mucus viscosity, shear mucus from the lung wall and propel mucus toward larger airways.^{1,2} HFCWO therapy has become an airway clearance treatment mainstay for patients with cystic fibrosis which has demonstrated significant improvements in both clinical outcomes and quality of life. Other HFCWO therapy studies with BE patients have reported significant improvement in clinical outcomes and a subsequent decrease in associated healthcare costs.^{3,4,5,6}

METHODS

- » Study design: comparative, observational, retrospective case review comparing exacerbation rates of 1 year before (pre) to 2½ years after (post) HFCWO therapy, using each patient as their own control.
- » Exacerbations, BE related only, were defined as reoccurring symptoms resulting in hospitalizations, emergency department (ED) visits and antibiotic prescriptions.
- » Exacerbations were determined by review of the patient's medical records and by patient phone interview.
- » Those patients with radiographically confirmed BE and compliant with their HFCWO treatment regimen were eligible. Quality of life (QoL) was verbally reported by the patient.
- » P-values were calculated by paired t-test. The 2½ year data were adjusted for comparison to the 1 year data.
- » The SmartVest® HFCWO Airway Clearance System (Electromed, New Prague, USA) was used by all patients.

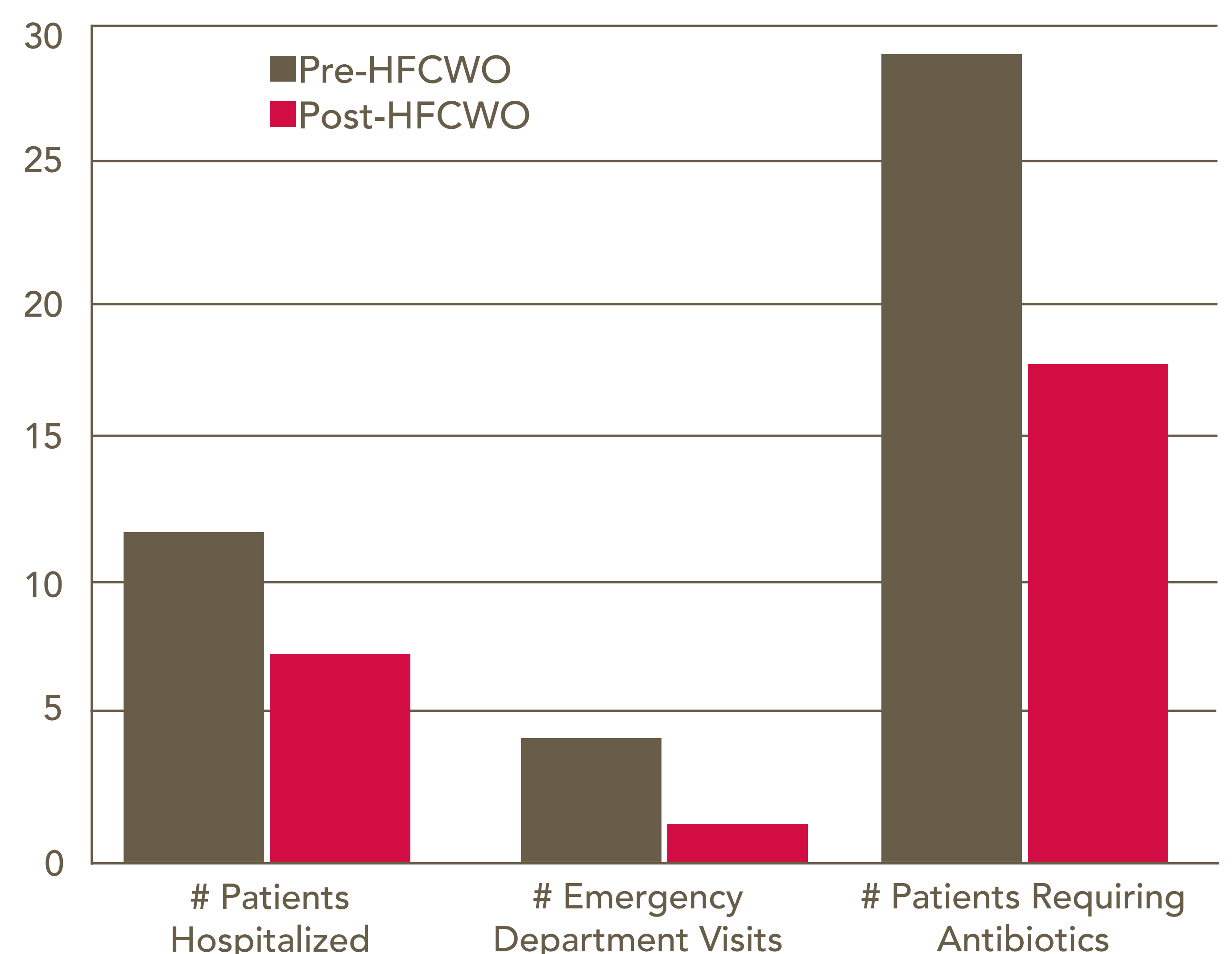
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RESULTS

Exacerbations	Pre-HFCWO (1 year)	Post-HFCWO (2.5 yrs adjusted)	Percent Decrease
# Patients Hospitalized	12	7	42%
# Emergency Department Visits	4	1	75%
# Patients Requiring Antibiotics	29	18	38%

- » A total of thirty-nine patients were enrolled in the study.
- » Exacerbations, in all categories, were significantly reduced; 42% decrease in hospitalizations (p=0.007); 75% decrease in emergency department visits (p=0.0002); and a 38% decrease in antibiotic prescriptions (p=0.0005).
- » Sixty-eight percent of study participants reported a substantial improvement in their QoL and a reduction in the severity of their exacerbations.



CONCLUSION

The significant reduction in BE related exacerbations demonstrates the considerable potential of HFCWO therapy in this population. As a corollary, the possibility of substantially improving a patient's QoL would also be a meaningful advancement in BE care. More broadly, secondary benefits of reducing BE related respiratory infections may have the potential to deter contributions to antibiotic resistance which may have even greater societal benefits. These encouraging results warrant wider HFCWO clinical use in conjunction with further investigation using a larger sample size.