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Title: The use of high frequency chest wall oscillation during an acute infective pulmonary exacerbation of cystic fibrosis

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Body: BACKGROUND Cystic fibrosis (CF) patients hospitalised for an acute infective pulmonary exacerbation require increased airway clearance. Specialist physiotherapists may be a limited resource. We investigated the use of high frequency chest wall oscillation (HFCWO), in addition to 'usual' airway clearance techniques (ACTs). OBJECTIVE The aim was to assess the utility of HFCWO (The Vest[®] Airway Clearance System, Hill-Rom) as a self administered therapy compared to European ACTs in facilitating recovery from an acute infective pulmonary exacerbation in people with CF when used in addition to supervised physiotherapy. METHOD A non-blinded randomised, controlled design was used. Patients who met inclusion criteria were randomised to control or HFCWO groups. All patients received four daily sessions, two supervised by a specialist CF physiotherapist and two carried out independently. The control group carried out their usual ACTs, the study group used HFCWO with pauses to huff and cough. The primary outcome measurement was change in FEV₁. RESULTS n = 36 (64% male). Data was analysed using the Wilcoxon Rank Sum test.

	Control	HFCWO	P value
Age Mean (SD) (years)	29.8 (±11.7)	25.8 (±7.3)	NS
Baseline FEV1 Mean (SD) (mls)	1490 (±900)	1570 (±540)	NS
Change in FEV1 Median (IQR) (mls)	120 (50, 260)	240 (80, 360)	0.18
Change in FVC	70 (-170, 370)	370 (90, 620)	0.05
Change in FEF25	170 (-10, 540)	500 (-50, 820)	0.35
Change in FEF75	25 (-10,150)	10 (-30, 50)	0.28

CONCLUSION Change in FEV₁ was not significantly different between groups, however a significant improvement in FVC was demonstrated. HFCWO should be further explored as an adjunct in treatment of infective pulmonary exacerbations of CF.