



## Effect of airway clearance techniques in patients experiencing an acute exacerbation of chronic obstructive pulmonary disease: a systematic review.

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Answers were sought to the following question: Are techniques, applied predominantly with the aim of clearing secretions from the airways, to patients during an acute exacerbation of chronic obstructive pulmonary disease (AECOPD), safe and effective? A systematic review was undertaken of studies that (i) were either randomized controlled or randomized cross-over trials, (ii) recruited patients during an AECOPD, (iii) reported the results of between-group analyses and (iv) investigated the effect of techniques applied primarily with the aim of clearing secretions from the airways. Studies that examined non-invasive positive pressure ventilation (NIPPV) and early rehabilitation were excluded. Data were extracted pertaining to resting lung function, gas exchange, sputum expectoration, symptoms, NIPPV use and hospital stay. Five studies were included with a mean Physiotherapy Evidence Database (PEDro) score of 4.4 +/- 1.1 (range: 3-6). The main findings were that (i) airway clearance techniques did not improve measures of resting lung function or produce any consistent change in measures of gas exchange, (ii) the application of 5 min of continuous chest wall percussion reduced forced expiratory volume in 1 second (FEV<sub>1</sub>), (iii) in people with copious secretions, mechanical vibration, and non-oscillating positive expiratory pressure (PEP) mask therapy increased sputum expectoration and (iv) in patients with hypercapnic respiratory failure, intrapulmonary percussive ventilation (IPV) and PEP mask therapy reduced the need for, and duration of, NIPPV, respectively. With the exception of continuous chest wall percussion, airway clearance techniques were safe in patients during an AECOPD. Vibration and non-oscillating PEP facilitated sputum expectoration in patients characterized by copious airway secretions. In patients with respiratory failure, techniques that apply a positive pressure to the airways may reduce either the need for, or duration of, NIPPV and hospital length of stay.

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