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Oscillating devices for airway clearance in people with cystic fibrosis

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Why is it important to do this Cochrane review¹?

Cystic fibrosis (CF) is a common inherited life-limiting genetic disorder in which mucus hypersecretion within the airways leads to airway obstruction and mucus plugging². Airway damage and the progressive loss of respiratory function is a consequence of persistent infection and inflammation within the lungs^{3,4}. As respiratory infections are the most common cause of morbidity and mortality, chest physiotherapy in the form of breathing exercises or adjunctive devices is the mainstay of therapies to keep the lungs as free from mucus as possible.

What comparisons were made in this review?

This review considered the use of oscillation and oscillatory devices for airway clearance and the consequent impact these have on the individual with CF, in particular when compared with other recognised forms of airway clearance. The primary outcomes investigated were respiratory function parameters; secondary outcomes considered sputum volume/weight, patient preference, frequency of exacerbations, oxygen saturations, exercise tolerance and quality of life (QoL).

Two review authors independently searched relevant databases, extracted data, and assessed the risk of bias of included studies in accordance with the Cochrane risk of bias tool.

What did we find?

The review included 35 studies (randomised controlled trials (RCTs) and quasi-RCTs) with 1138 people with CF aged between 4 and 63 years of age. One third of these were published only as abstracts, thus limiting the amount of information available for the meta-analysis.

We considered few studies to be of relatively high methodological quality and therefore at a low risk of bias. Since airway clearance requires the application of a technique or the inclusion of a device, it was not possible to blind the participants to the interventions; however, in nine studies there was evidence that researchers collecting respiratory function data or sputum samples or performing other relevant testing were blinded to the intervention.

Oscillatory devices, both oral and chest wall, for airway clearance were compared with another recognised airway clearance technique either as a single technique (e.g. oscillation versus active cycle of breathing technique (ACBT)) or in conjunction with another recognised airway clearance technique (e.g. oscillation and ACBT

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