D.10 Airway clearance techniques

Item	Details
Key issue in the scope	Airway clearance techniques.
Review question in the scope	What is the effectiveness of airway clearance techniques in people with cystic fibrosis?
Review question for the protocol	What is the effectiveness of airway clearance techniques in people with cystic fibrosis?
Objective	To examine the effectiveness of airway clearance techniques in people with cystic fibrosis.
Language	English
Study design	• Systematic reviews of RCTs

Item	Details
	• RCTs (Only RCTs with N >10 will be included. RCTs with N ≤ 10 and analysed in an included Cochrane systematic review will be included). • Conference abstracts of RCTs (Only if RCTs unavailable and the quality assessment of abstracts will conducted based on the available information and if necessary the authors of abstracts will be contacted. Conference abstracts included in the Cochrane reviews will be included). • Comparative cohort studies (only if RCTs unavailable or limited data to inform decision making)
Population and directness	Children and adults with defined CF (diagnosed clinically and by sweat test or genetic testing). Population size and indirectness: • Studies with <10 participants will not be included. • Studies with indirect population will not be included.
Stratified, subgroup and adjusted analyses	If possible the following groups will be analysed separately: • Children (particularly under 2 for hospitalisations) • Adults • Symptomatic CF • Asymptomatic CF In the presence of heterogeneity, sensitivity analysis will conducted including and excluding studies with a high risk of bias.
Intervention	• Manual physiotherapy techniques including: chest shaking / vibrations, chest percussion • Positive expiratory pressure (PEP) mask therapy • Active cycle of breathing techniques (ACBT) • relaxation or breathing control forced expiration technique (FET) which includes huffing and breathing control • thoracic expansion exercises • Autogenic Drainage (AD) • Oscillating devices (acapella and flutter, cornet) • High Frequency Chest Wall Oscillation (e.g. The Vest) • Non-invasive ventilation
Comparison	The comparisons prioritised in this review are: • Intervention A compared with no intervention/control. • Intervention A compared with intervention B (as advised by the committee).

Outcomes	• Expectorated secretions (mucus, sputum, phlegm)
	• Sputum volume
	• Patient preference
	• Pulmonary exacerbations, change in frequency
	• Pulmonary function tests (change from baseline would be prioritised over final scores)
	  ○ forced expiratory volume in one second (FEV1)
	  ○ forced vital capacity (FVC)
	• Oxygen saturation measured by pulse or transcutaneous oximetry
	• Quality of life (CF-QOL, CFQR)
	• Hospitalisations, change in frequency
	Note: change from baseline will be priorised over absolute values

Importance of outcomes	Critical outcomes for decision making: • Sputum volume

Item	Details
	• Exacerbations • Patient preference
Setting	Any healthcare setting where NHS care is delivered (primary, secondary, tertiary or community).
Search strategy	Sources to be searched: Medline, Medline In-Process, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Cochrane Databases of Abstracts of Reviews of Effectiveness, Health Technology Assessment Database, Embase, AMED, CINAHL, PEDro Limits (e.g. date, study design): Limit to English-language only where possible (Medline and Embase); apply standard exclusions filter Supplementary search techniques: No supplementary search techniques were used. See appendix E.7 for full strategies
Review strategy	Appraisal of methodological quality: • The methodological quality of each study will be assessed using an appropriate checklist as per NICE guidelines manual (The Cochrane Risk of Bias tool for RCTs and the Newcastle and Ottawa scale for observational studies). • The quality of the evidence will be assessed by GRADE for each outcome according to the process described in the NICE guidelines manual (2014). Synthesis of data: • Meta-analysis will be conducted where appropriate. • Final and change scores will be pooled and if any study reports both, change scores will be used in preference over final scores. • If studies only report p-values from parametric analyses, and 95% CIs cannot be calculated from other data provided, this information will be plotted in GRADE tables, but evidence may be downgraded. • If studies only report p-values from non-parametric analyses, this information will be plotted in GRADE tables without downgrading the evidence, as imprecision cannot be assessed for non-parametric analyses Minimal important differences (MIDs): • Expectorated secretions (mucus, sputum, phlegm): GRADE default • Sputum volume: GRADE default • Patient preference: GRADE default • Pulmonary exacerbations, change in frequency: any change will be considered clinically significant • Pulmonary function tests (change from baseline would be prioritised over final scores) ○ forced expiratory volume in one second (FEV1): 5 percentage points ○ forced vital capacity (FVC): GRADE default • Oxygen saturation measured by pulse or transcutaneous oximetry: GRADE defaults • Quality of life: CF-QOL = 5; CFQ-R = 8.5 • Hospitalisations, change in frequency = GRADE default Default MIDs: 0.8 and 1.25 for dichotomous outcomes; 0.5 times SD for continuous outcomes. Review process: • This question will be prioritised for dual weeding. • A list of excluded studies will be provided following weeding.

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	• Evidence tables and an evidence profile will be used to summarise the evidence.
Equalities	• Psychological and behavioural issues are more likely in people with a lower socioeconomic status • Gender- outcomes are worse for women although there is no evidence that this is a consequence of difference in care • Geographical issues – care is given through specialist centres and this may be a problem if a person with CF is living in an isolated location.
Notes/additional information	