D.16 Nutritional interventions

Item	Details
Key issue in the scope	Management of nutrition.
Review question in the scope	What is the effectiveness of nutritional interventions in cystic fibrosis?
Review question for the protocol	What is the clinical and cost effectiveness of nutritional interventions in people with cystic fibrosis?
Objective	Nutritional status is a strong predictor of morbidity and mortality in people with CF and malnutrition is a common problem due to faecal fat loss, increased

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	energy requirements due to chronic infections and because people with CF often suffer from pancreatic insufficiency, resulting in malabsorption. While guideline recommends that people with CF should intake up to twice the recommended daily caloric intake, this can be difficult to achieve because they may have reduced appetite, infection-related anorexia, gastro-oesophageal reflux or abdominal pain. This review aims to determine which nutritional intervention achieves the best outcomes for people with cystic fibrosis.
Language	English
Study design	• Systematic review of RCTs • RCTs • 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). • Observational studies (only if RCTs unavailable or limited data to inform decision making) Exclusions: • Cross-over RCTs are not an appropriate design for this review. • Only articles published after 1997 will be considered. Woestenenk (2013) states that “as CF treatment, and thus the nutritional status of patients has changed during the last 15 years, effectiveness of nutritional interventions might have changed too”
Population and directness	Infants, children, young people and adults with defined CF, diagnosed clinically and by sweat test or genetic testing Population size and indirectness: • No sample size specification. • Studies with indirect populations will not be included
Stratified, subgroup and adjusted analyses	Groups that will be reviewed and analysed separately if data are available: • Infants (<12 months) • Children (less than 12 years) • Young people (12-17 years) • Adults (≥18 years) • gender (male vs female) Sensitivity analysis: In the presence of heterogeneity, sensitivity analysis will conducted including and excluding studies with a high risk of bias. In the presence of heterogeneity, the following subgroups will be considered for subgroup analysis: • duration of the study
Intervention	• Dietary advice including increase in conventional food {snacks}, high energy foods. • Oral supplementary prescribed feeds • enteral tube feeding • psychological and behavioural interventions (Such as managing meal times {children} and disturbed eating behaviour and body image disorders {adults}) • appetite stimulants (cyproheptadine, megace)
Comparison	• Usual care • Placebo • Other intervention

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	(There may be more specific comparisons for certain groups within CF, Committee to advise on relevant comparisons)
Outcomes	• Change in weight or height or body mass index (BMI) or z score or other indices of nutrition or growth • Lung function: FEV1 • Pulmonary exacerbations • Changes to body composition detected by anthropometric measure (weight or height or body mass index (BMI) or z score or other indices of nutrition or growth) • Adverse effects including diarrhoea, reduced appetite, abdominal bloating, episodes of distal intestinal obstruction syndrome; for appetite stimulants the following adverse effects will also be considered: high blood glucose and adrenal insufficiency (decreased cortisol levels) • Quality of life (CF-QOL, CFQR) • Patient and parent or carer satisfaction • Note: change from baseline will be priorised over absolute values
Importance of outcomes	Critical outcomes for decision making: • Lung function: FEV1 • Quality of life (CF-QOL, CFQR) • Changes to body composition detected by anthropometric measure (weight or height or body mass index (BMI) or z score or other indices of nutrition or growth)
Setting	All settings in which NHS-commissioned health and social care is provided.
Search strategy	Sources to be searched: Medline, Medline In-Process, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Cochrane Database of Abstracts of Reviews of Effectiveness, Health Technology Database, Embase Limits (e.g. date, study design): Apply standard exclusions and English language filters. Limit to RCTs, systematic reviews and observational studies. Supplementary search techniques: No supplementary search techniques will be used. See appendix E.11 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): • Change in weight or height or body mass index (BMI) or z score or other indices of nutrition or growth = GRADE default • FEV1 = 5 percentage points

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	• Pulmonary exacerbations = any change will be considered clinically significant • Adverse effects including diarrhoea, reduced appetite, abdominal bloating, episodes of distal intestinal obstruction syndrome; for appetite stimulants the following adverse effects will also be considered: high blood glucose and adrenal insufficiency (decreased cortisol levels) = GRADE default • Quality of life: CF-QOL = 5; CFQ-R = 8.5 • Patient and parent or carer satisfaction = GRADE default Default MIDs: 0.8 and 1.25 for dichotomous outcomes; 0.5 times SD for continuous outcomes. • Review process: • A list of excluded studies will be provided following weeding. • 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	Key papers: Nutritional intervention in patients with Cystic Fibrosis: A systematic review, Woestenenk 2013 Use of oral supplements to increase calorie intake in people with cystic fibrosis (Cochrane Review), Smyth 2014