NICE National Institute for Health and Care Excellence

Economic plan

This plan identifies the areas prioritised for economic modelling. The final analysis may differ from those described below. The rationale for any differences will be explained in the guideline.

1 Guideline

Cystic fibrosis: diagnosis and management of cystic fibrosis

2 List of modelling questions

Review questions by scope area	**What is the effectiveness of immunomodulatory agents in the management of lung disease?**
Population	People with cystic fibrosis
Interventions and comparators considered for inclusion	1. Oral corticosteroids (prednisolone); 2. inhaled corticosteroids (fluticasone); 3. nonsteroidal anti-inflammatory drugs (NSAIDs) (ibuprofen); 4. macrolides (azithromycin); 5. no treatment.
Perspective	NHS and Personal Social Services (PSS)
Outcomes	Quality adjusted life years (QALYs)
Type of analysis	Cost-utility analysis using a Markov model
Issues to note	Transition probabilities between the lung function strata and the probability of exacerbations within each strata, were estimated from a network meta-analysis (NMA) undertaken by the Technical Team (TT). Treatment related adverse events were included in the model for oral corticosteroids (prednisolone), NSAIDs (ibuprofen) and macrolides (azithromycin).

Review questions by scope area	**What is the effectiveness of antimicrobial regimens in suppressing chronic pulmonary disease?**
Population	People with cystic fibrosis that have a chronic infection with Pseudomonas Aeruginosa
Interventions and comparators considered for inclusion	1. No treatment vs. nebulised colistimethate sodium vs. nebulised tobramycin vs. tobramycin dry powder; 2. nebulised colistimethate sodium vs. nebulised tobramycin; 3. colistimethate sodium dry powder vs. nebulised tobramycin;

	4. nebulised tobramycin vs. nebulised aztreonam lysine vs. 28 days nebulised aztreonam lysine alternating with 28 days nebulised tobramycin.
Perspective	NHS & PSS
Outcomes	QALYs
Type of analysis	Cost-utility analysis using a Markov model
Issues to note	Patient Access Schemes are in place for some of the antimicrobials included in the model. Those discounts were applied in the model, to help the Committee inform their recommendations. Details of those discounts will not appear in any public facing documents to ensure confidentiality is not breached. The probability of exacerbations was estimated from a NMA undertaken by the TT. The studies that reported FEV1 % predicted were too heterogeneous to synthesise in NMA, despite extensive investigations to try to explain the heterogeneity. These results were not meta-analysed, on the advice of the TSU. As a result, it was considered inappropriate to undertake one reliable, fully incremental analysis; hence, multiple comparisons within the model were developed. The comparison of greatest interest to the Committee was that which included aztreonam, as NICE HTA recommendations are approved for the remaining treatments.

Review questions by scope area	**How can services be organised to minimise the risk of cross-infection?**
Population	People with cystic fibrosis
Interventions and comparators considered for inclusion	1. Cohort segregation by pathogen vs. no cohort segregation by pathogen 2. Protective equipment vs. no protective equipment 3. Individual inpatient segregation (single inpatient rooms) vs. no individual inpatient segregation (beds on shared wards) 4. Incomplete cohort segregation including en suite bathroom facilities vs. no cohort segregation including shared bathroom facilities
Perspective	NHS and PSS
Outcomes	QALYs
Type of analysis	Cost-utility analysis using a decision tee
Issues to note	Studies included in the clinical evidence review did not provide comprehensive descriptions of their strategies. Consequently, assumptions were made to fit those studies into a pragmatic number of strategies. The studies also assessed different pathogens, and given that those pathogens incur different quality of life impacts and treatment costs, it was necessary to categorise

	the studies and strategies by the type of pathogen they aimed to prevent. For simplicity, intermittent infections were assumed if a chronic infection was not stated in the study.

Review questions by scope area	**What is the effectiveness of different models of care?**
Population	People with cystic fibrosis
Interventions and comparators considered for inclusion	1. Specialist Centre 2. Shared Care (paediatrics) 3. Outreach Care (adults)
Perspective	NHS and PSS
Outcomes	Costs
Type of analysis	Cost description
Issues to note	To aid consideration of cost-effectiveness, a costing tool was developed that utilised a “what-if” approach. This tool estimated the annual cost to provide the three recognised models of care, for a given MDT composition.