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REGARDING THE ARTICLE ENTITLED “A SMARTPHONE APPLICATION FOR REPORTING SYMPTOMS IN ADULTS WITH CYSTIC FIBROSIS IMPROVES THE DETECTION OF EXACERBATIONS: RESULTS OF A RANDOMISED CONTROLLED TRIAL”

Running title:

Regarding the article on smartphone app

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Dear Editor,

Wood et al demonstrates that relatively unsophisticated symptom monitoring (without artificial intelligence or complex physiological monitoring) can detect exacerbations earlier among adults with CF [1]. A possible explanation is that exacerbations are generally under-detected in CF, hence any monitoring beyond usual care will find more exacerbations.

However, there is uncertainty whether earlier exacerbation detection improves lung health. Wood et al found no FEV₁ advantage, though may not have been adequately powered for that purpose [1]. The eICE study was powered to detect a between-arm FEV₁ difference of ~90ml (3%) and also detected more exacerbations with home-monitoring, yet FEV₁ change was similar in both arms [2].

It is important to explore why incurring the opportunity cost of detecting exacerbations early makes minimal impact. Uncertainty around the optimal approach to manage “early” exacerbations has been highlighted [3]. Wood et al assumes early exacerbations respond to oral antibiotics [4]. More oral antibiotic courses were used in their home-monitoring arm but intravenous antibiotics use was similar [1]. More frequent oral antibiotics relative to intravenous use also occurred in the eICE home-monitoring arm (though there was 17 intravenous-treated exacerbations for home-monitoring vs nine for usual care). However, a subsequent analysis of eICE data found greater FEV₁ recovery with intravenous compared with oral antibiotics [5], implying that oral antibiotics may be inadequate treatment for early exacerbations. Intravenous and oral treatments differ in several ways – intravenous treatments are more likely to include dual antibiotics supervised in hospital allowing delivery of other therapies e.g. intensive airway clearance. Understanding why intravenous treatments are more advantageous in early exacerbations is important but challenging. Nonetheless, if intravenous antibiotics are required for optimal treatment of early exacerbations, treatment non-acceptance may limit the effectiveness of home-monitoring. In our study, ~20% of all recommended intravenous courses were declined by adults with CF and refusal was more likely with milder symptoms [6].

Two UK home-monitoring trials aiming to detect early exacerbations (NCT02994706 and NCT02416375) have yet to report, though the paediatric version of one of those studies experienced difficulties with data collection [7]. As the CF population increases, there will be increasing pressure on staff time. A meta-analysis of the four relevant home-monitoring trials might illuminate whether scarce resources are best invested downstream in detecting exacerbations or upstream in supporting self-care to prevent exacerbations. Investment in prevention is an attractive option when adherence to preventative therapies may be as low as 35-50% [8,9].

COMPETING INTERESTS

None declared.

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