European Cystic Fibrosis Society

Journal of Cystic Fibrosis
The Official Journal of the European Cystic Fibrosis Society

Cystic Fibrosis Research News

Title:

Continuous glucose monitoring versus self-monitoring of blood glucose in the management of cystic fibrosis related diabetes: A systematic review and meta-analysis

Lay Title:

Comparing continuous glucose monitoring to self-monitoring of blood glucose in the management of cystic fibrosis related diabetes; a systematic review and meta-analysis

Authors:

Dr Shanal Kumar [a,b], Associate Professor Georgia Soldatos [a,b], Sanjeeva Ranasinha [a] , Professor Helena Teede [a,b], Dr Michael Pallin [c]

Affiliations:

[a] Monash Centre for Health Research and Implementation, School of Public Health and Preventive Medicine, Monash University, Level 1, 43-51 Kanooka Grove, Clayton VIC 3168, Australia

[b] Diabetes and Vascular Medicine Unit, Monash Health, 246 Clayton Road, Clayton VIC, 3168 Australia

[c] Monash Lung and Sleep, Monash Health, 246 Clayton Road, Clayton VIC, 3168 Australia

What was your research question?

We asked, does the use of continuous glucose monitoring (CGM) compared to fingerpick self-monitoring of blood glucose (SMBG) lead to improved long-term blood sugar control in people with CF-related diabetes? And if so, was the improved sugar control associated with other benefits on lung health, weight and overall wellbeing.

Why is this important?

The diagnosis of CF-related diabetes has negative implications for people with CF. Those with CF-related diabetes tend to have worse respiratory and overall health. It is also associated with poorer quality of life which may be due to a higher treatment burden. Reducing the burden associated with CF-related diabetes and improving blood sugar control may help improve overall health.

What did you do?

We performed a thorough and structured electronic search looking for all the studies, regardless of design published in the literature that evaluated CGM and/or SMBG in people

with confirmed CF-related diabetes. After retrieving the search results, we reviewed every study for appropriateness and only included studies that met a selection criterion we developed. For each included study, first we labelled it as either using CGM or SMBG and then calculated how much the HbA1c (a test that measures the amount of blood sugar (glucose) attached to your haemoglobin (a protein in red blood cells that carries oxygen throughout the body) changed over time. A statistical method called a meta-analysis was then used to combine results and compare differences in HbA1c over time between the CGM versus SMBG group.

What did you find?

We found 17 studies met our selection criterion. None were randomised controlled studies; therefore, were prone to many biases. In total, 416 children and adults with CF-related diabetes of whom 138 had used CGM and 278 used SMBG were analysed. People using CGM had 4.1 mmol/mol (equal to 0.4%) lower HbA1c compared to people using SMBG. We also found the impact of the improved blood sugar control on lung health and weight were conflicting. Therefore, the ideal blood sugar targets on CGM for people with CF-related diabetes remains unclear. Furthermore, none of the included studies evaluated hypoglycaemia and its impact on overall wellbeing.

What does this mean and reasons for caution?

In people with CF-related diabetes, using CGM may improve blood sugar control as evidenced by improvements in HbA1c over time. But the effects of this improved blood sugar control remain unclear.

What's next?

Further research is needed to determine if improved blood sugar control with the use of CGM translates into better lung health, so optimal blood sugar targets on CGM can be clarified for people with CF-related diabetes.

Original manuscript citation in PubMed

https://pubmed.ncbi.nlm.nih.gov/35906171/

cfresearchnews@gmail.com