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"It's an absolute life-changing device"- adults with Cystic Fibrosis-Related Diabetes experiences of the Freestyle Libre (FSL) flash glucose monitoring system

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Objectives: Self-measured blood glucose (SMBG) testing is important for diabetes management, with >8 tests/day being associated with improved glycaemic control. Repeated daily SMBG can be painful, inconvenient and difficult to maintain long-term. For people with CFRD this may add to their high treatment burden and impact on treatment satisfaction and health-related quality of life (HRQoL).
The FSL system comprises a wearable sensor and reader to monitor glucose levels at any time without need for routine SMBG tests. Use of FSL has proven clinical and non-clinical benefits in types 1 and 2 diabetes. In the UK FSL has become available for people with CFRD on insulin since May 2019. This study aimed to explore early experience of FSL use by adults with CFRD attending a large regional CF unit.
Methods: Adults with insulin-treated CFRD using the FSL system were invited to respond to a short survey exploring previous SMBG practice, FSL usability, treatment satisfaction and health related quality of life (HRQoL).
Results: Responses from 48/50 (96%) surveys were received (20 male, median age 37 [19–52] years). Prior to using FSL, 27% (n = 13) checked <1 SMBG/day; 21% (n = 10) checked > 8/day (recommended). More than 88% of all subjects *agreed/strongly agreed* FSL system was easy and comfortable to wear, obtaining glucose was more discreet than routine SMBG testing and that they engaged in more frequent glucose checks than before. SMBG tests/day were reduced, with additional tests primarily to check a displayed hypoglycaemia or confirm accuracy of the FSL system. Most subjects (n = 47, 98%) recommended and wished to continue using FSL, with glucose trend arrows and scanning function being the highest rated features. Additional responses (n = 28) received were suggestive of overall improved HRQoL and treatment satisfaction.
Conclusion: The FSL system is highly rated by adults with CFRD attending a regional CF unit and may have an important role in improving diabetes self-management.

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Initial impact of flash glucose monitoring for patients with Cystic Fibrosis-Related Diabetes

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Objectives: Flash glucose monitoring became widely available for people with CFRD in the UK in March 2019. We assessed the initial impact of this technology on glucose control.
Methods: Patients with CFRD using flash glucose monitoring (FreeStyle Libre®) at our centre were included. Data was collected retrospectively from the Libreview web-based platform. Optimal flash glucose range was set as 3.9–7.8 mmol/l with >70% time in range considered good glucose control (based on international consensus in type 1 diabetes). We compared % time in range over 14 days at baseline and at 3 months.
Results: 42 patients used flash glucose monitoring with 33 patients (17M/16F) having complete data at baseline and 3 months. Baseline median % time in range was 23.5% (range 3–89%) compared with 41% (range 7–86%) at 3 months, an overall increase in median % time in range of 17.5%.
5/33 (15%) patients were classed as having good glucose control at baseline (>70% time in range). 3 of these patients improved their % time in range at 3 months with a median of 5.5% (3–8%). The other 2 patients had a decrease in % time in range at 3 months with a median of 9% (3–15%).
28/33 (85%) patients had a time in range of <70% at baseline. 16/28 (57%) of these patients improved their % time in range by a median of 8% (range 1–26%). 12/28 (43%) patients had a decrease in their % time in range by a median of 6% (0 to 28). After 3 months of using flash glucose monitoring, 3/28 (11%) patients achieved good control (time in range >70%).
Conclusions: Flash glucose monitoring was beneficial in the majority of patients with CFRD who are administering insulin. After 3 months of flash glucose monitoring 58% of patients had improved their % time in range. Some patients saw a decrease in % time in range after 3 months, the reasons for which require further investigation. Data collection is ongoing and we will continue to measure the impact of flash glucose monitoring on a number of relevant CFRD outcomes.

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Continuous monitoring of diabetes mellitus (DM) parameters, correlated with pulmonary function monitoring, leading to improving general health in patients with cystic fibrosis

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Background: Diabetes Mellitus is a very common disease in adult patients with Cystic Fibrosis. Patients with uncontrolled diabetes may experience more worsening of the main disease as well as prolonged hospital days and intravenous therapy.
Material and methods: We followed adult Cystic Fibrosis-Related Diabetes (CFRD) patients that attended our department of Cystic Fibrosis in Skopje, North Macedonia during 2019 year. Collected data included age, gender, weight, height, body mass index (BMI), forced vital capacity (FVC), forced expiratory volume at 1 second (FEV1), glycated hemoglobin (HbA1c), fasting plasma glucose (FPG), days of hospitalisation, genotype, microbiological finding in sputum.
Results: From 26 patients, 12 are with DM (46,15%), 58,3% of them are homozygote for F508del , male 8 (66,66%), female 4 (33,33%), median age 27,8 years (20–33 y), median HbA1c = 7,46% (ranged 6,3–12,6%), median BMI = 19,16 kg/m^2, 3 (24%) of them are with low weight under 18 kg/m^2 BMI. Median FPG = 6,0 mmol/l (ranged 5,2–8,2), glucose in urine = positive in 6 (50%) patients (glu/u = +1+4). With peripheral neuropathy are 6 patients (3 of them are women). For pulmonary function we obtained the following results: median FVC = 3,24 L (ranged 1,34–6,73 L), 71,63% (37,08–123%), median FEV1 = 2,12 L (0,85–5,33 L), 50,17% (25–116%), with chronic *Pseudomonas aeruginosa* are 66,66%, the others are with chronic *Staphylococcus aureus* infection. Days of hospitalization with intravenous antibiotic therapy, for each individual patient median average is 27,25 days per year, (1–4 hospitalisation for 14 days/year).
Conclusion: Uncontrolled diabetes in the patients with CF, is associated with worsening of the main disease which includes chronic pulmonary infection, prolonged hospital days, worse lung function, with lower or normal weight. Continuous follow-up of patients and their blood glucose level are importance to reduce micro and macro vascular complications and worsening of the main disease.

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Establishing face validity of the MAGIC programme for people with cystic fibrosis diabetes (CFD)

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Background: The Managing Abnormal Glucose In Cystic fibrosis (MAGIC) programme is an on-line, evidence-based, self-management education programme for people with cystic fibrosis diabetes (CFD). It was developed, using the principles of co-design, by a stakeholder development group consisting of people with CFD and healthcare professionals. The MAGIC programme is grounded in evidence generated from a qualitative systematic review, qualitative interviews and shared experiences of people with CFD and healthcare professionals expert in the management of CFD. It was designed as a patient focussed, staged approach to learning; with the aim to develop self-efficacy, knowledge and skills as the participants progress through the four modules.
Objective: To determine the face validity of the MAGIC programme.