**236** Acceptability of continuous glucose monitoring (CGM) in cystic fibrosis

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**Objective:** Real-time monitoring of glucose by CGM is a validated tool in the management of diabetes, but its use in CF-related diabetes (CFRD) is new and the attitudes of CF patients towards it are unknown. To assess this further, we surveyed our adult CF patients who had undergone CGM as part of the management of their CFRD.

**Method:** Thirty patients (20 female) completed a 5-point Likert questionnaire.

**Results:** Most (83%) found the device easy to use and the instructions clear, and 77% indicated that CGM did not affect their daily routine, but in the remainder it interfered with sleep (50%), washing activities (42%), and choice of clothing (38%). Side-effects were reported by only 27% of these, 57% noted pain and 43% a skin reaction – 1 patient found these unacceptable. The majority stated they did not modify their diet (86%) or exercise regimen (90%) during the test. Two thirds also performed blood glucose monitoring during the duration of CGM as instructed, with 68% reporting a good correlation with the CGM results. Following this test, 73% reported a better understanding of blood glucose levels, 47% of insulin management and 77% of the relationship between dietary intake and blood glucose levels. Subsequently, 33% have modified their diet, and 90% would undergo CGM in future if required.

**Conclusions:** Although intrusive, CGM is perceived by patients as a useful and acceptable tool for the monitoring of their CFRD, with a low side-effect profile. We encourage other CF units to consider its use for the management of this increasingly common adult CF complication.

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**237** A retrospective review of the epidemiology of cystic fibrosis related diabetes (CFRD) in adult cystic fibrosis (CF) patients, Johannesburg, South Africa

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CF is a common fatal autosomal recessive inherited condition. Survival of patients with CF has increased due to optimal medical therapy. CFRD is a late complication of CF. The risk for developing CFRD is increased with increasing age, presence of exocrine pancreatic insufficiency, DF508 homozygous genotype, lower BMI and female gender.

**Aims and Objectives:** The aims of the study were to determine the prevalence of CFRD in the population of CF patients attending the adult CF clinic at Charlotte Maxeke Johannesburg academic hospital and to determine the characteristics of the patients with CFRD in terms of age, gender, genotype, lung function, BMI, HBA1c, use of corticosteroids and pancreatic function. There is currently no data available in South Africa regarding these statistics.

**Methods:** A retrospective patient file review was conducted on all 50 patient files in the Adult CF Unit. Patients were classified as having normal glucose tolerance, impaired glucose tolerance or CFRD based on the results of oral glucose tolerance testing (OGTT).

**Results:** 12 patients (24%) had normal glucose tolerance, 10 (20%) had impaired glucose tolerance, 23 (46%) had CFRD without fasting hyperglycaemia and 3 patients (6%) had CFRD with fasting hyperglycaemia. The prevalence of CFRD was 54%. Statistical analysis failed to demonstrate any significant difference in the characteristics of patients with and without CFRD.

**Conclusions:** The prevalence of CFRD in this population of CF patients correlates with the prevalence of CFRD in other CF centers. There were no statistically significant differences in the characteristics of patients with and without CFRD.

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**239** Establishment of an F508del pseudoislet model for the study of CF-related diabetes

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**Objectives:** CF-related diabetes (CFRD) is poorly understood, but CFTR is expressed by pancreatic β-cells and is important in insulin secretion [1]. CF animal models offer new opportunities to study CFTR deficient islets. However, islet isolation is labor intensive, of low yield and inflicts a significant animal burden. Here, we sought to establish an F508del pseudoislet model using the murine MIN6 β-cell line which expresses wild-type CFTR. 3D pseudoislets are preferable to monolayer cultures because of the enhanced cell–cell contact achieved, which is needed for normal patterns of insulin secretion.

**Methods:** MIN6 cells, grown in ultra-low attachment plates (Corning), self-formed into pseudoislets over one week. Pseudoislets were examined for insulin secretion in response to stimuli (RIA) and β-cell markers (Western blot). To establish an F508del pseudoislet model, MIN6 cells were treated with CFTR shRNA (Qiagen), subsequently transfected with F508del cDNA (CFTR Expression Core) and pseudoislets configured as described [2].

**Conclusions:** Wild-type MIN6 pseudoislets are similar in size and morphology to primary mouse islets and release comparable levels of insulin following stimulation with glucose, nutrients and drugs. Furthermore, they showed enhanced expression of β-cell markers (GLUT2, glucokinase) when compared with MIN6 monolayers. These findings reinforce the utility of this model to study basic mechanisms of β-cell biology. The established F508del pseudoislet model will be used for future studies to determine if CFRD results from perturbation of normal β-cell function because of the basic CFTR defect.

**Reference(s)**