Continuous Glucose Monitoring – stand alone: Does it effect change in the real world?
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Background: Continuous Glucose Monitoring(CGM) can provide an abundance of information to the health professional and patient. In conjunction with a food diary, self-monitoring of blood glucose(SMBG) and HbA1c, it has been shown to improve glycaemic control(1). The Diabetes Educator is involved in placing and removing the sensor, downloading, printing and interpreting the data and patient education about the findings.

Aims: To explore common indications for CGM referral and assess whether CGM resulted in changes to patient management.

Methods: Retrospective analysis of 37 insulin-requiring individuals with type 1(T1DM) and type 2(T2DM) diabetes investigated with blinded-CGM (I-Pro2™;Medtronic) (2010-2014). Patients documented food intake, physical activity, SMBG and medications over six days. We assessed: the indication for CGM, diabetes type, HbA1c prior to and following CGM, percentage of time spent hypoglycaemic(<3.9mmol/L) and hyperglycaemic(>7.8mmol/L), and whether CGM resulted in changes in diabetes therapy, behaviour or glycaemic control.

Results: There were 24 patients (64.9%) with T1DM and 13 patients (35.1%) with T2DM. The most frequent indication for CGM was suspected/unreported hypoglycaemia with CGM also commonly used to investigate SMBG/HbA1c mismatch or to further investigate contributors to an elevated HbA1c. In two patients CGM was used for pre-pregnancy planning, and to assess safety to drive(Table 1). Compared to those referred for other indications, in patients referred for suspected unrecognised hypoglycaemia there was a high percentage of time <3.9mmol/L (8.1±7.9%) versus (5.2±7.1%). There was a non-significant drop in HbA1c: 8.2±1.8% to 7.8±1.4% (p=0.69). In 97.3%, CGM resulted in a change of insulin regimen. It also led to reported behaviour modification in the majority of patients(See Table 1).

Table 1. Reasons for Referral for CGM and Outcomes

Reasons for Referral	n= (%cases)
Hypoglycaemia	19 (51.4)
SMBG/HbA1c Mismatch	7 (18.9)
Variable SMBG	7 (18.9)
Elevated HbA1c/Hyperglycaemia	3 (8.1)
Pre-Pregnancy	2 (5.4)
Concerns relating to driving	2 (5.4)
Gastroparesis	1 (2.7)
Education tool	1 (2.7)
Outcome	
Change to insulin therapy	36 (97.3)
Behavioural modification	23 (62.2)
Dietitian Referral	16 (43.2)
Change in exercise	12 (32.4)
Repeat CGMS	5 (13.5)

More than one referral reason or outcome possible per patient

Conclusion:

CGM was most commonly used where frequent hypoglycaemic episodes were suspected. These patients indeed had a long duration of glucose levels <3.9mmol/L. CGM effected a change in insulin therapy in almost all patients, and led to reported improvements in behaviour, exercise patterns and dietary pattern, usually through a multidisciplinary approach.

Reference:

1. Kaufman FR, et al. A pilot study of continuous glucose monitoring system. Diab Care. 2001:24:2030-2034