CONTINUOUS GLUCOSE MONITORING (CGM) AND TYPE 1 DIABETES MELLITUS CONTROL IN CHILD

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Abstract: Sensors for continuous glucose monitoring (CGM) in intercellular fluid are used as a device to achieve better control in type 1 diabetes mellitus (DM), which is best shown through lower glycated hemoglobin (HbA1c) levels.The aim of this study was to assess how to used CGM (parents were solely financing all the cost of the device) and what was the effect of CGM on the control of DM. Changes in treatment guided by the information obtained from CGM can result in improved HbA 1c levels and reduced risk of hypoglycaemia and DKA. In addition, CGM can be an educational and motivating tool if used appropriately with adequate support from healthcare professionals. Families of children and young people are keen to have the benefit from these technologies. These are relatively expensive so it is important that health care professionals, families of children and young people (CYP) with diabetes are adequately trained in the use of these devices. Health care professionals need to be able to make patient selection based on individual needs and preferences to achieve maximum benefit.
Key words: Type 1 diabetes mellitus, Continuous glucose monitoring, Children, TechnologyTime in range.

Introduction:

Continuous glucose monitoring (CGM) has a positive impact on blood glucose control, improving HbA1c levels and time in range (TIR, 70–180 mg/dl) and limiting glucose variability and number of hypoglycemic episodes (Resnick et al 2006). This positive effect is strictly associated with glucose sensor use for at least 60% of the time (Bode et al 2005). Similarly, combining CGM systems with continuous subcutaneous insulin infusion (CSII) reduces HbA1c and increases TIR without detrimental effects on the number of hypoglycemic events when compared with multiple daily injections (MDI) with self-monitoring of blood glucose (SMBG) or the use of CSII alone (Boland et al 2001).

Continuous glucose monitoring (CGM) has been shown to be helpful in children and adults with diabetes and offers the potential to improve care for children with type 1 diabetes (T1D) beyond what can be achieved with self-monitoring of blood glucose (SMBG) alone. The Endocrine Society now recommends CGM use starting at 8 years of age for anyone with T1D able to use it on a near-daily basis. Still, despite frequent use in large diabetes centers, CGM is not commonly used for pediatric patients with T1D . One reason for this is a lack of infrastructure and personnel qualified to teach patients, as access to a multidisciplinary trained team needed to teach families to use CGM effectively is generally not available to the non-academic pediatric endocrinologist (Bode et al 2005). In addition, there is concern among providers about being overwhelmed by the considerable amount of data obtained (Juvenile Diabetes Research Foundation Continuous Glucose Monitoring Study Group 2008).And about limited reimbursement for time spent interpreting the data.

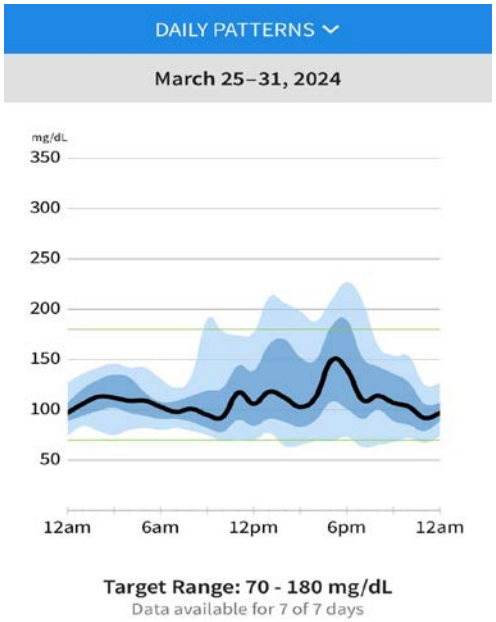
Reports show that fewer than 30% of children with T1D have a hemoglobin A1c (HbA1c) less than 8%, and children experience episodes of severe hypoglycemia more frequently than adults . Accordingly, there is increasing interest among pediatric endocrinologists in using CGM to improve HbA1c levels and reduce the incidence of hypoglycemia in children. This corresponds with patient/family interest in

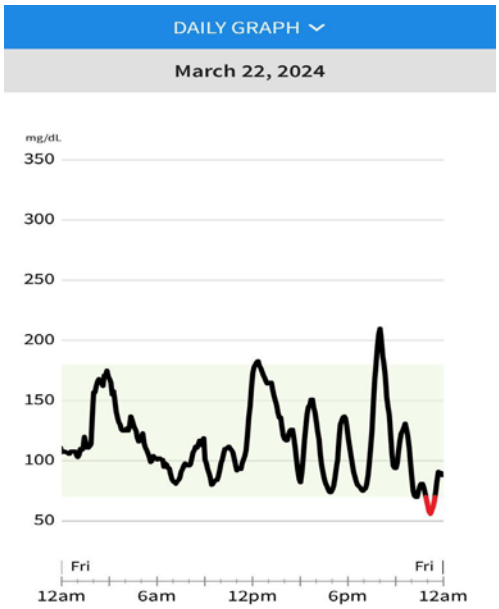
CGM as a means to prevent hypoglycemia primarily, and improve diabetes control secondarily (JDRF 2008). The full clinical potential impact of CGM, however, is far from being realized since most children with T1D do not use or have access to this resource for their diabetes care.

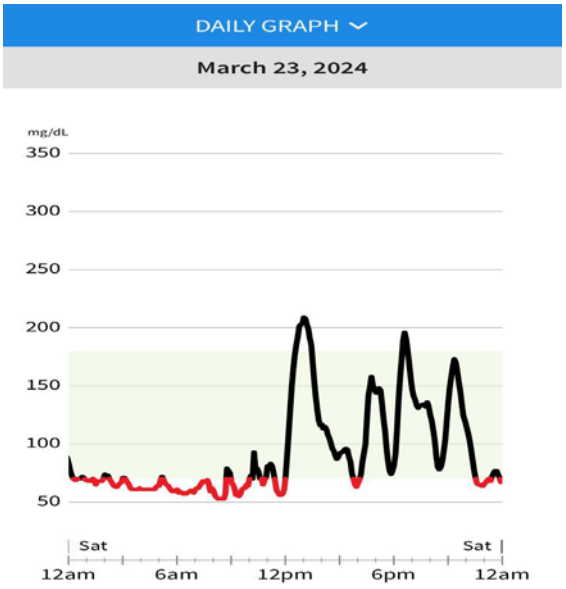
Methods and Material:

Observation and Results:

This was of child with T1D using CGM. The CGM Satisfaction (CGM-SAT) questionnaire was administered to the child and demographic and glucometrics data were recorded.Currently four companies have personal CGM devices available in the US:Abbott (FreeStyleLibre and freestyle Libre 2),Dexcom (theG6),Medtronic (Guardian Sensor 3) and Sensonics(Eversense) out of which Freestyle Libre were used







Conclusion: In this study, we confirmed that CGM is effective in achieving better control of type 1 DM by significantly improving HbA1c levels . Meanwhile, inclusion of CGM in the mandatory form of health insurance will most certainly be an incentive to evaluate the impact of this technology on a broader population of patients.

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