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Unit No. 3

TRANSFORMING YOUR CLINICAL PRACTICE USING CGM: INTEGRATE TO EDUCATE

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ABSTRACT

Continuous glucose monitoring (CGM) is increasingly being recognised as an effective tool for monitoring glucose levels to manage diabetes. As people living with diabetes (PwD) are mainly managed in primary care, the adoption of CGM in this setting is crucial in improving clinical outcomes. Despite the demonstrated advantages of CGM in PwD, the technology remains underutilised in primary care due to several factors, including insufficient resources, training, and clinical inertia. To help overcome these barriers, optimised systems are needed to assist the integration of CGM into the clinical workflow. This article provides guidance on the integration of CGM into the clinical workflow in the primary care setting. If done successfully, the integration of CGM will facilitate healthcare professionals in providing appropriate treatment and lifestyle modification guidance for PwD, thereby improving clinical outcomes.

Keywords: Continuous glucose monitoring, type 2 diabetes, diabetes outcomes, diabetes clinical practice, primary care

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INTRODUCTION

Diabetes organisations worldwide consider continuous glucose monitoring (CGM) as part of the evolving standard of diabetes care.[1-3] CGM is a tool that accurately reveals insights about glycaemic patterns to guide and evaluate therapeutic interventions, with the aim of improving glycaemic control in people living with diabetes (PwD)[1-3]; however, CGM remains underutilised in clinical practice due to the monetary and time investment required to implement CGM by both PwD and clinicians, as well as clinical inertia due to lack of training in CGM and lack of experience in interpreting CGM data.[3,4] As most PwD are managed in primary care,[5-7] there is a need to develop optimised systems to increase the use of CGM in this setting.[8]

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BENEFITS OF INTEGRATING CGM IN PRIMARY CARE

Many healthcare professionals (HCPs), including those in Singapore, recognise the role of CGM in optimising glycaemic control in PwD.[9] Physicians, nurse clinicians, and pharmacists have all shown positive attitudes towards the technology.[9] Aside from providing insight into glycaemic patterns, which can support treatment decisions, CGM is a powerful educational tool that can engage and motivate PwD to adopt lifestyle changes that improve their condition.[10,11] Additionally, it has been shown that initiation of CGM can decrease hospitalisations in PwD by almost 50 percent[12]; therefore, if CGM is implemented early in primary care, PwD may experience improved life expectancy and lower healthcare costs, as demonstrated in other studies on the benefits of primary care.[13] If CGM is made accessible with the required support in primary care, it can substantially improve satisfaction for PwD, as well as HCPs, which ultimately improves clinical outcomes for PwD in primary care.[5]

CONSIDERATIONS WHEN INTEGRATING CGM INTO A CLINICAL WORKFLOW

When considering whether to integrate CGM into the clinical workflow, there are a number of factors to consider: expertise in CGM; practice demographics and PwD preferences; office workflow; and resources and capacity within the practice.[14] For example, what is the HCP's level of expertise with CGM? If it is inadequate, do they have adequate time to learn and interest in learning the technology? What are the types of PwD who visit the clinic? Would CGM match the clinical needs of PwD frequenting the practice (e.g., alarms to indicate hypoglycaemia for patients on intensive therapy, as well as affordability and convenience)?[15] Does the clinic have a diabetes educator or staff available to provide training and troubleshooting? Is the practice adequately staffed to handle the additional documentation and billing requirements? Does the practice have the capacity to extend consultation time and the funds to purchase and maintain CGM equipment?[14] Consideration of these factors is helpful when determining the type of CGM to implement and the specific CGM device(s) that best align with the practice and PwD needs.[14]

STEPS TO INTEGRATE CGM INTO THE CLINICAL WORKFLOW

To successfully integrate CGM systems into the clinical workflow, consider utilising all available resources. A well-qualified team should be established by including members such as a practice manager, a practice nurse, and certified diabetes educators.[16,17] The concept of CGM should be introduced to the team and all should agree on the

integration of CGM as part of diabetes management in the practice.[16] With all team members on board, assign clearly delineated roles and responsibilities to each team member, including who will be responsible for assessing PwD needs, training PwD on CGM use, billing, customer service, inventory management, and information technology support.[16] If required, seek assistance from a CGM company representative to complete CGM setup.[16] Afterwards, team members should be trained on the application of CGM, including recognising the characteristics of PwD most suitable for CGM and interpreting the ambulatory glucose profile (AGP) report.[16]

CGM SYSTEMS AND DEVICES

CGM devices used by PwD can be used continuously or intermittently and typically require training for PwD to collect and interpret data.[16-18] A sensor is applied to the arm and PwD wear it for the duration specified by the clinician or CGM device. The sensor collects and holds data that can be analysed by the clinician and/or PwD, if adequately trained. PwD can receive their data in one of two ways: 1) automatic transmission to their compatible smartphone or dedicated reader, or 2) manual scanning of their sensor using their smartphone or reader, which can provide eight hours of retrospective blood glucose data at each scan along with trend arrows that indicate their blood glucose levels.[14,18] It is imperative that clinicians advise PwD on the correct CGM device to use based on the individual's clinical needs, technological abilities, and personal preferences.[18] Practical tips to provide PwD regarding CGM use can be found in **Table 1**.

Table I: Practical tips to provide PwD for CGM use

FreeStyle Libre 2 system[19]	
1	Scan the sensor at least once every 8 hours to ensure that all the data are captured and stored
2	Do not compare self-monitoring of blood glucose readings to sensor readings as these might differ
3	Do not rely on Day 1 glucose readings to adjust insulin as the sensor requires time to adapt to the interstitial fluid
4	Remove sensor prior to x-ray, MRI, or CT appointments and apply a new one afterwards
5	If sensor readings are inconsistent with symptoms of low/high blood glucose, perform a fingerstick test to confirm
6	Select an appropriate site (e.g., back of upper arm) to apply the sensor to prevent loosening of sensor (e.g., during intense exercise)
7	If there is skin irritation to the adhesive used, remove the sensor and contact your HCP
8	Sensors cannot be reused or re-inserted if they are accidentally dislodged because they are designed for single use only
9	Sensors are packaged together with applicators as a set
10	Sensors have not been evaluated in pregnant women, persons on dialysis, people <4 years of age, or those using other implanted medical devices (e.g., pacemakers)
Dexcom G6 system[20]	
1	Do not let skincare products, such as sunscreens and insect repellents, touch the device, as they can cause the plastic to crack. If these products get on the device, immediately wipe them off. Ensure there are no cracks on any parts of the device
2	Clean hands with soap and water and insertion site with alcohol wipes before inserting sensor. Apply sensor on an appropriate site (e.g., belly or back of upper arms). Contact HCP in case of irritation at site/broken or detached sensor wires
3	When starting to use a new sensor, enter the matched code into the display device to use the device without fingerstick calibrations
4	Keep transmitter and display device within 6 metres of each other with no obstacles in between

These tips apply to the FreeStyle Libre 2 system or Dexcom G6, which have been used as examples.

CGM = continuous glucose monitoring
CT = computed tomography
HCP = healthcare professional
MRI = magnetic resonance imaging
PwD = people living with diabetes

CLINICAL WORKFLOW

Initiation Process

HCPs should perform a database search for candidates who could benefit from CGM. Once a person living with diabetes has been identified, introduce the concept of CGM and review the rationale for the technology with the individual.[16] If the individual provides consent, educate and emphasise the importance of tracking their daily activities, including food, exercise, and medication intake, for optimal CGM data interpretation.[16] For PwD using CGM devices, educate them and/or their caregiver on the use of the associated smartphone app or reader whilst addressing any concerns, questions or knowledge gaps.[16] If the person living with diabetes is comfortable, apply the sensor to the arm and book a follow-up appointment for review (after at least 14 days of CGM use)[10]; however, it is important to inform the individual to check that sufficient CGM data has been collected prior to the follow-up appointment. This will allow the subsequent visit to focus on the person living with diabetes and clinician interaction and shared decision-making, instead of data acquisition.[5]

Follow-up Process

In the follow-up appointment, CGM data can be uploaded from the reader by the clinician and retrospectively reviewed on the desktop or cloud-based application.[5] This allows the clinician to analyse the AGP report and interpret core CGM metrics, which include the overall and daily glycaemic variability patterns, to identify key patterns in daily glucose profiles influenced by treatment factors, diet, lifestyle, and behaviours.[5,17] This helps the clinician detect any clinical problems (e.g., hypoglycaemia, hyperglycaemia) and establish a treatment plan/personalised action plan to improve CGM metrics, which may involve changes in lifestyle factors.[5,17] To reduce the risk of future problems, relevant ongoing education may be recommended to the person living with diabetes,[16] and feedback on the individual's experience in utilising CGM may be sought. Finally, a follow-up appointment should be booked with the individual for future CGM data review (based on the individual's needs and CGM product guidance; this could be from after two weeks to three months).[10,18]

After CGM Has Been Integrated into the Clinical Workflow

Once a CGM system has been integrated, ensure to evaluate the success of the programme.[16] Track clinical practice and PwD metrics in order to assess the return on investment for both clinicians and PwD.[16] In particular, CGM provides real-time information on hypo- and hyperglycaemia patterns and glucose variability, which may be of significant value to adjust treatment, even when the individual's HbA1c (glycated haemoglobin) is in the target range of less than 7 percent (refer to **Figure 1**). In addition, consider upskilling clinical staff to improve CGM expertise, which will ultimately enhance PwD clinical outcomes.[16] Finally, cultivate a consultation routine with PwD, such that clinic visits are optimised by focusing on shared decision-making informed by CGM data.[5,17] An algorithm for the clinical workflow is outlined in **Figure 1**.

FUTURE DIRECTIONS

Moving forward, the successful implementation and use of CGM in the primary care setting involves providing support systems for optimised use of CGM.[5] These include: increasing access to CGM devices, optimising data-sharing systems and integration of CGM reports into electronic medical records, and increasing training on CGM for primary care clinicians and other allied HCPs such that they can support PwD.[5]

CONCLUSION

Much work remains to be done in order to improve CGM use in clinical practice. This article outlines the best consultation practices in the clinical workflow, PwD- and clinic-specific considerations, and recommendations that might help guide the approach to integrating CGM into clinical practice. Successful implementation of CGM will improve the satisfaction and clinical outcomes for PwD and their primary care team.

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CONFLICTS OF INTEREST

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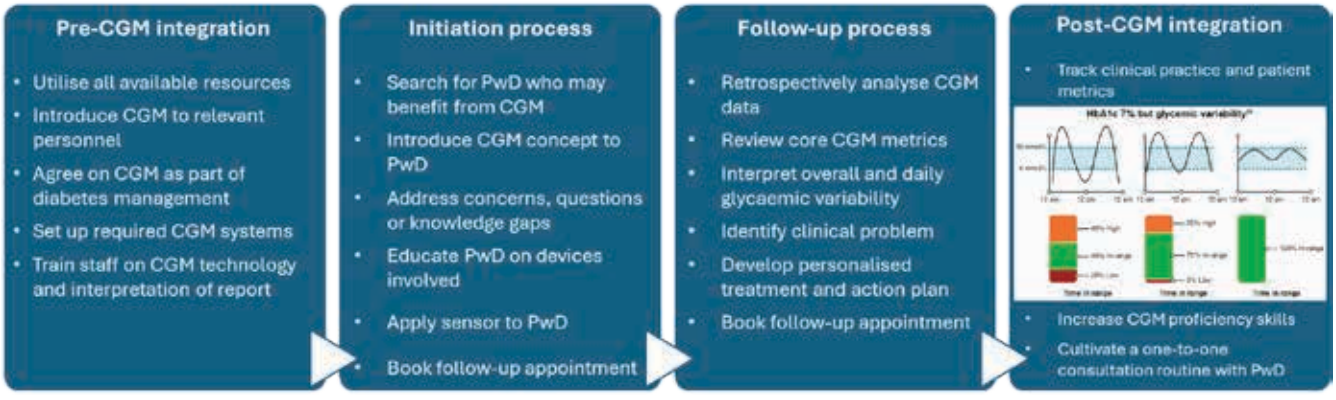
Figure 1: Clinical workflow for CGM integration[21]



CGM = continuous glucose monitoring
HbA1c = glycated haemoglobin
PwD = people living with diabetes

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LEARNING POINTS

- **CGM for monitoring glycaemic control in diabetes management is a powerful tool that has the potential to substantially improve the primary care experience for PwD and their treating HCPs.**
- **Clinical outcomes for PwD can be improved by implementing shared decision-making between clinicians and PwD based on CGM-derived metrics and reports.**
- **Optimisation of systems and implementation of HCP training programmes are needed to improve CGM adoption in clinical practice.**