An Education Protocol To Guide Diabetes Educators To Deliver Real-Time Continuous Glucose Monitoring System To Educate People With Diabetes

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Dexcom G7

AN EDUCATION PROTOCOL TO GUIDE DIABETES EDUCATORS TO DELIVER CGM EDUCATION TO EDUCATE PATIENTS WITH DIABETES ON MULTIPLE DAILY INJECTION INSULIN THERAPY





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Dexcom G7 Installation Checklist

SESSION 1

1.	Explained the purpose of CGMS installation, patient roles and responsibilities; obtain agreement to complete 2-session education program.	
2	Insert sensor; download Dexcom G7 and Clarity apps on patient's smartphone; create patient account.	
3	Share CGM data with healthcare professionals after obtaining patient consent.	
4.	Teach immediate care and aftercare of sensor and patch.	
5.	Educate device use and monitoring, Dexcom G7 app functionality and graph interpretation.	
6.	Customize alert settings.	
7.	Share real-time data with patient's relatives. (optional)	
8.	Advise patient to securely record login email and password.	
9.	Practice the steps for recording and explain signal loss troubleshooting.	
10	Clarity App Education.	
11.	Complete documentation.	

Session 1

Aim

1) Install the Dexcom G7 sensor and related apps
2) Educate the operation and use of the Dexcom G7 and Clarity apps

Before CGM installation

1) Greetings and explain the meaning of real-time CGM and the difference from SMBG
2) State the roles and responsibilities of patients and get patients' agreement to complete the 3-session education program
3) Consent for sharing CGM data to health care professionals

During CGM installation

4) Download the Dexcom G7 and the Clarity apps in patients' smartphone, then create a patients' account
5) Insert sensor to selected area (refer to Appendix 1 - Dexcom G7 Sensor Insertion Guide)
6) Advise patients to keep patch dry and sweat-free especially in the first 12 hours
7) Inform patients that the sensor takes about 30 minutes to warm up after the 4-digit pairing code was entered, and its lifespan is 10 days with a 12-hour grace period
8) Teach patient on the immediate care and aftercare of both waterproof sensor and over patch
   a) Suggest using the over patch as instructed (refer to Appendix 1 - Dexcom G7 Sensor Insertion Guide)
   b) Allow patients to wear the sensor to swim up to 24 hours not submerged deeper than 2.4 meters of water
   c) Avoid activities such as sauna use and scuba diving which exceed a depth of 382 meters.
   d) Cover the sensor with a lead apron and keep the sensor out of the scanned area during X-ray, CT scan, or radiation therapy
   e) Avoid wearing the sensor during magnetic resonance imaging (MRI) or high-frequency electrical heat (diathermy) treatment
   f) Store sensor at a temperature between 2°C and 30°C and keep the in-use sensor between 10 °C and 42°C
9) Share CGM data with health care professionals (refer to Appendix 2- Guide for Sharing Patient's CGM Data with Clinic in Dexcom G7)

After CGM installation

10) Educate patients to keep the distance between their sensor and smartphone less than 6m and keep their smartphone Bluetooth turn on to prevent signal loss
11) Educate patients on Dexcom G7 function key use and explain (refer to Appendix 3 – Function Display)
    a) Guide patients to read glucose reading and arrows in the Dexcom G7 app on patients' smartphone
    b) Guide to chart blood glucose, insulin, meal, activity and additional note timely and emphasize the importance of recording in future daily log analysis. (refer to Appendix 4 - Guide for Meal & Insulin Record in Dexcom G7)
       i) Blood Glucose: log blood glucose and calibration if have
       ii) Insulin injection: insulin type (fast acting or long acting); insulin unit; and the injection date and time
       iii) Meal: carbs (in gram) and meal intake date and time
       iv) Activity: duration; intensity (light/ medium/ heavy) and exercise date and time

Session 1

v) Note: free text description on special event, e.g. hypoglycemia (enter notes to describe symptoms of hypo and events before hypoglycemia); food record (enter notes in detail to describe food intake as detailed as possible in terms of type and quantity

*Important to add record at correct time for emphasizing the importance of recording details for future daily log analysis

c) Educate patients on graph interpretation, and explain:

i) Curve concept: interstitial glucose is being measured continuously by the sensor and real time glucose automatically sent to the smartphone every 5 minutes by Bluetooth. All data will be plotted onto the curve

ii) Glucose reading can be retrieved from the last 24 hours; otherwise, the data can be reviewed in the Clarity app

iii) Grey rectangle: glucose within the target range of 3.9-10 mmol/L (or individualized as specified)

iv) Below the low target red line: glucose < 3.9mmol/L

- Advise patients to verify the low glucose with its symptom(s) and capillary glucose, give treatment if needed

v) Above the high target yellow line: glucose> 13.9mmol/L

- Advise patients to note, think and relate it to as food or skipping medication, etc

d) Customize alert settings including "Quiet mode"; "Glucose Alert" and "System Alert" at "Profile". Patients can turn off all alert sounds or set to vibrate (except the App stopped alert) as set profiles or, with one setting change for up to six hours. Visual alerts on the device will still display so the patients can monitor their values without sound. Even in the vibrate mode, urgent low glucose and technical alerts (e.g. sensor issue, loss of signal, sensor fail, replace sensor now, etc.) will still escalate to sound if not acknowledged

e) State option to share real time data with up to 10 followers at "Connection" (refer to Appendix 5 – Guide for Invited People to be Patient's Follower for Sharing Realtime Data)

f) Suggest patients to self-record login email and password; can assist in the record if consented

12) Wait for 30mintues for the first reading and demonstrate meals or activities recording with the patients if needed. Let patients practice the steps for recording for the first time at all possible

13) Mention that if the signal loss occurs in the Dexcom G7 app, the signal will be automatically restored in approximately 30mins with proper use and advise to contact health care professionals or Dexcom sales for assistance if the signal loss lasts for more than 3 hours.

14) Educate for the use of Clarity app

a) Summary - To review glucose statistics, time-in-range and patterns in selected 2/7/14/30/90-day range

b) Reports- To download, print or email the full AGP report in selected 2/7/14/30/90-day range (This function is highly recommended to be taught to patients)

c) Goals- To review best day and time-in-range data

d) Profile- To change setting in sharing data, target-in-range, unit of measure and notification

15) Documentation

Dexcom G7 Installation Checklist

SESSION 2

1.	Remove sensor, download 14-day CGM report from patient's Clarity account.	
2.	Discuss any feedback or problems encounter from app or device.	
3.	Review 14-day AGP report: time in range, glucose metrics, patterns.	
4.	Review the graph show data averaged over 10 days and identify any hyperglycemia/hypoglycemia for further discussion.	
5.	Review 14-day CGM "Pattern" report including "Best Day" and specific pattern graphs.	
6.	Quick review on 14-day Daily Review Report day-by-day, focusing on alerts, meals, insulin, activity.	
7.	Analyze low/high glucose events and patient's management, reinforce appropriate action & provide advice for improving event management if needed.	
8.	Summarize key learning and recommend actions.	
9.	Adjust medication if necessary.	
10.	Encourage ongoing lifestyle and insulin dose modifications.	
11.	Complete documentation.	

Session 2

Aim: Review and interpret real-time CGM reports with patients

Preparation

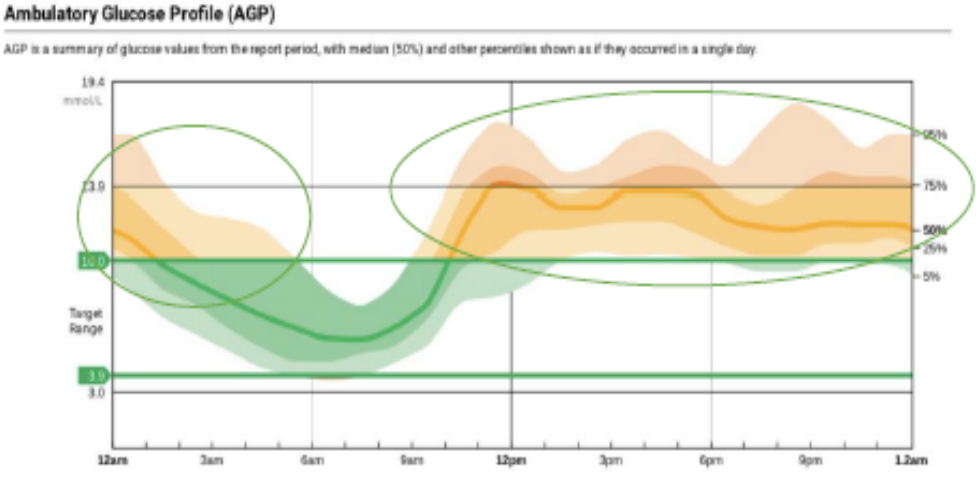
1) Greetings and explain the purpose of this session
2) Remove patients' sensor if not yet done
3) Download the 14-day CGM report from clients' Clarity accounts
4) Ensure that patients have timely recorded their blood glucose levels, insulin doses, meals, activities and any additional notes in the Dexcom G7 apps
5) Discuss with patients for any feedback or problems encountered while using Dexcom and Clarity app e.g. calibration of sensor glucose or alert setting

Education

6) Review and explain the 14-day CGM report obtained from the "AGP" including analysis of the Time in Ranges, Glucose Metrics (Average Glucose, Glycemic Management Indicator, Coefficient of Variation and Time CGM Active) and Ambulatory Glucose Profile
   a) Spotlight any deviation as general overview on past 10 days glucose pattern



   b) Review the graph shows your data averaged over 10 days, identify any pattern discovered including hyperglycemia and hypoglycemia for further discuss in lifestyle modification and medication adjustment in the graph below



7) Review 14-day CGM report retrieved, targeted on "Patterns" report
   a) Review a graph showing the Best Day identified with corresponding statistic data, acknowledge self-management in glycemic control and the achieved target

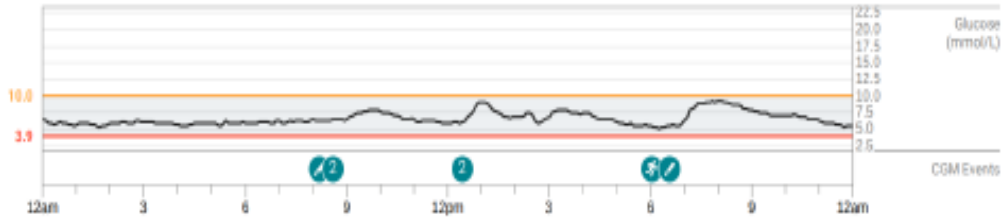
Session 2

Best Day

KA MING's best glucose day was July 24, 2023

KA MING's glucose data was in the target range about 100% of the day.

Mon, Jul 24, 2023



b) Review a series of graphs showing specific patterns, if any, found with dates and time periods. For example, identifying daytime high or nighttime low patterns found in specific periods

→ identify any pattern discovered including hyperglycemia in daytime and for further change in lifestyle modification such as food choices and medication adjustment (e.g. mealtime insulin, correction insulin dose and timing of insulin delivery)

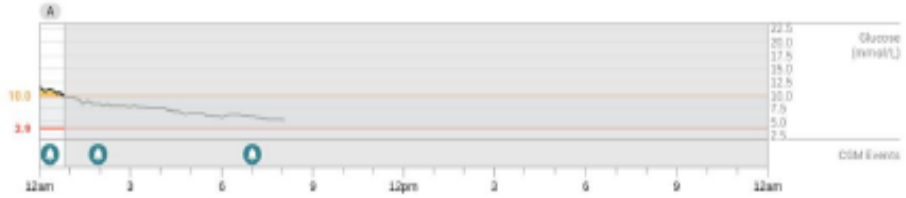
Daytime Highs

YUEN SANG had a pattern of daytime highs

YUEN SANG had a pattern of significant highs between 10:40 AM and 7:35 PM.

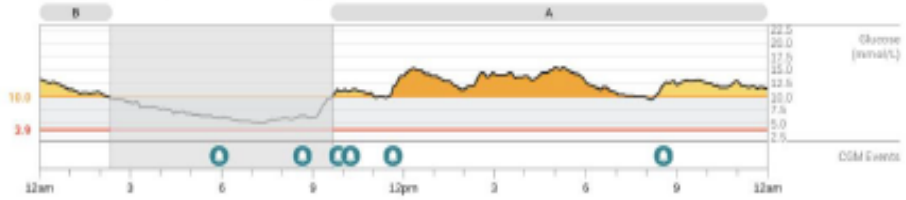
Thu, Jun 15, 2023

Contributed to pattern: A 12:00 AM - 12:49 AM



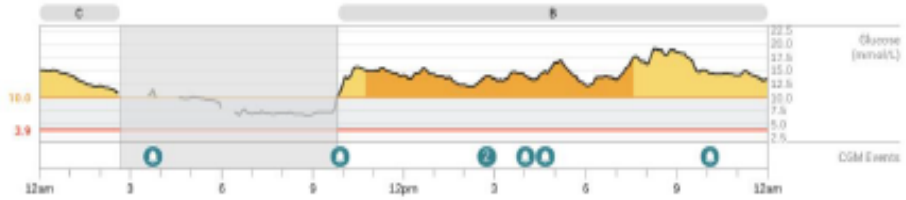
Wed, Jun 14, 2023

Contributed to pattern: B 12:00 AM - 2:19 AM A 9:39 AM - 11:59 PM



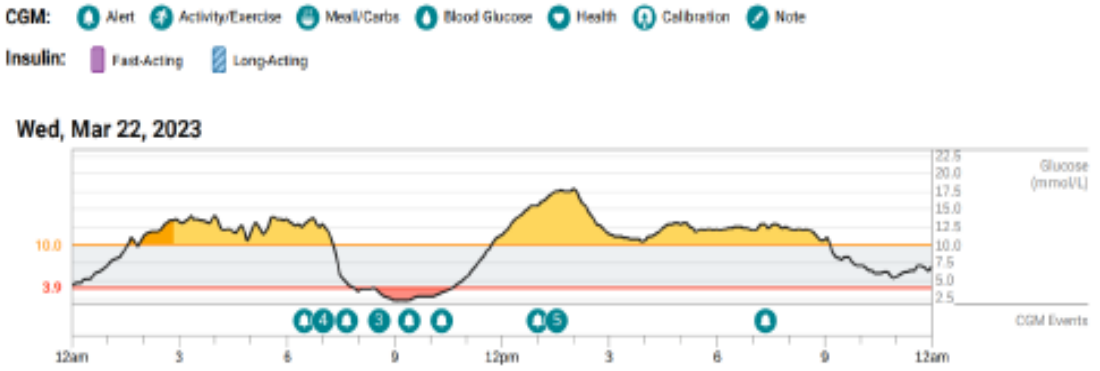
Tue, Jun 13, 2023

Contributed to pattern: C 12:00 AM - 2:39 AM B 9:49 AM - 11:59 PM



Session 2

8) Quick review on 14-day Daily Review Report day-by-day including notes on a) alert, b) activity /exercise, c) meals/carbs, d) blood glucose, e) health, f) calibration, g) note, h) fast-acting insulin, i) long-acting insulin



Time	Event	Details	Glucose
7:21 PM	Alert	Signal Loss	12.9 mmol/L
1:34 PM	Alert	High	17.4 mmol/L
1:31 PM	Blood Glucose	16.2 mmol/L	17.4 mmol/L
1:31 PM	Meal	50 g	17.4 mmol/L
1:31 PM	Fast-Acting	10.0 u	17.4 mmol/L
1:31 PM	Note	蛋牛三文治+熱奶茶	17.4 mmol/L
12:59 PM	Alert	High	15.5 mmol/L
10:19 AM	Alert	Low	3.3 mmol/L

9) Focusing on the event details including low alert and high alert to review effectiveness of lifestyle modification and medication adjustment when special events occur

   i) Identify any hypoglycemic/hyperglycemic episodes and explore any factors that impact events

   ii) Review any notes marked during the episodes of hypoglycemia including insulin (Fast-Acting, Long-Acting), meals/carbs, exercise/activity, blood glucose, calibration and note

   iii) Review any effective or ineffective lifestyle modification and medication adjustment made to deal with the hypoglycemic events

   iv) Acknowledge and reinforce appropriate action if patients effectively manage hypoglycemic events and attempt to identify the causes of events

   v) Provide advice on modifications and corrective actions if patients unable to effectively manage events such as inaccurate CHO counting, incorrect insulin dose injection administration

Session 2

Examples

a) Low alert : Hypoglycemia

Can identify hypoglycemia episode and with proper hypoglycemia management

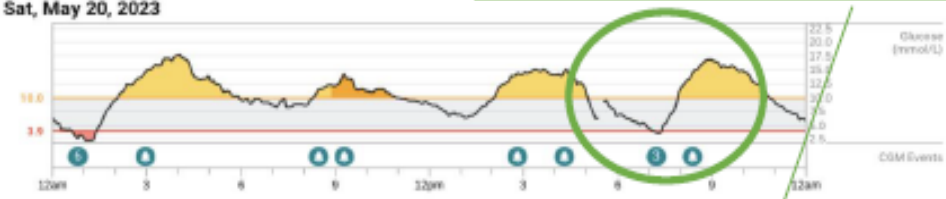
Tue, Apr 4, 2023



Time	Event	Details	Glucose
11:30 PM	Long-Acting	16.0 u	8.0 mmol/L
9:16 PM	Alert	Urgent Low Soon	4.0 mmol/L
7:30 PM	Fast-Acting	12.0 u	4.4 mmol/L
6:47 PM	Alert	Urgent Low Soon	4.1 mmol/L
3:31 PM	Alert	High	14.3 mmol/L
1:36 PM	Fast-Acting	8.0 u	4.7 mmol/L
9:56 AM	Alert	Urgent Low Soon	3.3 mmol/L
7:19 AM	Fast-Acting	8.0 u	5.2 mmol/L

Remind to counter check with BG if symptoms unmatched

Sat, May 20, 2023



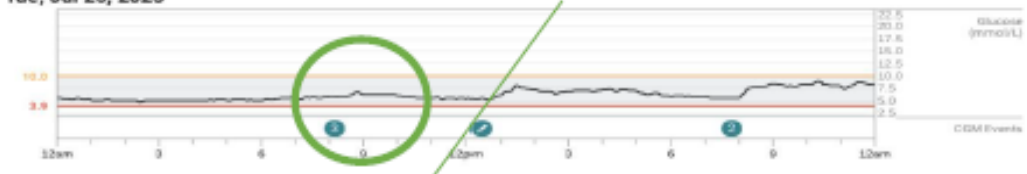
Time	Event	Details	Glucose
8:22 PM	Alert	High	14.3 mmol/L
7:18 PM	Note	I am not hungry, but 3.1 onigiri rice ball, spinach, flush, iced coffee green salad, 3 shrimps, 6pic sweet potato, spinac, rice 50g,soup	3.6 mmol/L
7:12 PM	Alert	Urgent Low Soon	3.7 mmol/L
7:12 PM	Alert	Low	3.7 mmol/L
4:17 PM	Alert	High	14.7 mmol/L
2:47 PM	Alert	High	14.3 mmol/L
9:17 AM	Alert	High	14.2 mmol/L
8:28 AM	Alert	Signal Loss	11.3 mmol/L
2:57 AM	Alert	High	14.6 mmol/L
12:57 AM	Alert	Urgent Low	2.9 mmol/L
12:52 AM	Alert	Low	3.2 mmol/L
12:52 AM	Alert	Urgent Low Soon	3.2 mmol/L
12:47 AM	Alert	Urgent Low	2.6 mmol/L
12:42 AM	Alert	Urgent Low Soon	3.1 mmol/L
12:42 AM	Alert	Low	3.1 mmol/L

Session 2

b) High alert : Hyperglycemia

Correct estimation in prandial insulin to prevent hyperglycemia

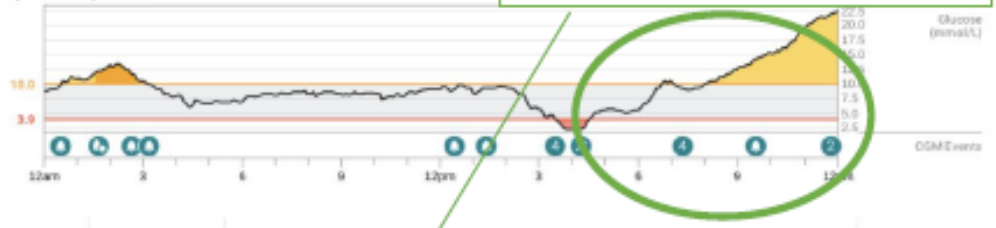
Tue, Jul 25, 2023



Time	Event	Details	Glucose
7:47 PM	Note	意粉	5.4 mmol/L
7:47 PM	Fast-Acting	4.0 u	5.4 mmol/L
12:27 PM	Note	橘仔番薯[illegible]粉	5.4 mmol/L
8:10 AM	Note	沙律	5.7 mmol/L
8:10 AM	Fast-Acting	4.0 u	5.7 mmol/L
8:10 AM	Long-Acting	30.0 u	5.7 mmol/L

Wrong estimation in carbohydrate portion in main meal leading to hyperglycemia

Fri, Mar 17, 2023



Time	Event	Details	Glucose
11:47 PM	Long-Acting	16.0 u	21.9 mmol/L
11:46 PM	Blood Glucose	18.8 mmol/L	21.8 mmol/L
9:34 PM	Alert	High	14.2 mmol/L
7:23 PM	Note	飯一碗40 g 蒸豆腐十炒排骨10 g	9.0 mmol/L
7:23 PM	Meal	50 g	9.0 mmol/L
7:21 PM	Fast-Acting	12.0 u	9.2 mmol/L
7:20 PM	Blood Glucose	6.3 mmol/L	9.2 mmol/L
4:15 PM	Note	飲350芒果汁	LOW
3:39 PM	Alert	Urgent Low	3.1 mmol/L
3:34 PM	Alert	Low	3.5 mmol/L
3:29 PM	Alert	Urgent Low Soon	3.9 mmol/L
3:17 PM	Fast-Acting	10.0 u	4.6 mmol/L
1:23 PM	Alert	Signal Loss	9.3 mmol/L
12:26 PM	Alert	Signal Loss	8.9 mmol/L
3:09 AM	Alert	Signal Loss	10.0 mmol/L
2:39 AM	Alert	Signal Loss	11.7 mmol/L

Some events not shown due to page constraints.

Session 2
After report review and CGM education 10) Summarize the learning points derived from CGM experience including aspects to be improved and recommend action to be taken; and make medication adjustment if necessary 11) Encourage patients to try further lifestyle modification or insulin dose adjustment in future use of CGMS 12) Documentation

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Association of Hong Kong Diabetes Nurses Limited

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