

Diabetes Technology

Resource

Created by Elizabeth (Lissa) Bauer



Continuous Glucose Monitors

CGM comparison https://www.diabetesnet.com/diabetes-technology/meters-monitors/compare-current-monitors/

DEXCOM G6:

Basics: 10 day sensor w/ blood glu measurements every 5min, no calibration needed but has ability to calibrate if needed. Interfaces with tslim pump, omnipod DASH (and 5) pump, INPEN Bluetooth pen

- Intro video: https://www.youtube.com/watch?v=tgd-T7IQ8S8

<u>Informational docs</u>: https://www.dexcom.com/guides

<u>Training videos</u>: https://www.dexcom.com/training-videos

- Getting started (including sensor insertion):
 - o If using G6 phone app https://www.youtube.com/watch?v=4ARsmm_3Ktg&feature=youtu.be
 - o If using receiver https://www.youtube.com/watch?v=c5mjePmJVS0&feature=youtu.be

Blood glucose reports (Portal):

- Clarity HCP login: https://clarity.dexcom.com/professional/
- How to get pump data uploaded into clarity:
 - Wirelessly data will upload automatically if using "Dexcom G6" app (see below)
 - Manually patients (or clinic) can manually upload into clarity by connecting reader to computer with usb that came with the reader https://www.youtube.com/watch?v=BVfB20ONsbY

Phone apps - (note: only some phones are compatible -- https://www.dexcom.com/compatibility)

Patients



Dexcom G6 – for viewing sensor glucose data (updated every 5 min). Provides alerts/alarms. Uploads data into clarity

Also has an apple watch app (see BG data on your watch)



Clarity – this will allow patients to see their glucose reports (the same ones you will use to guide their management)



Follow – data sharing for family/friends. Will allow them to see the same BG data patient sees on their G6 app (pt has to invite member through the G6 app $\frac{https://youtu.be/uRzaL7mfUck}{}$)

Also has an apple watch app (see family BG data on your watch)

Providers:



Dexcom G6 Simulator – simulates what a pt would see using the G6 app including adding events/adjusting settings. Also shows different scenarios (glu rising, glu dropping slow rapid etc) and how to share data (with family, using follow app).

o Also simulates follow app so you can see what family would see.

Other misc info

- Compatible with siri (ie "Siri, what is my blood glucose" and siri will respond with most recent BG --- good for visually impaired)
- Trend arrows <u>https://s3-us-west-</u>
 - 2.amazonaws.com/dexcompdf/HCP Website/LBL015804+G6+Trend+Arrows+and+Treatment+Decisions.pdf
- Recommended reading ---- Using trend arrows for adjusting insulin https://academic.oup.com/jes/article/1/12/1445/4642923





MEDTRONIC GUARDIAN CONNECT

Basics: Up to a 7-day sensor w/ sensor glucose measurements every 5min. After first day of insertion, the system requires q 12hour BG fingerstick and calibration. Stand alone cgm OR can interface with Medtronic's Smart Insulin Pen, InPen™. Does not integrate with Medtronic 630, 670G, 770G systems, these systems have their own sensors. Offers 10-60-minute predictive alerts for highs and lows (customizable limits and alerts/alarms). Can integrate on iOS with the Sugar IQ app, which provides personalized insights on insulin and blood glucose

Intro video: https://youtu.be/QLgaaL-vLBY

Informational docs: https://www.medtronicdiabetes.com/customer-support/guardian-connect-system-support

Training videos:

- Getting Started:
 - How to insert sensor: https://youtu.be/0DoeJeqH-nY
 - Setting up the guardian connect app: https://youtu.be/QWBvHb1TpnU

Blood glucose reports (Portal):

- Carelink HCP login: https://carelink.medtronic.com/
- If patient has a compatible phone and is using the 770G system, or Guardian Connect, the data will automatically upload. However, all systems also come with a Bluetooth USB for uploading in the event they do not have a compatible phone.

<u>Phone apps</u> (note: only some phones compatible https://www.medtronicdiabetes.com/customer-support/guardian-connect-faqs)

Patients:



Guardian Connect US – for viewing sensor glucose data (updates every 5 min). Also uploads automatically into Carelink

o Only works with guardian connect transmitter (ie If using standalone CGM and not with pump)



Sugar.IQTM **Diabetes Assistant** – analyzes everything that affects blood glucose (food, insulin, exercise) and gives personalized insights to help user see how these activities effect their glucose levels. Only available in iOS.

Only works with guardian connect transmitter (ie only If using standalone CGM – it does not work with 670/770G systems)

Family



CareLink[™] **Connect US** – serum glucose data sharing for family/friends

When a patient uses Guardian Connect, care partners can receive text message alerts and see the data from any internet enabled device (not on a separate app). More on this here: https://youtu.be/mK70FND1ihw

o https://www.medtronicdiabetes.com/customer-support/guardian-connect-fags

Providers: No virtual <u>CGM</u> app --- there is a virtual pump website (see below)





FREESTYLE LIBRE

Basics: 14 day flash sensor (not continuous). No calibrations needed (no ability to calibrate). When you scan the sensor, it downloads the last 8hrs of data. Can share data with family. If shared family will see the BG value from last scan.

- **FreeStyle Libre** Glu readings every 5 min. You must <u>scan</u> the sensor using a reader or a compatible phone (using librelink app) in order to see your blood glucose. No alarms/alerts.
- **FreeStyle Libre 2** same as above except has optional alarms/alerts. Can use a phone (libre 2 app) or reader. If using a reader in order for alarms/alerts to work the reader needs to be within 20ft unobstructed. If alarm goes off, user will still need to scan the sensor in order to see the BG reading. Obtains glucose readings every 1 min (other cgms are every 5min).
 - o https://www.youtube.com/watch?v=Yq0gUAMsFmg

Informational docs:

- Quick reference guide https://freestyleserver.com/Payloads/IFU/2020/q2/ART40711-001_rev-C-Web.pdf

Recommended videos:

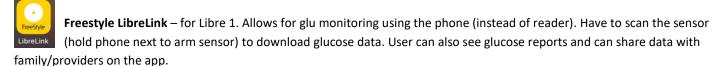
- Getting Started:
 - How to insert sensor: https://www.youtube.com/watch?v=qzM sFnwgEc
 - Intro librelink app https://www.youtube.com/watch?v=-rHDuBOrM3s

Blood glucose reports (Portal):

- Libreview HCP login: https://www2.libreview.com/
- How to get pump data uploaded into libreview:
 - Wirelessly data will upload automatically if using "LibreLink" app (see below) --- not compatible with Libre2
 - Manually patients (or clinic) can manually upload into LibreView by connecting reader to computer with usb that came with the reader https://www.youtube.com/watch?v=r3x3p 3mbaw

<u>Phone apps</u> - (note: only some phones are compatible -- https://www.freestyle.abbott/ie/en/librelink/compatibility-guide.html)

Patient





Freestyle Libre2 – for Libre 2. Allows for glu monitoring using the phone (instead of reader). Has optional alarms/alerts. Have to scan the sensor (hold phone next to arm sensor) to download glucose data but alarms will alert regardless of scan. User can also see glucose reports and can share data with family/providers on the app.

Family



LibreLinkUp - data sharing for family/friends. Will allow followers to see glucose value (with trend arrow) every time user flashes the sensor. It's only that point in time. There is no BG graph

Provider – there is no simulator app

Misc:

 Recommended reading ---- Using trend arrows for adjusting insulin https://academic.oup.com/jes/article/2/12/1320/5181247





SENSEONICS EVERSENSE

Basics: only implantable CGM. Implanted in physician office every 180 days (just approved for 180 days this month!). Transmitter sits on top of where sensor was implanted and receives glucose data. Of note: Since 180 days just approved I am not sure of any changes to the sensor/algorithm. This information is from current sensor (90 days) -- Needs a 24hr warm up period after insertion and then 4 calibrations within the first 24hrs of insertion. Twice daily calibration required. Transmitter has to be charged daily (~10min). No data is collected when the transmitter is not communicating with the sensor (ie when off the body). Only CGM with on body vibratory alerts for low/high. Interfaces with omnipod and glooko.

- https://www.youtube.com/watch?v=d4lepb2t4nE

Informational docs:

https://resources.eversensediabetes.com/

Recommended videos:

- Getting Started
 - Sensor insertion: https://www.youtube.com/watch?v=zGM6IDcbUJw
 - Linking sensor to transmitter (have to have app installed first) https://player.vimeo.com/video/286217703

Blood glucose reports (Portal):

- HCP login: https://uspro.eversensedms.com
- How to get cgm data uploaded into the portal: Data will upload automatically using the "Eversense" phone app (see below)

Phone apps - (note: only some phones are compatible -- https://www.eversensediabetes.com/compatibility)

Patient



Eversense – receives and displays cgm sensor glucose data from transmitter (updates every 5 min). Uploads data automatically into portal

Also has an apple watch app (see BG data on your watch)

Family



Eversense NOW - data sharing for family/friends. Will allow followers to see past 3 hours of glucose data and trends, 20 most recent glu alerts and recent events. Only compatible with eversense cgm app (above)

Provider – there is no simulator app





Insulin Pumps

Pump Comparison: no updated comparison with 770G and omnipod 5 from diabetes forecast. Decent review can be found here https://integrateddiabetes.com/updated-insulin-pump-comparisons-and-reviews/

TANDEM T-SLIM

Basics: 2 different pumps (same hardware but 2 different types of software – manual vs. advanced hybrid closed loop). Bluetooth enabled tubed pump, receives automatic updates without need of changing whole pump (still need RX to update). Interfaces with Dexcom G6 CGM, rechargeable battery, holds 300 units of insulin. Has different types of infusion sets.

- Basal IQ (w/ Dexcom G6 cgm): manual pump with basal-IQ technology, a Predictive Low Glucose Suspend system, that predicts glucose levels and stops insulin delivery if glucose is expected to drop below 80 mg/dL in the next 30 minutes or if CGM BG <70mg/dL. Basal will restart with the next rise in BG (min time is 5min). (Analogy: this algorithm functions like an on/off light switch with basal rate turning off (if low) or on (if rises >70mg/dL)

Info video: https://www.youtube.com/watch?v=gklpD8yqOow

- Control IQ (w/ Dexcom G6 cgm) – Advanced hybrid closed-loop system (pump + dexcom G6 cgm) that adjusts insulin using a predictive algorithm that increases basal insulin delivery and/or gives correction bolus if BG is predicted to be higher than 160mg/dL and 180 mg/dL, respectively in 30 min. Decreases basal and suspends if predicted to be low in 30 min. Has sleep and exercise functions where BG target range changes (112.5-120mg/dL vs. 140-160mg/dL). (Analogy: this algorithm functions like a dimmer light switch- basal and bolus can be turned down or up gradually or rapidly)

Info video: https://www.youtube.com/watch?v=ADUDwM1SxeE&t=66s

Informational docs:

- Basal IQ quick reference: https://www.tandemdiabetes.com/docs/default-source/general-guides/basal-iq_technology_ml-1003334 b.pdf?sfvrsn=44837d7 16
- Control IQ quick reference: https://www.tandemdiabetes.com/docs/default-source/general-guides/ml-1004929 a---print-flyer-quick-reference-sheet-control-iq-technology.pdf?sfvrsn=d9dc04d7 8
- Training resources including tutorials on how to use pump (how to deliver a bolus, temp rate, set sleep or exercise activity etc) https://www.tandemdiabetes.com/providers/education-and-resources/training

Videos (https://www.youtube.com/user/tandemdiabetes)

- How to insert infusion set: https://www.youtube.com/watch?v=S8 zp7PdZM&feature=youtu.be
 - o Intro to infusion sets (if you want to learn about the different types): https://www.youtube.com/watch?v=XRYS-GCDN60
- Setting up the app with control IQ system: https://youtu.be/qzg7NI18LB0

Pump Data Portal (t:connect): https://tconnecthcp.tandemdiabetes.com/hcp_account/#/hcplogin

- Note: if using basal IQ or control IQ (with Dexcom G6) it will show the CGM data in addition to the pump insulin data
- How to get pump data uploaded into t:connect:
 - o Wirelessly data will upload automatically only if using control IQ pump with "Control IQ" app (see below)
 - Manually (if not using control IQ app) patients (or clinic) can manually upload into t:connect by using usb that comes with the pump to upload into t:connect https://www.youtube.com/watch?v=az5EvcTz2Ml&list=PLaVPFQzKqgRn-YtxDbKovLYJMhu-co4t7&index=1

Phone apps (check compatibility https://support.tandemdiabetes.com/hc/en-us/articles/360039080154-What-mobile-devices-can-l-use-the-t-connect-mobile-app-with-:

Patients:



T:connect Mobile App – insulin pump data display (only viewable, cannot bolus through app)

- o Will allow pump data to automatically upload into t:connect (otherwise pt will have to manually upload)
- o Compatible with Apple and Android phones

Providers/virtual pump:



T:simulator – virtual pump that replicates same software of pump. Can use to walk through blousing, changing insulin settings, setting activity and sleep functions etc.

 Same size as physical pump. Tries to replicate to make it very similar (if not the same) to the physical pump (touch screen, touch feedback etc)





MEDTRONIC MINIMEDTM

Basics: 7-day pump CGM sensor wear. 2-3 day infusion set wear.

- **630G pump** standard pump. Can interface with Guardian™ Link 3 Transmitter and guardian sensor 3 and suspend on low, but it is not a hybrid closed loop system. Pairs with the Contour® Next Link 2.4 meter
- **670G system** hybrid closed loop system (automated insulin titration by pump using sensor glucose from Guardian™ Link 3 Transmitter and Guardian™ Sensor 3). Pairs with the Contour 2.4 Next meter. Self-Adjusts insulin every 5 minutes https://youtu.be/h4a3f5RWg-o
- **770G system** latest system. Similar to 670G, but fewer alerts and exits from AutoMode. Connects via Bluetooth with both Guardian™ Link 3 Transmitter, as well as, phone apps, and automatically updates to CareLink every 24 hours. The transmitter is marked differently with "GL3". Pairs with Accu Check Guide Link meter only. https://www.youtube.com/watch?v=6gk O soWuY

Informational docs:

- 630G https://www.medtronicdiabetes.com/customer-support/minimed-630g-system-support
- 670G https://www.medtronicdiabetes.com/customer-support/minimed-670g-system-support
- 770G https://www.medtronicdiabetes.com/customer-support/minimed-770g-system-support
 - Setting up minimed mobile app https://www.medtronicdiabetes.com/customer-support/minimed-770g-system-support/setting-up-minimed-mobile-app

Recommended Videos:

- How to insert infusion set
 - o <u>Quick-set</u> infusion set (usual infusion set)- <u>https://www.youtube.com/watch?v=xCjzyMZ5zIQ</u>
 - o <u>Mio Advance</u> infusion set https://www.youtube.com/watch?v=XIYIluwhmiE
 - How to insert guardian sensor: https://youtu.be/oGKq8PwnaUA

Blood glucose reports (Portal):

- Carelink HCP login: https://carelink.medtronic.com/
 Note: if using guardian sensor, it will show the CGM data in addition to the pump insulin data
- How to get pump data uploaded into Carelink:
 - Wirelessly data will upload automatically if using 770G system using the "MiniMed™ Mobile" app (see below)
- Manually patients (or clinic) can manually upload into carelink by using a usb that comes with the pump (white for paradigm, black for 630/670, blue for 770G) https://www.medtronicdiabetes.com/customer-support/carelink-software-support For access to all systems.

<u>Phone apps</u> (check compatibility https://www.medtronicdiabetes.com/customer-support/minimed-770g-system-support/device-compatibility): Patients:



MiniMedTM Mobile US – insulin pump data display (only viewable, cannot bolus through app) --- only works with 770G

- Will allow pump data to automatically upload into Carelink (otherwise pt will have to manually upload)
- o For more information: https://www.medtronicdiabetes.com/minimed-770g-system-support/minimed-mobile-app-training

Family:



CareLink™ Connect US – serum glucose data sharing for care partners (ie.family/friends). Care partners can receive text message alerts and see the data from any internet enabled device. https://youtu.be/mK70FND1ihw

- Compatible with 770G system or guardian connect CGM (not any of the 600 series)
- More on this here: https://www.medtronicdiabetes.com/customer-support/guardian-connect-faqs

Providers:



MiniMed™ Virtual Pumps App allows you to use a virtual pump to experience using a pump like a patient would holding the pump in their hands

- o 630G and 670G system scenario simulator has different scenarios that will walk you through step by step on the app how to do it on the pump (ie. Change your carb ratio)
- o 770G system virtual pump same as if you were setting up a real pump. Just remember Medtronic pumps are not touch screen so you have to use the cursor buttons (up, down, enter etc) to get to where you want to go. Also works on browser at https://www.medtronicdiabetes.com/minimed-virtual-pump

Provider webinars: https://www.medtronic.com/us-en/healthcare-professionals/therapies-procedures/diabetes/education/on-demand-webinars.html





INSULET OMNIPOD

Basics: the only <u>tubeless pump</u>. Requires a PDM/controller to bolus insulin but once POD is programmed the basal program continues independently. Of the different editions, the insulin delivery PODS are the same it is just the pdm or "controller (omnipod 5)" that is different. Interfaces with Dexcom G6. Approved for adults and kids. POD expires after 72hrs requiring replacement. Waterproof for up to 25ft for 60 min. Pharmacy benefit (usually ordered through omnipod to a pharmacy such as Walgreens and not through medical supply company).

- **Omnipod EROS** all new pts should receive the DASH but some may still use the older pdm which uses cursor buttons (not touch screen) and does not connect wirelessly. Pts make insulin changes through this. https://www.omnipod.com/Omnipod-system
- **Omnipod DASH** pdm (personal diabetes manager) is called "DASH", which is touchscreen, in color and looks like a small cell phone used for boluses. Has a food library that will add carbs being eaten to bolus calculator. Patients can use bolus presets, carb presets, and meal presets for meal bolusing. Interfaces with Dexcom G6 and Eversense cgms but not automated (ie cgm data will show up on reports but it is not an automated system). There is no suspend on or before low function. https://www.youtube.com/watch?v=sWQolltxMWO
- Omnipod 5- The first tubeless AID system on the market (currently in its limited market release). Integrated with dexcom G6 and automated btwn pump and cgm (no phone or controller needed for automation). Only approved for DM1. SmartAdjustTM algorithm uses dexcom G6 cgm data to predict BG in 60 minutes and adjusts insulin q5min to reach target. Target can be customized 110-150mg/dL in 10 unit increments (can have up to 8 different target segments). Bolus using smartphone (only approved w/ android currently, IOS in the future) or controller (similar to DASH). SmartBolus calculator requires pt to enter carbs but adjusts based on cgm trend. No bolus or meal presets (ie DASH). https://www.youtube.com/watch?v=OuGEQFn2hAE

Informational pdfs: https://www.omnipod.com/healthcareproviders/clinical-resources/provider

- Omnipod EROS user guide: https://www.omnipod.com/sites/default/files/2021-04/Omnipod-System User-Guide English.pdf
- Omnipod DASH user guide: https://www.omnipod.com/sites/default/files/2021-04/Omnipod-DASH User-Guide English.pdf
- Omnipod 5 user guide: https://www.omnipod.com/sites/default/files/Omnipod-5 Quick-Start-Guide.pdf

Videos

- Informational videos: https://www.omnipod.com/podder-support/videos
 - Starting/Replacing a new pod (need to view below 3 videos)
 - How to fill a new POD https://www.youtube.com/watch?v=fedgtUzAHj8
 - How to apply new POD https://www.youtube.com/watch?v=bHTP415luvk
 - How to insert POD cannula https://www.youtube.com/watch?v=1jjvHUJf1eM
 - Omnipod display app https://www.omnipod.com/DISPLAY

Pump Data Portal (omnipod uses glooko which is not proprietary to insulet):

- Glooko https://my.glooko.com/users/sign in
 - Wireless uploads for OmniPod DASH users through PDM (happens every 24hrs when PDM is connected to WiFi) https://youtu.be/TBCjJhsqIZE
 - Pt will first have to setup a podders account and agree to sharing data with glooko https://youtu.be/MZTyxm_gaCY

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Omnipod DASH Phone apps (check compatibility https://www.omnipod.com/podder-support/apps-data-management/myomnipod-app)

Patients:



Omnipod Display – for pump user. View insulin pump data from pdm (view only, cannot bolus through app). Allows sharing to family/friends. Has locate my PDM feature. User can enable notifications from pdm to alert on phone.



Glooko - this will allow patients to see their glucose reports (the same ones you will use to guide their management). Can also combine cgm and exercise data to reports if they are sync'd.

Family



Omnipod View – allows family/friends to see insulin delivery information. Only available if pt is using the omnipod display app on phone

Providers/virtual pump:



Omnipod DEMOTM– virtual pump replicating omnipod pdm. The app will walk you through each step (activating a pod, creating new basal etc)

Omnipod 5 apps—only compatible with some android devices. Only available to those in the "limited market release" so I have not seen but I am told there will be:

- Omnipod 5 patient app, works as the controller to see pump data and to do boluses
- Omnipod 5 view Family follow app. It is not yet released but should be available by full market release
- Omnipod 5 simulator simulator for providers

BLUETOOTH ENABLED SMART INSULIN PEN

INPENTM

Basics:.Bluetooth enabled smart insulin pen using short acting insulin (novolog, Humalog, fiasp) and connects to phone app. Works same as a novolog/humalog pen BUT also logs the dose in the INPEN app (amount bloused, time of day etc). Report can be downloaded by provider. INPEN app helps calculate bolus (carb ratio, fixed dosing or meal size + correction/ISF) + dosing reminders. Integrates with Medtronic guardian connect cgm, Dexcom G5/G6 cgms and many Bluetooth enabled glucometers showing serum glucose readings + insulin dosing on a graph that would replicate what you see with a pump patient. Pen is reusable for one year – with insulin cartridge replacements. ½ unit insulin increments. Company acquired by Medtronic. https://www.youtube.com/watch?v=N4jxjRb0Kjl

Informational pdfs:

- user guide: https://www.companionmedical.com/guides/inpen-user-guide.pdf
- knowledge base: https://support.companionmedical.com/

Recommended Videos:

- How to:
 - o Remove insulin cartridge: https://youtu.be/yETxQ7fKN Q
 - o Insert new insulin cartridge https://youtu.be/RpBOaZI6ZTw
 - o Prime pen (before each injection): https://youtu.be/JOX35ijt6UM
 - Select units and inject insulin: https://youtu.be/H2uQq-FSI-8
- Webinar: https://youtu.be/4-i0qqZ2kXo

Pump Data Portal: none

- Use the app to create a report. Pt will have to email, print or fax it to provider https://support.companionmedical.com/article/137-how-to-generate-and-send-a-report

<u>Phone apps</u> (check compatibility https://support.companionmedical.com/article/59-is-inpen-compatible-with-my-phone-or-tablet)

Patients:



INPEN – calculates bolus dose using a preset calculation (carb ratio, fixed dose or meal estimator – size). Also records active insulin (IOB) and will make adjustments to calculation based on correction factor (similar to using bolus wizard on a pump). Automatically syncs with guardian connect, Dexcom and apple health integerated BG meters displaying the most recent BG in order to use with bolus calculation

Notifications will display on apple watch

Family: none

Providers/virtual pump: none





Other great diabetes technology links:

- ADA Consumer guide replaced below pdf but not as detailed. Compares different products https://consumerguide.diabetes.org/
- insulin pen comparison (from 2020) <a href="http://main.diabetes.org/dforg/pdfs/2020/2020-cg-insulin-pens.pdf?utm_source=Offline&utm_medium=Print&utm_content=insulinpens&utm_campaign=DF&s_src=vanity&s_subsrc=insulinpens
- blood glucose meter comparison (from 2020) <a href="http://main.diabetes.org/dforg/pdfs/2020/2020-cg-blood-glucose-meters.pdf?utm_source=Offline&utm_medium=Print&utm_content=meters&utm_campaign=DF&s_src=vanity&s_subsrc=meters
- fast acting glucose (to treat hypoglycemia) (from 2020) http://main.diabetes.org/dforg/pdfs/2020/2020-cg-glucose-products.pdf?utm source=Offline&utm medium=Print&utm content=glucoseproducts&utm campaign=DF&s src=vanity&s subsrc=glucoseproducts
- diabetes medications (function and generic/brand names) (from 2020) http://main.diabetes.org/dforg/pdfs/2020/2020-cg-medications.pdf?utm source=Offline&utm medium=Print&utm content=medications&utm campaign=DF&s src=vanity&s subsrc=medications

Why is my cgm different from my fingerstick blood glucose? https://www.youtube.com/watch?v=I3tQ80NXvGk