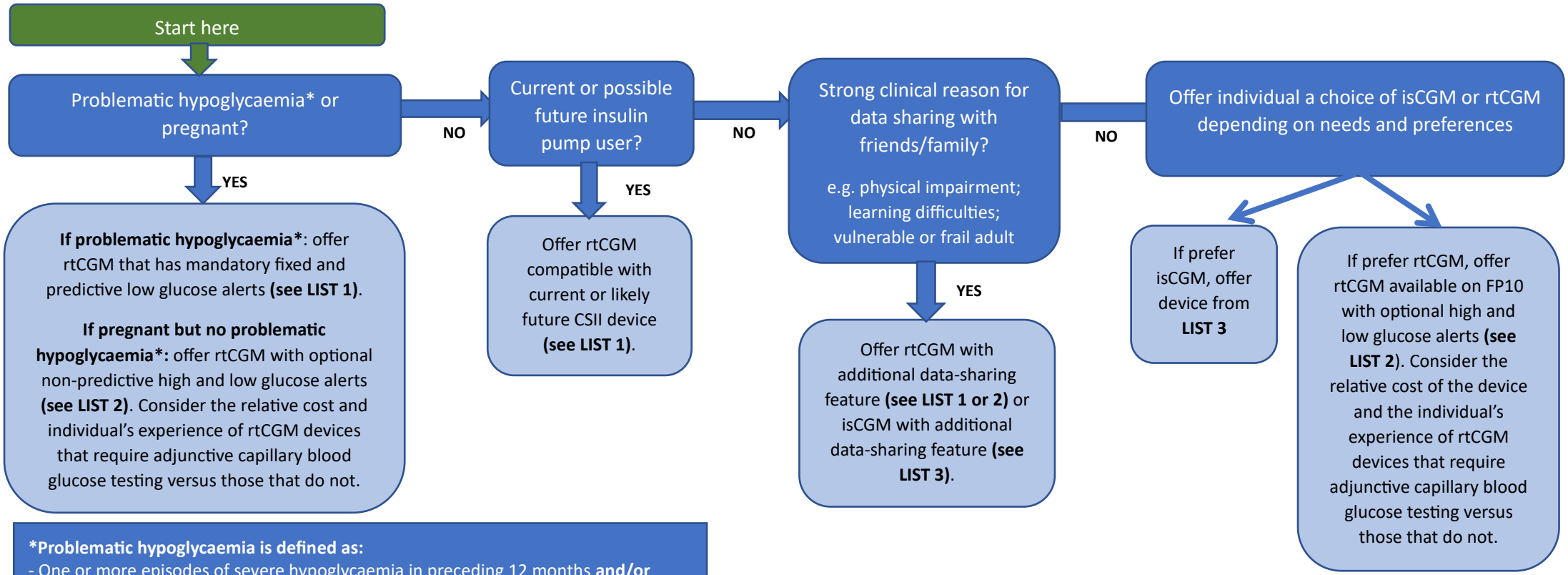
South West London Continuous Glucose Monitoring Guideline for Adults Living with Type 1 Diabetes

All adults living with type 1 diabetes in South West London are eligible for access to continuous glucose monitoring (CGM). This is in line with the updated National Institute for Health and Care Excellence (NICE) Guidance for adults with type 1 diabetes (NG17).

This document has been adapted with permission from the London Diabetes Clinical Network pan-London implementation document and SEL ISC CGM guidance for continuous glucose sensors for adults with type 1 diabetes and details further information for appropriate prescribing of CGM across South West London.

Choice of CGM device

When choosing a CGM device, clinicians and individuals should use shared decision-making to identify the individual's needs and preferences and an appropriate device should be offered to meet these. Not all devices will be suitable for all individuals e.g. due to contra-indications. If multiple devices meet an individual's needs and preferences, the device with the lowest cost should be offered. The flow chart below and subsequent device lists should be used as a guide. Appendix 1 gives definitions and explanations of acronyms and clinical terms used in this document.



***Problematic hypoglycaemia is defined as:**
- One or more episodes of severe hypoglycaemia in preceding 12 months **and/or**
- Impaired hypoglycaemia awareness (Gold score ≥ 4) **and/or**
- More than one episode of asymptomatic hypoglycaemia per week **and/or**
- Fear of hypoglycaemia

South West London Integrated Medicines Optimisation Committee (SWL IMOC). A partnership between NHS organisations in South West London Integrated Care System: NHS South West London (covering the boroughs of Croydon/Kingston/Merton Richmond/Sutton and Wandsworth) and CHS/EStH NHS Trusts/ St George's and Kingston NHS Foundation Trusts and South west London and Georges Mental Health Trust

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The device lists 1-3 below show the currently available devices (February 2023). They are listed/grouped according to common features. This does not imply clinical suitability and does not remove the need for shared decision-making about a CGM device that will suit an individual's needs and preferences. These lists do not constitute a complete list of features for every device. Please refer to the device manual and manufacturer for more information.

LIST 1	**Real time CGM (available from hospital supply chain only, not available on FP10 prescription)** Speciality features appropriate for specific clinical conditions or compatibility with certain CSII devices. No costings supplied for this list as supply chain costs will vary locally.		
Device Name	**Key features of the device**	**CSII/Closed loop compatibility:**	**Additional CBG testing required?**
Abbott Freestyle Libre 3	14-day sensor. Optional low and high glucose alerts. Data sharing with HCP's (healthcare professionals), relatives/carers via LibreLinkUp. Smartphone access only – no alternative data reader.	No	Minimum 200 strips per year**
Dexcom G6	10-day sensor, 3- month transmitter. Fixed urgent low glucose alert(cannot be silenced) and predictive low glucose alert (optional). Data sharing with HCP's and relatives/carers. Optional reader device if no smartphone access	Yes, with Tandem t-slim X2 and CamAPS systems	Minimum 200 strips per year**
Dexcom G7	10-day sensor, integrated transmitter – no expiry. Urgent low glucose alert and predictive low glucose alert (both optional/can be silenced). Data sharing with HCP's and relatives/carers. Optional reader device if no smartphone access.	No	Minimum 200 strips per year**
Medtronic Guardian 3	7-day sensor, 3-month transmitter. Fixed urgent low glucose alert and optional predictive low glucose alert. Data sharing with HCP's only.	Yes, Medtronic 640G and 670G	Minimum 930 strips per year (2 calibrations per day plus basic 200 strips per year**)
Medtronic Guardian 4	7-day sensor, 3-month transmitter. Fixed urgent low glucose alert and optional predictive low glucose alert. Data sharing with HCP's, and with relatives/carers via CareLink connect smartphone app.	Yes, with Medtronic 780G	Minimum 200 strips per year**
Medtrum TouchCare Nano	14-day sensor, rechargeable transmitter. Optional low glucose alerts. Data sharing with HCP's, and relatives/carers	Yes, with Medtrum TouchCare ® Nano Tubeless Insulin Pump	Minimum 200 strips per year**

** see information on page 4- Prescribing of additional capillary blood glucose (CBG) test strips and lancets

LIST 2	**Real time CGM (available on FP10 prescription)** All have optional low and high glucose alerts. No compatibility with CSII devices. All devices have sharing capability for HCP's but not all offer sharing with relatives/carers		
Device Name	**Key features of the device**	**Additional CBG testing required?**	**Estimated annual cost per individual**
Dexcom One	10-day sensor, 90- day transmitter. Optional reader device if no smartphone access. Data sharing with HCP's only (via DEXCOM Clarity software).	No**	Total £900/year - £828 (sensors), £72 (transmitters) CBG testing: Minimum 200 strips per year**
GlucoRx Aidex	14-day sensor, 4-year transmitter. Use of GlucoRx AiDEX app on compatible smartphone Data sharing with HCP's and relatives/carers.	Yes, for all treatment decisions	£778.70 (sensors) CBG testing: Minimum 1660 strips per year (4 test strips and lancets per day for treatment decisions plus basic 200 strips per year**)

LIST 3	**Intermittently scanned CGM** Available on FP10 prescription. Not compatible with CSII.		
Device Name	**Key features of the device**	**Additional CBG testing required?**	**Estimated annual cost per individual**
Freestyle Libre 2	Optional high and low glucose alerts. Data sharing with HCP's, friends/relatives/carers via LibreLinkUp. Optional reader device if no compatible smartphone access	No**	£910 (sensors) CBG testing: Minimum 200 strips per year**

GlucoMen Day rtCGM: Menarini Diagnostics have confirmed that they are committed to supporting existing patients who are currently using GlucoMen Day rtCGM System, however will not be supporting any new patients at this time. Therefore, GlucoMen Day rtCGM will not be included within this guidance for new patients.
GlucoRx Aidex: £29.95 per 14-day sensor (26 sensors/year). No transmitter costs applied. Cost of CBG based on use of 4 test strips and lancets per day at a cost of £0.26 per unit.
Dexcom One: £23 per 10-day sensor (36 sensors/year). £18 per 3-month transmitter
Costs are correct as per Drug Tariff March 2023 NHS Electronic Drug Tariff (nhsbsa.nhs.uk). Cost for capillary blood glucose testing is based on one test strip and one lancet at a unit cost of £0.26 per test; the cost assumptions used by NICE when developing NG17. Cost of 200 strips and lancets per year ~£52.
** see information on page 4- Prescribing of additional capillary blood glucose (CBG) test strips and lancets

Initiation and prescribing responsibility

In South West London, all CGM devices that are available on FP10 prescription (List 2 and 3) are listed with a RAG category of **"AMBER 2"** in the SWL joint formulary for adults living with type 1 diabetes. The AMBER2 RAG category means that the CGM devices available on FP10 prescriptions (Lists 2 and 3) are to be initiated by an 'appropriate specialist' or specialist team who will have experience and expertise in CGM use, be competent in initiating (including training on the use of the device) and provide ongoing support and monitoring. The appropriate specialist will assess the suitability of the CGM device against the individual's clinical need. Whilst it is expected that the majority of initiations will be done through specialist diabetes teams within acute NHS Trusts, initiation can be undertaken by an 'appropriate specialist' in other settings where healthcare professionals are providing specialist care to adults living with type 1 diabetes.

Where the specialist diabetes team initiates the device, a minimum of 4 weeks of sensors and transmitters will be issued to the individual on initiation. A request for primary care to take over prescribing will be detailed in a standard clinic letter. There is no requirement for a shared care or transfer of prescribing form for CGM for adults living with type 1 diabetes.

Changing between different CGM devices

For people with an intermittently scanned CGM device (i.e. Flash GM or Freestyle Libre) wishing to change to a real-time CGM device, NHS specialist teams will review CGM clinical needs and suitability at the next routine appointment-it is not necessary to make a referral solely for CGM initiation.

In the case, where an urgent change is needed, the specialist team will supply a minimum of 4 weeks of sensors and a transmitter. Specialist teams will have provided education to the individual on the use of the new CGM system and a standard clinic letter will detail the CGM device and primary care prescribing request.

CGM devices in List 1 are not available on FP10 and can therefore only be supplied by hospital diabetes teams.

****Prescribing of additional capillary blood glucose (CBG) test strips and lancets**

All individuals with type 1 diabetes will require ongoing FP10 prescriptions for CBG testing (lancets and strips). This is to ensure a safe mechanism of glucose testing is available should the CGM device or reader fail/damaged/lost, and to facilitate glucose testing when use of the CGM device is not appropriate.

Some CGM devices also require additional adjunctive blood glucose testing or testing for calibration, or to confirm hypoglycaemia. These devices are clearly labelled as in the lists above.

In addition, for individuals with diabetes who drive group 1 vehicles (motorbikes, cars and light vehicles), the Driver and Vehicle Licensing Agency (DVLA) rules state that those with interstitial glucose monitoring systems (rtCGM or isCGM) may need to carry out CBG testing in certain circumstances . Individuals with type 1 diabetes who drive group 2 vehicles **cannot** rely on interstitial glucose testing before or whilst driving and will therefore require ongoing regular FP10 prescriptions for CBG testing kit (lancets and strips).

Overall the revised NICE guidance on access to CGM may result in a reduction in the need for CBG, however, ongoing use will be determined by the individual's clinical circumstances. The information in the tables on pages 2 and 3 provide a general guide as to how often an adult person living with type 1 diabetes may need to test but this may differ depending on individual circumstances, particularly if their device requires adjunctive capillary blood glucose testing for calibration or confirmation, to confirm hypoglycaemia or in line with driving requirements. The quantity required should be jointly reviewed regularly by the prescriber and the individual with type 1 diabetes to ensure an appropriate number of test strips and lancets are prescribed. Please note once opened, most test strips have an expiry date of between 3-6 months dependent on the brand and therefore it is recommended not to prescribe more than 3 months of test strips at any one time.

Individuals can continue to use their current CBG meter and ketone meter alongside the CGM device. The brand chosen should reflect local formularies, the functionality required and patient choice.

This guide has been developed alongside a primary care information sheet, a community pharmacy information sheet and example letters to primary care. These documents are available on the NHS South West London Integrated Care System Medicines Optimisation webpage.

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References

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National Institute for Health and Care Excellence. Type 1 diabetes in adults: diagnosis and management. Last updated August 2022, accessed 04.05.2023

Appendix 1: Clinical Terms and acronyms

Acronym	Clinical term and explanation
CGM	**Continuous Glucose Monitoring** A continuous glucose monitor is a device that measures glucose levels via a sensor worn on the body, and sends the readings to a display device ('reader') or smartphone via a transmitter.
rtCGM	**real-time Continuous Glucose Monitoring** This allows a continuous display of real-time glucose readings via a display device. Scanning a sensor to display the glucose result is not required.
isCGM	**Intermittently-scanned Continuous Glucose Monitoring** Also known as 'flash' glucose monitoring. This allows an intermittent display of glucose readings. The sensor records glucose readings continuously, but the sensor must be scanned by the individual (using a reader device or smartphone) to display the reading.
CSII	**Continuous Subcutaneous Insulin Infusion** This is also known as an 'insulin pump' device. Insulin pumps deliver a continuous background flow of insulin, and intermittent 'bolus' insulin, subcutaneously via a thin cannula attached to the abdomen, or via an insulin-containing 'pod' worn on the upper arm. The individual controls the amount and timing of insulin delivery.
CBG testing	**Capillary blood glucose testing** This involves use of a lancet device to prick the finger and draw a drop of blood. A testing strip is used to absorb the blood sample and deliver a blood glucose result via insertion into a glucometer. **Adjunctive:** Some CGM devices recommend testing capillary blood glucose to support treatment decisions, including insulin dose decisions. Device labels may additionally require capillary blood glucose checking for symptoms of hypoglycaemia and some devices also require regular capillary blood glucose testing to calibrate the CGM device. These devices will require an additional regular FP10 prescription of capillary blood glucose testing strips and lancets. **Non-adjunctive:** This is a CGM device which states that additional capillary blood glucose testing is not required to make treatment decisions
Hybrid closed loop	Hybrid closed-loop technology involves both a CGM and CSII device. The CSII device uses an algorithm to continuously take glucose readings from a CGM device and calculate how much background insulin is needed. It then automatically delivers the insulin via pump. The device therefore automatically adjusts the background insulin delivery if glucose levels go too low or high. With a hybrid-closed loop device, the individual must still control how much bolus insulin is given.
Low glucose alerts	A Continuous Glucose Monitoring device that alerts the sensor wearer when their blood glucose level drops below a certain figure. The aim is to prevent a hypoglycaemic or severe hypoglycaemic episode, depending on the figure that the alert is set to. All CGM devices offer low glucose alerts as a feature, and the level they are set at can be altered according to individual preference and clinical need. **Optional low glucose alert:** These alerts can be turned off if the individual/clinician prefers or recommends this. **Mandatory low glucose alerts:** These low glucose alerts operate at a fixed blood glucose level and cannot be silenced or turned off. They are aimed at preventing blood glucose falling to dangerously low levels. **Predictive low glucose alerts**: These offer advance warning alerts of when a low blood glucose level will occur, so that preventative action can be taken. They may be fixed or optional.
High glucose alerts	As per low glucose alerts above. High glucose alerts are usually optional and/or predictive, and rarely fixed.
Gold score	A linear assessment scale to assess awareness of hypoglycaemia symptoms. Regularly completed in specialty type 1 diabetes centres to assess the level of awareness an individual has of their hypoglycaemic episodes.
RAGG	**Red Amber Green (RAG) List** The RAGG list categorises prescribable preparations into four categories, red, amber, and green. The purpose of the RAG list is to promote safe, effective prescribing within the most appropriate setting by the most appropriate person. The category of **"amber 2"** on the SWL joint formulary means that treatment can be continued in primary care under an individual management plan, following initiation and stabilisation/CGM training from an appropriate specialist