

## Guideline For Blood Glucose Monitoring

### Blood Glucose Meters and Test Strip Options

Blood glucose monitoring requires the use of appropriate equipment. The aim of this guidance is to rationalise the number of different blood glucose testing devices across Oxfordshire whilst ensuring appropriate use of NHS resources. Advantages of compliance with the guidance include consistency of approach, reduced risk of errors due to unfamiliarity with equipment, a reduction in unnecessary prescribing, and improved cost effectiveness.

- Blood glucose testing should be used as part of a care plan for the management of diabetes following structured patient education which includes the purpose of testing. **Testing is not required for all people with diabetes.**
- The decision to change to a more cost-effective meter should be used as an opportunity to review the purpose of testing and the interpretation of results. Switching should not be carried out without discussion with the patient. Some patients do require specific meters, so not all are suitable for switching (see page 3).
- If a change in prescribed test strips is required, people should be encouraged to use their current supply of test strips first as long as the strips have not reached their expiry date and the current meter is in working order
- The majority of test strips expire within 3-6 months of opening. If one container usage is over a longer period than this, review blood glucose monitoring needs.
- People should be reminded to use control solutions/calibrate machines in line with manufacturer recommendations.
- Only the test strips and lancets should be prescribed on FP10. Blood glucose meters and supporting equipment are provided free of charge from the manufacturer. Visit the company's website for details.

The blood glucose testing meters referred to in this document are recommended in Oxfordshire at the time of publication and meet the needs of the majority of patients whilst complying with ISO standards. The list is neither exhaustive nor exclusive and is subject to change due to product updates/changes.

**Note** – Freestyle Libre is available in Oxfordshire in line with [Clinical Commissioning Policy 285](#) (to be updated in line with NHSE guidance on Flash Glucose Monitoring) and is not covered in this guideline.

### Driving

The main issue in relation to driving and the law is the risk of hypoglycaemia. It is important that any person using treatment that can cause hypoglycaemia (insulin/ sulphonylurea/glinides) has the means to test their blood glucose. Check the [DVLA website](#) for the most up to date guidance.

- The [current DVLA guidance](#) separates insulin-treated diabetes and diabetes managed by tablets associated with hypoglycaemia risk (including sulphonylureas and glinides) and provides different recommendations for each. It also provides different recommendations for Group 1 and Group 2 drivers.
- People with **insulin-treated diabetes** are recommended to test their blood glucose prior to driving, and every 2 hours during long journeys. Following hypoglycaemia treatment the blood glucose must be in the normal range for 45 mins prior to resuming driving.
- For people with **diabetes managed by tablets carrying hypoglycaemia risk**:
  - Group 1 Drivers - May drive and **need not notify** the DVLA provided they meet certain criteria (see table on DVLA website). Blood glucose monitoring is not routinely required, but should be used if needed to avoid or detect hypoglycaemia in people at high risk.
  - Group 2 Drivers - May drive but **must notify** the DVLA. Certain criteria must be met including evidence of self-monitoring of blood glucose at least twice daily and at times relevant to driving (ie no more than 2 hours before the start of the first journey and every 2 hours while driving). A blood glucose meter with the facility to store a minimum of 3 months of results is required and has to be reviewed annually by an appropriate medical professional. A meter with the facility to download results is recommended. All meters in use must be reviewed.
- Group 1 drivers – must have adequate awareness of hypoglycaemia and must report all episodes of severe hypoglycaemia requiring the assistance of another person (excluding sleep episodes).
- Group 2 drivers - must have full hypoglycaemia awareness and must report all episodes of severe hypoglycaemia requiring the assistance of another person (including sleep episodes). Refer to DVLA website for further information.

## Type 1 Diabetes Mellitus

Self-monitoring of glycaemic control should only be performed if it has a clear purpose for the patient and healthcare professional. It should not be viewed as a stand-alone intervention, but should be incorporated into structured patient education (NICE-clinical guideline 15). Approaches and targets should be individualised and agreed in consultation with patients, as part of the care planning process.

Test frequency will depend on the patient and their insulin regimen. A frequency of up to eight times daily is possible. More testing is required to meet driving requirements

All results must be recorded with time and date to provide a cumulative record as a basis for day-to-day changes in therapy

People prescribed insulin should be taught how to adjust therapy in line with their blood glucose monitoring.

Increase in BGM may be required during period of:

- Illness
- Lifestyle changes
- Changes
- Pre conception
- Impaired hypo awareness
- Frequent hypos
- Exercise
- Driving
- Terminal care/end of life patients as part of a care plan

Test at night if unrecognised hypos are suspected

Routinely pre-meals and pre-bed (MDI). One or two multi-point profiles a week at different times of day (BD premixed)

HbA1c should be measured every three to six months.

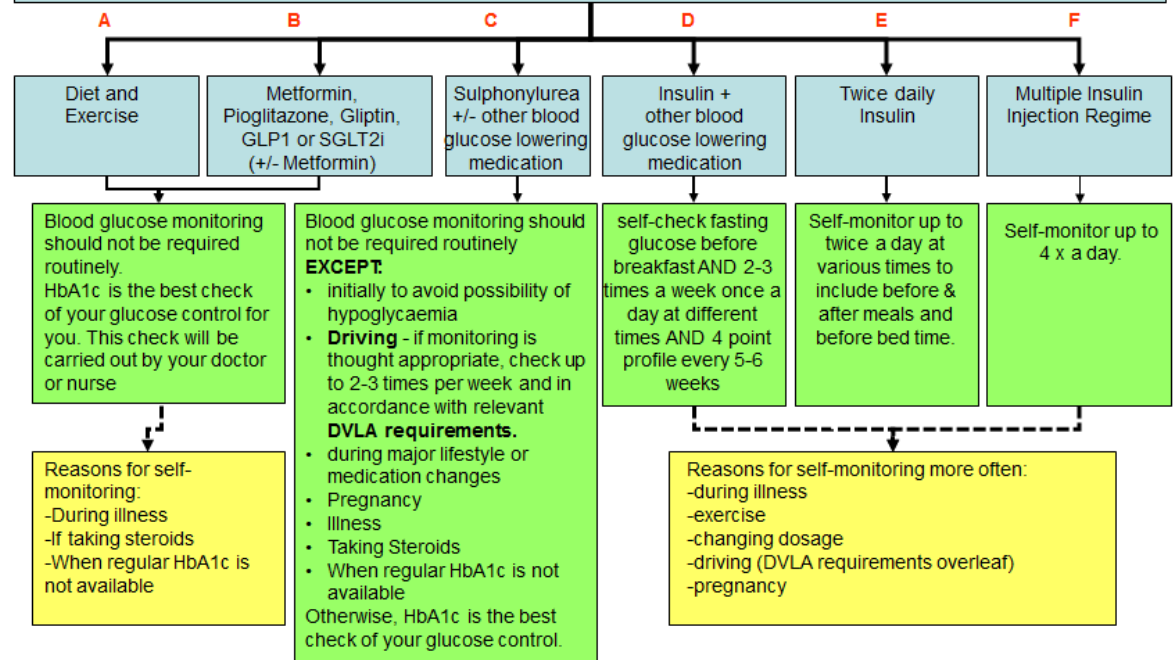
## Type 2 Diabetes Mellitus

### Self-Monitoring of Blood Glucose in Type 2 Diabetes

People with Type 2 Diabetes usually have more stable blood glucose levels, so **routine self-monitoring may not be needed.**

**If you need to self-monitor your blood glucose and how often** will depend on the treatment you receive.

The **pathway** which you should follow for **self monitoring of blood glucose** will be shown to you by your nurse, doctor or pharmacist.



Use flowchart alongside the [Patient Information Leaflet](#) (PIL) during an educational discussion with their clinician.

Driving (see page 1 for more detail)	Alternative Site Testing (ASL)
<ul style="list-style-type: none"> <li>• The main issue in relation to driving and the law is the risk of hypoglycaemia</li> <li>• It is important that any person who is using treatment that can cause hypoglycaemia (insulin/sulphonylurea/glinide) has the means to test their blood glucose</li> <li>• Refer to page 1 of this guideline and <a href="#">DVLA website</a> for further information</li> </ul>	<p>These results <b>must be used with caution</b> in the following circumstances:</p> <ul style="list-style-type: none"> <li>• When making frequent insulin dose adjustment decisions eg following new diagnosis</li> <li>• During illness management</li> <li>• Following exercise</li> <li>• For hypoglycaemia management especially if poor warning symptoms</li> </ul>

## Blood Glucose Meters and Test Strip Options

### FIRST LINE - meets the needs of majority of patients:

(see page 1 for advice on reviewing patients)

Test Strips	Meter name	Benefits	Cost (strips)	Lancets	Manufacturer
<b>Finetest Lite</b>	Finetest Lite	-0.5µl blood volume -Large display -Auto-coding -Alternative site testing -Data download	£5.95 (50)	Greenlan (£3 for 100)	Neon
Other blood glucose meters with strips costing <£6 for 50 can also be considered first line.					

### Available options for patients who may be excluded from using a first line meter:

Patient Groups	Test Strips	Cost (strips)	Meter name	Manufacturer
Type 1 diabetes with requirement for blood ketone monitoring (for use in CSII therapy; diagnosis of DKA; CAPD; pregnant women)	Glucomen Areo Sensor Glucomen Areo Ketone Sensor	£9.95 (50) £9.95 (10)	Glucomen Areo 2k for Glucose and Ketones	Glucomen
	GlucorX HCT GlucorX HCT ketone	£9.95 (50) £9.95 (10)	GlucorX HCT and Ketone	GlucorX
	4Sure Glucose Strips 4Sure Ketone Strips	£8.99 (50) £9.92 (10)	4SURE Smart Duo	Nipro
Visual impairment	GlucorX Nexus	£9.95 (50)	GlucorX Nexus Voice	GlucorX
	Mobile	£9.99 (50)	Accu-Chek Mobile cassette	Roche
Bus/taxi / HGVdrivers on insulin/ sulphonylureas (to dispose of sharps safely whilst working; use standard meter at home)	Mobile	£9.99 (50)	Accu-Chek Mobile cassette	Roche
Requirement for bolus dose advice on meter	Aviva	£16.09 (50)	Accu-Check Aviva Expert	Roche
	FreeStyle Lite	£16.10 (50)	FreeStyle InsuLinx	Abbott
Patients on insulin pumps	Contour Next	£15.04 (50)	Contour Link	Ascensia
	FreeStyle	£15.97 (50)	FreeStyle Accu-Chek	Abbott
	Aviva	£16.09 (50)	Combo / Accu-Chek Insight	Roche

Meter choice should be guided on the advice of specialist team for:

- Renal dialysis patients
- Children, less than 16 years old - seek advice from paediatric specialist prior to switching.  
*Nb. the paediatric service routinely uses the Expert meter, which uses Aviva test strips.*
- Antenatal and post-natal patients  
*Nb. the Glucomen Areo and Wavesense Jazz meters are favoured by Obstetrics*
- Any patients for whom the GP practice has received instructions from secondary care to keep the patient on a specific meter. Specialist services will ensure that the specific reason for a particular meter is clearly stated if a meter with more expensive test strips is suggested.
- Further details on specifications of different meters can be found in [Choosing a Blood Glucose Monitoring Meter](#) guidelines.

### Cost effective lancet choices for self-use by patients

- Each meter is supplied with a lancing device and will require lancets on prescription
- Use the least costly lancets that are suitable for the individual patient - these may not be the one provided with the meter. There are a number of cost effective lancets available on prescription priced at less than **£3 per 100 lancets**.
- Lancets are designed to fit into proprietary finger-pricking devices however most single use lancets can fit several devices.
- Finger pricking devices are not prescribable as they are not listed as appliances under Part IXA of the Drug Tariff. Finger pricking devices are supplied with the blood glucose monitoring meter and can be ordered directly from the company.
- Multi-device lancets which contain a preloaded lancet drum (e.g. Fastclix), should be restricted to those with clinical need, e.g. those with dexterity problems or children/adults where disposal of sharps may be impractical or difficult
- Safety lancets are designed so that the sharp retracts after use. These are primarily for the benefit of healthcare workers to avoid needle stick injury, not to be used by patients self-monitoring blood glucose, therefore they should not routinely be prescribed by GPs on prescription (unless a healthcare worker is testing the patient's blood glucose).
- Ensure that quantities on prescription are appropriate and in line with frequency of testing (i.e. should match quantities and frequency of ordering of blood glucose test strips).
- Lancets are for single use only, patients should be provided with suitable containers for the collection of used lancets. Arrangements should be available for the suitable disposal of these containers.
- Lancets for self-use must not be used by healthcare workers to take samples from more than one patient.

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