

West Essex Blood Glucose & Ketone Meter Guidance (Including lancets, insulin pen needles and disposal of sharps)

These guidelines are intended to assist healthcare professionals in the selection of appropriate blood glucose meters and test strips for patients to self-monitor their blood glucose levels. These guidelines should be used in conjunction with the revised West Essex Clinical Commissioning Group (WECCG) BGM guidelines ([found here](#)) which give a clear indication of who should be blood glucose monitoring. The purpose and frequency of testing should form a part of each individual care plan using a patient-centred approach.

Meters will be provided free of charge from GP surgeries or diabetes clinics. Patients should be dissuaded from purchasing a meter themselves without prior discussion with their healthcare professional, as strips and lancets will not automatically be supplied by their GP.

All meters/strips should comply with current ISO standards for accuracy and assessment of interferents including haematocrit.

*Advice may be sought from EPUT Specialist Community Diabetes Service (SCDS) on
 01992 561 666 Ext:5469*

1 Selecting an appropriate test strip for people with diabetes mellitus

1.1 The following meters are suitable for the majority of individuals with T1/ T2/ gestational or diabetes in pregnancy. Some individuals with type 1 diabetes or complex type 2/ gestational/ diabetes in pregnancy defined as requiring **multiple daily insulin injections (MDI's) using two different types of insulin and self-adjusting insulin doses according to blood glucose results** may require alternative meters with additional features- refer to section 3.

1.2 The following meters are recommended as they are cost effective and meet the following criteria:

- Compliant with current ISO accuracy standards
- Fast test time ≤ 5seconds and small blood sample volume ≤ 0.5µl, which reduces strip wastage
- Large memory function ≥ 500 tests, with 'no delete' facility – complying with DVLA guidelines
- Allow for alternate site testing at ≥ 2 sites
- Allow for meal tagging
- User friendly, no coding required

Meter	Manufacturer	BG testing Strips	Cost per 50 strips	Suitability	Features/Comments
1st line choice: Suitable for most patients					
Fine Test Lite	Neon Diagnostics	Fine test lite	Less than £6 (2 pots of 25)	For most patients Only use alternative meters listed below if clinically indicated.	Meter of choice for EPUT community teams-includes strip eject function. Memory size 500 tests-suitable for group 2 (lorry/bus) drivers that require insulin and test up to 5 times per day.

Meter	Manufacturer	BG testing Strips	Cost per 50 strips	Suitability	Features/Comments
Alternative choices: Only for patients with specific requirements					
Accu-Chek Mobile	Roche	Mobile cassette	Less than £10	For Group 2 (lorry/bus) drivers that require insulin and test more than 5 times per day or for patients with dexterity issues.	Larger memory size of 2000 tests. Easy disposal of used test strips/ lancets. Patients should be advised to ensure they receive adequate blood samples by following manufacturer's instructions.
Glucomen Areo 2K	Menarini Diagnostics	Glucomen Areo		For patients with dexterity issues or for those requiring blood ketone monitoring in addition to blood glucose monitoring.	Larger test strip size. Bluetooth. Memory size 730 tests. Includes strip eject function.
GlucorX Nexus Mini Ultra	GlucorX	GlucorX Nexus		For patients unable to tolerate standard size device.	Compact, multifunctional blood sugar machine. Memory size 1000 tests.

1.3 For patients who are unable to self-administer their insulin and rely on the community nursing service to perform this task the meter of choice is the Fine Test Lite meter (Neon diagnostics).

Note: EPUT WE healthcare professionals must order their meters and testing strips via the eproc system.

1.4 If a change in meter is appropriate the patient will be informed prior to the change occurring to give an opportunity to raise any concerns. Current strips should be used up first to avoid waste.

2 Meters suitable for patients with visual impairment (for specialist advice only).

Meter	Manufacturer	BG testing Strips	Cost per 50 BGTS strips	Features/Comments
1st line choice: Suitable for most patients				
Palmdoc 2	Palmdoc Ltd	Palmdoc	Less than £10	Speaking meter. Available in English, Urdu, Arabic, and Polish
2nd line choice: Only for patients requiring strip eject/ meal tagging features				
GlucorX Nexus Voice	GlucorX	GlucorX Nexus	Less than £10	Speaking meter suitable for those that require additional features of a strip eject button or meal tagging

2.1 FOR EXISTING PATIENTS ON ACCU-CHEK MOBILE (using acoustic mode):

These patients may remain unchanged if there is a clinical need or reviewed where appropriate to do so. Patients should be advised to ensure they receive adequate blood samples with Accu-Chek Mobile by following manufacturer's instructions.

3 Type 1 diabetes or complex type 2/ gestational/ diabetes in pregnancy (requiring MDI using two different types of insulin and self-adjusting insulin doses according to blood glucose results)

3.1 Where meters in section 1.2 do not meet an individual's needs the following meters can be offered:

- **Any meter that meets the current ISO standards for accuracy, meets the patient's needs and costs less than £10 per 50 blood glucose test strips.**
- Or any of the following meters where 50 blood glucose test strips cost more than £10 can be offered, if deemed clinically appropriate.

Meter	Manufacturer	BG test Strips	Costs per 50 BGTS	Features/comments
Accu-Chek Aviva Expert	Roche	Aviva	£15-17	Limited to those requiring an in-built bolus insulin calculator - often required by younger paediatric patients Memory size 1000 tests No strip eject feature
FreeStyle InsuLinx	Abbott	FreeStyle Lite		Limited to those requiring an in-built bolus insulin calculator . Touch Screen Memory size 1000 tests No strip eject feature
Contour Next One	Ascensia Diabetes Care	Contour Next		For patients who find alerts when BG level high or low useful Memory size 800 tests No strip eject feature

3.2 Generally these meters will be initiated by secondary care, the paediatric diabetes service or the specialist community diabetes service who stock a range of meters.

3.3 Some insulin pumps require specific blood glucose test strips- these include Freestyle Lite test strips (Omnipod pump), Aviva test strips (Roche pump), Contour Next test strips (Medtronic pump).

3.4 For newly diagnosed Type 1 and gestational diabetes, the meter must have enough strips to provide for frequent blood glucose monitoring over 3 to 4 days (minimum 20 strips) until the prescription can be dispensed.

3.5 The majority of patients meeting NHSE criteria for FreeStyle Libre® will reduce the number of SMBG strips required per month, except when advised by a specialist team. FreeStyle Optium® test strips are non-formulary and not recommended for prescribing as other cost effective strips are available.

4 Prescribing of blood ketone / urine ketone test strips

4.1 All patients with **Type 1** diabetes should be offered a method of testing for ketones along with education on action to be taken.

4.2 **Adults with Type 1 diabetes-** generally, **urine ketone** test strips are acceptable for use. Patients should be advised to monitor the expiry date and to mark on the pot the date it is opened in order to obtain more strips once they have expired.

Manufacturer	Product name	Number of strips	Cost per 50 strips
Gluco Rx	KetoRx	50	Less than £2.30
Bayer	Ketostix	50	Less than £3.10

Some adults with Type 1 diabetes may need to monitor their **blood ketone** levels (refer to section 4.4). Education on sick day rules is included in the Dose Adjustment For Normal Eating (DAFNE) Type 1 education programme.

4.3 **Children with Type 1 diabetes-** patients should be supplied with a meter that has the facility to check **blood ketones**. Urine ketone testing is not recommended.

4.4 Meters and blood ketone test strips will be supplied to people with Type 1 diabetes who meet one or

more of the following criteria:

- Incontinent
- Unable to self-manage diabetes e.g. Nursing Home, Residential Home, administration of insulin by community team
- Recent or frequent DKA or at moderate – high risk of DKA
- Under 17 years
- Pregnancy

4.5 The following meters are recommended for those who also need to perform blood ketone testing:

Meter	Manufacturer	Strips	Cost per 10 strips	Features/ comments
1st line choice: Suitable for most patients				
Glucomen Areo 2K	Menarini Diagnostics	Glucomen Areo Ketone Sensor strips	Less than £10	Suitable for most patients requiring blood ketone monitoring in addition to blood glucose monitoring. Memory size 730 tests Includes strip eject function
2nd line choice: Only for patients who require the use of an in-built insulin bolus calculator meter				
Freestyle InsuLinx	Abbott	Freestyle Optium beta-Ketone test strips	£21- £22	Should only be prescribed to patients requiring a BGM with in-built bolus calculator Memory size 1000 tests No strip eject feature

5 Additional information regarding meter choice/ accuracy

5.1 It is important that healthcare professionals should be aware that variability of device accuracy and durability can occur with any of the above medical devices, and that if a patient reports problems it is perfectly appropriate to re-issue a new or replacement device from the same class.

5.2 The accuracy of a blood glucose meters should be checked regularly. Meter companies can provide quality control solution free of charge for patients/ carers/ HCP's to check the meter accuracy in any of the following situations:

- Every time a new pot of 50 test strips is opened
- Meter has been dropped
- Meter has become damp or wet
- Meter is producing unexpected results

5.3 Meter choice will be regularly reviewed with regard to new meters on the market, consumer feedback, functions and price.

6 Lancets

6.1 Use cost effective lancets (which may not be the ones provided with the meter) priced ≤ £6/ 200. **Any of the following can be prescribed:**

Meter recommended within this guidance	Manufacturer	Indication for <u>meter</u>	LANCETS	Gauge of lancets*	Cost of 200 lancets
Fine Test Lite	Neon Diagnostics	1 st line: suitable for most patients	Greenlan	0.35mm/ 28G	£6 or less
Accu Chek Mobile	Roche Diabetes care	2 nd line: For Group 2 (lorry/bus) drivers that require insulin and test more than 5 times per day or for patients with dexterity issues.	FastClix	0.3mm/ 30G	

Meter recommended within this guidance	Manufacturer	Indication for meter	LANCETS	Gauge of lancets*	Cost of 200 lancets
Accu Chek Aviva Expert	Roche Diabetes care	Limited to those that require a bolus insulin calculator	FastClix	0.3mm/30G	£6 or less
Glucomen Areo 2K	Menarini Diagnostics	2 nd line: For patients with dexterity issues or for those requiring blood ketone monitoring in addition to blood glucose monitoring.	Glucobject PLUS	0.20mm/33G	
GlucorX Nexus Mini Ultra	GlucorX	2 nd line: For patients unable to tolerate standard size device.	GlucorX Lancets	0.31mm/30G	
GlucorX Nexus Voice		2 nd line: For visually impaired patients requiring strip eject/ meal tagging required			
Palmdoc 2	Palmdoc	1 st line: For visually impaired patients	Palmdoc lancets	0.38mm/30G	

6.2 The following lancets costing over £6/ 200 are **not recommended**:

Meter recommended within this guidance	Manufacturer	Indication for meter	LANCETS	Gauge of lancets*	Cost of 200 lancets
Suitable for majority of patients with T1/ T2 or gestational diabetes					
Contour Next One	Ascensia Care	Limited to those who find alerts when BG level high or low useful	Microlet	0.5mm/28G	More than £6
Freestyle InsuLinX	Abbott Labs	Limited to those that require a bolus insulin calculator	Freestyle	0.5mm/28G	

6.3 Lancets are designed to fit into proprietary finger-pricking devices but from local experience most appear to be a universal fit for all.

6.4 The higher the gauge (G) of the lancet, the smaller the diameter of the needle.

6.5 Medium size lancets (0.28 to 0.38mm) costing (\leq £3.00 / 100) are suitable for most patients. If uncomfortable, a higher gauge (33G) lancet should be recommended.

6.6 Finger pricking devices are not prescribable as they are not listed as appliances under Part IXA of the Drug Tariff but are supplied with the blood glucose monitoring meter.

6.7 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).

6.8 Lancets should be disposed safely (refer to section 8).

7 Insulin Pen Needles

7.1 The following insulin pen needles in the table below are recommended as they are universal, compliant with current ISO standards and cost effective.

7.2 Pen needles that are 4mm in length are recommended for all adults, children and young people regardless of age, gender or Body Mass Index (BMI).

Product	Size of needle	Cost per 100	Additional comments
1st line: suitable for the majority of patients			
BD Viva	4mm/ 32 gauge (suitable for the majority of patients) Other available needle lengths*: 5mm/ 31 gauge 6mm/ 31 gauge	Less than £4	Universal BD patented lubrication
2nd line: for patients who do not tolerate 1st Line option			
GlucoRx Fine Point needles	4mm/ 31 gauge (suitable for the majority of patients) Other available needle lengths*: 5mm/ 31 gauge 6mm/ 31 gauge	Less than £5	Universal Updated to 5 bevel technology in April 2018 to aid injection comfortability

*If patients need to use needle lengths > 4mm they must use a correctly-lifted skinfold to avoid intramuscular injections. Refer to The UK Injection and Infusion Technique Recommendations, 4th Edition ([found here](#)).

7.3 All needles are for single use only.

7.4 Pen needles should be disposed safely (refer to section 8).

8. Safe sharps disposal

8.1 Ensure patients are educated about the safe disposal of lancets and pen needles via a sharps bin.

8.2 1 litre/ 5 litre sharpsguards or 1 litre sharpsafe and needle clipping devices can be prescribed on FP10.

8.3 It is good practice to advise patients not to use a sharps bin for longer than 3 months.

8.4 Refer to WECCG policy for the disposal of sharps ([Found here](#))

9. Safety insulin pen needles and lancets

9.1 Safety insulin pen needles incorporating automatic safety locks and single use lancets are primarily for the benefit of healthcare workers to avoid needle stick injury, not for the benefit of the patient.

9.2 They **should not** routinely be prescribed on FP10.

9.3 Where ever safety insulin pen needles are required, adequate training should be provided to the user.

References:

NICE NG17, Type 1 diabetes in adults: diagnosis and management
<https://www.nice.org.uk/guidance/ng17>

NICE NG28, Type 2 diabetes in adults: management
<https://www.nice.org.uk/guidance/ng28>

NICE NG18, Diabetes (Type 1 and 2) in children and young people: diagnosis and management
<https://www.nice.org.uk/guidance/ng18>

The first UK Injection Technique Recommendations 4th Edition. The Forum for injection technique (FIT). 2016.
http://www.fit4diabetes.com/files/4514/7946/3482/FIT_UK_Recommendations_4th_Edition.pdf

NICE CG139, Healthcare-associated infections: prevention and control in primary and community care
<https://www.nice.org.uk/guidance/cg139/chapter/1-guidance>

Guidance written by: Jane Tadman, Senior Diabetes Specialist Practitioner (SEPT) & Lucy Wright, Prescribing Support Pharmacy Technician (WECCG) December 2013.

Reviewed by: Jackie Heffer, Senior Diabetes Specialist Practitioner (SEPT) & Hinal Patel, Prescribing Support Pharmacist (WECCG) April 2016. Approved MOPB July 2016 review July 2018

Reviewed by: WECCG Medicine's Optimisation Team in collaboration with Essex Partnership University Trust's Specialist Community Diabetes team and Princess Alexandra Hospital's Adult and Paediatric Specialist teams. June 2018. Approved by WECCG's Medicine's Optimisation Programme Board July 2018, for review July 2020.

Reviewed by: WECCG Medicine's Optimisation Team in collaboration with Essex Partnership University Trust's Specialist Community Diabetes team and Princess Alexandra Hospital's Adult and Paediatric Specialist teams. August 2019. Approved by WECCG's Medicine's Optimisation Programme Board August 2019, for review July 2020.

Self-Monitoring of Blood Glucose (SMBG): electing an appropriate test strip for people with diabetes

SMBG recommended when there is a significant risk of hypoglycaemia (patients treated with Sulfonylureas/Glinides/GLP-1) or for short periods during illness or medication changes and for car drivers, where relevant. Refer to WECCG guidelines for information on which groups of patients should test and guidance on number of test strips required per month ([found here](#))

Insulin alone or in combination with oral therapy

SMBG recommended for all patients

Provide a BG meter and education

1ST line:
suitable for the majority of patients

Fine Test Lite (Neon Diagnostics)



Suitable for most patients
Neon Diagnostic's, Witham, Essex
Free phone patient Helpline:
0800 131 3378

2nd line:
suitable only where indicated

Accu Chek Mobile (Roche Diabetes Care)

For group 2 drivers (lorry/bus) that require insulin and test MORE than 5 times per day



Roche Diabetes Care
0800 701 000

Glucomen Areo 2K (Menarini Diagnostics)

For patients with dexterity issues or require blood ketone monitoring in addition to blood glucose monitoring



A.Menarini Diagnostics Ltd,
Wokingham
0044-1189-444100

Glucorx Nexus Mini Ultra (Glucorx)

For patients unable to tolerate standard size device



Glucorx, Surrey
0800 007 5892

Suitable meters for people with visual impairment or poor dexterity

1st line: suitable for most for people with visual impairment



PalmDoc 2 (Palmdoc Ltd)
0800 994 9995

2nd line: for people with visual impairment who require additional features of a strip ejection or meal tagging



Glucorx Nexus Voice (Glucorx)
0800 007 589

FOR TYPE 1/COMPLEX (MDI) - SPECIALIST INITIATION

Contact the Specialist Community Diabetes Service on **01992 561 666 Ext:5469**
They have a range of meters with additional features for patients with specific requirements.

*Rationale - ISO compliant, easy to use, small blood sample size (<0.5ul), large undeletable memory (complying with DVLA guidelines), allow for alternative site testing and meal tagging
If a change in meter is appropriate the patient will be informed prior to the change occurring to give an opportunity to raise any concerns. For further guidance please refer to our website www.westessexccg.nhs.uk