



Guideline on the Choice of Glucometers and Ketometers for ADULTS with TYPE 1 DIABETES (April 2019)

This guideline aims to assist healthcare professionals (HCPs) in secondary and primary care (if applicable) with the selection of glucometers* and ketometers* for ADULTS with TYPE 1 DIABETES. It should be used in conjunction with HSCB Self Blood Glucose Monitoring (SBGM) Guideline, September 2017, which can be accessed at the following link:

<http://niformulary.hscni.net/Formulary/Adult/6.0/6.1/6.1.6/Pages/default.aspx>

Most adults with type 1 diabetes will be assessed for and supplied with a meter from secondary care.

(*referred to as meters throughout this guideline, as appropriate)

Background

Self-monitoring of blood glucose is an essential part of the management of type 1 diabetes. The annual cost of prescribing blood glucose strips in Northern Ireland is approximately £7.8 million and blood ketone strips is over £200,000. Previously in N.Ireland the majority of patients were prescribed glucose test strips which were >£10 for a pack size 50. The prescribing of cost effective glucose test strips has increased in the past year, following implementation of HSCB Guideline on the choice of blood glucose strips for adults with type 2 Diabetes issued in September 2017. See link:

<http://niformulary.hscni.net/Formulary/Adult/6.0/6.1/6.1.6/Pages/default.aspx>

Health and Social Care Trusts in Northern Ireland stock meters that are on the Regional Blood Glucose Meter List (approved by the NI Regional Pathology Network, Point of Care Testing Speciality Forum, April 2019).

Currently, primary care may stock meters not listed on the Trusts' Regional Blood Glucose Meter List (providing the meters are ISO15197:2015 compliant). However, to ensure continuity, as some patients' care is delivered in both primary and secondary care, the Trusts' Regional Blood Glucose Meter List was used as a starting point for this HSC guideline.

To further increase the proportion of cost effective test strips prescribed (<£10 for pack of 50 blood glucose test strips and <£10 for pack of 10 blood ketone test strips), the need to further extend the meter guideline to adults with type 1 diabetes was established.

ALL meters listed in the HSC guideline meet the following requirements:

- ISO 15197:2015 approved and will be provided free of charge from GP surgeries and diabetes clinics
- Free support material supplied and free control solution provided
- Unable to delete meter readings
- Measurement range between 1.1 to 33.3mmol/l or more and measures only in mmol/l
- No calibration or coding is required to set up (NB: some of the dual blood glucose and blood ketone meters will require some simple coding)
- A starter meter pack is available that includes blood glucose strips and lancets.

Choice of Meter

When considering which type of meter may meet the requirements of adults with type 1 Diabetes, the following categories should be considered:

Category 1: Required to undertake routine blood glucose monitoring but **NOT** blood ketone testing.

Category 2: Required to undertake both blood glucose **AND** blood ketone monitoring.

Category 3: Have undertaken type 1 diabetes structured education and can accurately carbohydrate count and use an insulin calculator to work out required insulin dose, based on carbohydrate/insulin ratio.

Category 4: Use an insulin pump.

The meters listed in this guideline will suit the vast majority of adults with type 1 diabetes. However, when choosing a suitable meter the individual person's preference and needs should be adequately considered.

Category 1

Required to undertake routine blood glucose monitoring but NOT blood ketone testing

- Supply a glucometer listed in Appendix A.
- Consider the voice glucometer option for visually impaired.

Category 2

Required to undertake both blood glucose AND blood ketone monitoring

- Supply a meter listed in Appendix B.
- HCPs should ensure there is a clear understanding of:
 - When to test for blood ketones
 - How to interpret results

Category 3

Have undertaken type 1 diabetes structured education and can accurately carbohydrate count and use an insulin calculator to work out required insulin dose, based on carbohydrate/insulin ratio.

There are 2 options available:

- (1) **Apps** (can be used in conjunction with cost effective meters)
- (2) **'Smart Glucometer'** (if use of apps/with cost effective meters not suitable)
Supply with a 'Smart' glucometer from Appendix C.

NOTE:

- A ketometer (Appendix B) will also be supplied, when the HCP considers blood ketone testing is indicated.

Category 4

Using an insulin pump

Meters used along with insulin pumps are supplied directly from the relevant company along with the pump system. These meters are not specifically listed in this guideline but should ONLY be supplied to those using insulin pumps, as generally they do not use cost effective test strips.

NOTE:

- A ketometer (Appendix B) will also be supplied when HCP considers blood ketone testing is indicated.

Use of FreeStyle Libre[®]

Many adults with type 1 diabetes will be using the Freestyle Libre[®] flash monitoring device to monitor their glucose levels. These adults will still on occasions be required to test their blood glucose levels by finger pricking. See link below to Freestyle Libre[®] pathway, for details on prescribing and guidance on suitable meters to use alongside the Freestyle Libre[®] system.

http://www.hscboard.hscni.net/download/PUBLICATIONS/pharmacy_and_medicines_management/correspondence/Pathway-for-the-Managed-Access-of-FreeStyle-Libre.docx

The FreeStyle Libre[®] reader device has a bolus calculator functionality to enable calculation of insulin doses, based on carbohydrate/insulin ratio. This function requires to be activated by a healthcare professional. Adults who use the FreeStyle Libre[®] system and require to use an insulin calculator, should where possible be supplied with a meter from appendices A or B and use it in conjunction with a suitable App, to enable calculation of insulin doses. This option is favourable, as it enables use of cost effective test strips.

Storage and ordering of meters

- HCPs must no longer accept free or issue glucometer/ketometer samples from pharmaceutical companies, which are not on listed in this HSC guideline (Appendices A to C).
- Meters not listed in this guideline should either be returned to the relevant manufacturer or safely disposed of.

Note: Insulin pumps will require a compatible meter, most often supplied directly from the pharmaceutical company. These meters are not specifically listed in this guideline but should **ONLY** be supplied to those using insulin pumps.

Supply of meters

- It should be clearly documented in individual clinical records & for those attending secondary care in the NIECR diabetes pathway, why the particular category has been chosen.
- If an adult with type 1 diabetes requires a meter which is not listed in the HSC guideline, the reason should be documented in their clinical records/NIECR diabetes pathway.
- Initially 2 meters (one **spare** will be issued).

Information for patients

- All patients should be provided with a patient information leaflet (Appendix D) when they receive a new meter and education provided at the outset. They should be encouraged to take ownership for the management maintenance and should register their meter with the relevant pharmaceutical company.
- If patients have any problems or require a new meter/battery/control solution, they should be advised to contact the relevant pharmaceutical company directly.

- **Patients should be advised NOT to change their meter without first consulting their diabetes healthcare professional. The prescribing of strips and lancets for patients with type 1 diabetes who purchase or obtain a meter which is NOT on the HSC guideline and/or was not specifically recommended by their diabetes healthcare professional, is not supported by HSC, and may require the patient to pay for these themselves. The exception is meters which are used with insulin pumps.**

Switching meters

- Where possible, at routine clinic appointments, HCPs should review the glucose/ketone monitoring needs of adults with type 1 diabetes and if applicable, switch them to a cost effective meter choice from this guideline.
- GP practices are not expected to switch meters for adults with Type 1 diabetes. If Primary care staff have a query in relation to why an adult with type 1 diabetes is using a particular meter they should discuss this with the relevant diabetes healthcare specialist.
- All changes must be recorded in clinical notes.

Information for GPs and Community Pharmacists

- In most cases adults with type 1 diabetes will be started on a meter in secondary care. Very occasionally an adult with type 1 diabetes may require a meter to be supplied from primary care. GP Practices should therefore choose an appropriate quantity and variety of meters to stock from the HSC guideline, for distribution to adults with type 1 diabetes.
- GPs should prescribe the specific brand of blood glucose test strips, blood ketone test strips and lancets as specified by secondary care communication. If requests for non-cost effective blood glucose and ketone strips are not accompanied by secondary care communication, these should be queried by the GP practice.

- Lancing devices are not listed on the N. Ireland Drug tariff and so therefore cannot be prescribed. They are included in meter starter packs, so all patients will be supplied with a lancing device when they are given a new meter.
 - Replacement lancing devices can be requested from the manufacturer.
 - Community pharmacists should retain the list of HSC recommended meters for staff information. Community Pharmacists should be aware that GPs may not issue prescriptions for glucose strips, ketone strips and lancets (to adults with type 1 diabetes or type 2 diabetes), for meters which are not on the HSC list (the exception is meters which are used with insulin pumps). Community pharmacists should advise adults with type 1 diabetes **not to change** their meter, without first consulting their diabetes healthcare team.
- If an adult with type 1 diabetes presents to a pharmacy at the weekend, or during out of hours (when a patient's diabetes healthcare professional is not available) and urgently requires a new meter, the community pharmacist should, where possible supply a meter option from appendix A (providing it meets their clinical testing requirements).

Revision of the guideline

Meters which are added to the Trusts' Regional Blood Glucose Meter List following publication of this guideline may also be distributed to adults with type 1 diabetes (as outlined above), providing the glucose test strips are cost effective (<£10 for 50) and/or blood ketone strips are cost effective (<£10 for 10). This also includes any meters on the regional list, whose corresponding glucose test strips and/or ketone strips reduce in price, following publication of this guideline.

This guideline will be updated in April 2022.

Appendix A: Blood glucose meters with corresponding test strips <£10 (prices correct as per April 2019 NI Drug tariff)

	4SURE Smart Meter (Nipro Diagnostics)	Accucheck Mobile (Roche)	Accucheck Performa Nano (Roche)	Contour Black Edition (Ascensia)	<u>Contour Plus</u> (Ascensia)
					
Free meters provided (contact for ordering meters)	Yes. Louise Wilshire Sales Support T: +44 2380 604 304 E: Louise.Wilshire@nipro-group.com Shona Shaw Territory Sales Manager T: +44 7990 012689 E: Shona.Shaw@nipro-group.com	Yes: Direct from Emma Meneely Phone : 07793306202 Email: emma.meneely@roche.com Or Geraldine Sayee Phone: 07783 156676	Yes: Direct from Emma Meneely Phone : 07793306202 Email: emma.meneely@roche.com Or Geraldine Sayee Phone: 07783 156676	Yes: Direct from Emma Boyd Phone: 07469402761 Email: emma.boyd@ascensia.com	Yes: Direct from Emma Boyd Phone 07469402761 Email : emma.boyd@ascensia.com
Free replacement batteries	Yes	Yes, free coupon sent to patients which can be exchanged at selected Boots stores	Yes, free coupon sent to patients which can be exchanged at selected Boots stores	Yes	Yes
Technical support provided via Freephone number	Yes Customer services UK - 0800 08 588 08 www.nipro-diagnostics.co.uk	Yes: UK: 0800 701 000	Yes: UK: 0800 701 000	Ascensia Support Helpline: 0345 600 6030 (low cost phone number)	Ascensia Support Helpline: 03456006030 (low cost phone number)
Haematocrit range	0-70% Blood Glucose	25-55%	10% to 70%	0% to 70%.	0% - 70%
Expiry date of strips	24 months from date of manufacture (Shelf life is unaffected after first opening vial)	Expiry period of the test cassette after opening the foil-sealed plastic container is 90 days	18 months from opening or expiry date listed on package (whichever comes first)	24 months. The shelf life remains the same even when the pot has been opened	24 months The shelf life remains the same even when the pot has been opened
Name/cost of 50 strips	4SURE test strips £8.99	Mobile test cassette £9.99	Performa £7.50	Contour Strips £9.95	Contour Plus £8.50





	4Sure Smart Meter (Nipro Diagnostics)	Accucheck Mobile	Accucheck Performa Nano	Contour Black Edition	Contour Plus
Sample under-fill detection Y/N	Yes	Yes	Yes	Yes	Yes
Able to apply more blood to the same test strip; if under-fill Y/N	No	No	Not recommended	No	Yes Patient has an extra 30 seconds to apply more blood
Sample size required	0.5 µL (glucose)	0.3µl (min sample size) 5.0µl (max. sample size)	0.6µL	0.6µL	0.6 µL
Measurement time	5 sec (glucose)	Approximately 5 sec (depending on the blood glucose concentration)	5 seconds	5 seconds	5 seconds
Memory capacity	1000 tests	2000 measurements automatically saved with the time, date etc.	500 tests with time and date	480 tests	480 tests
Allow electronic download to personal computers and clinical systems. Y/N	Yes, results can be downloaded via a USB cable or Bluetooth.	Yes	Yes, but requires a cable available from your healthcare professional or from Accu-Chek website https://www.accu-chek.co.uk/	Patients can download the Glucofacts Deluxe software free of charge from the Ascensia website and the connecting cable will be provided free of charge.	Results can be transferred from the meter to a computer where they can be summarized in a report. The software can be downloaded free from www.diabetesascensia.co.uk Data cables are available via Customer Support.
Contraindications	Concentrations of the following substances outside therapeutic ranges may cause interference: Acetaminophen (Paracetamol), Ascorbic acid, Dopamine, Levodopa, Methyldopa, Tolazamide, Uric acid, Xylose and Lipemic Samples (Triglycerides). Pralidoxime Iodide and Reduced Glutathione within the therapeutic or physiologic concentration range may produce elevated glucose results. Do not test blood glucose during or soon after a xyloseabsorption test.	Parenteral administration of galactose and galactosemia can lead to falsely elevated test results. Ceftriaxone in the blood may lead to falsely lowered test results.	Test results affected by drugs that contain or metabolise to maltose: peritoneal dialysis fluids, immunoglobulins, abatacept	Tolazamide concentrations of >0.28mmol/L may produce results with a greater than 10% bias.	Capillary blood glucose testing may not be clinically appropriate for persons with reduced peripheral blood flow. Shock, severe hypotension, hyperosmolar hyperglycaemia & severe dehydration are examples of clinical conditions that may adversely affect the measurement of glucose in peripheral blood.
Partially sighted Y/N	Large display	Data output with audible beeper sequences for visually impaired patients	Yes. Large, automatic backlit display. Easy to read in low-light conditions.	Yes	Yes
Compatible with Diasend (transmitter and uploader)	Yes	Yes (both)	Yes (both)	Yes (both)	Compatibility being finalised. Anticipated compatibility will be available in next software update

	4Sure Smart Meter (Nipro Diagnostics)	Accucheck Mobile	Accucheck Performa Nano	Contour Black Edition	Contour Plus
Lancing device	4SURE Lancing Device	Fastclix	Fastclix	Microlet Next	Microlet Next
Cost of and gauge size of lancets	4SURE Lancets 30G (Fine) £2.90 for 100 4SURE Lancets 33G (Extra Fine) £2.90 for 100	0.3mm/30 gauge 204 £5.90	0.3mm/30 gauge 204 £5.90	0.5mm/28 gauge 100 £3.90 200 £7.44	0.5mm/28 gauge 100 £3.90 200 £7.44
Summary of specific lancing device features	Robust easy to use device that includes lancet eject feature and indicator to show that the device is loaded	<ul style="list-style-type: none"> • 6 lancets in a drum, no single lancets to see or touch • AST capability: yes (with AST cap - available on request) • Penetration range: 0.7 to 2.2mm • Penetration depth setting: 11 setting comfort dial 	<ul style="list-style-type: none"> • 6 lancets in a drum, no single lancets to see or touch • AST capability: yes (with AST cap - available on request) • Penetration range: 0.7 to 2.2mm • Penetration depth setting: 11 setting comfort dial 	<ul style="list-style-type: none"> • Locking endcap prevents accidental lancing • 5 clearly visible depth settings • Easy to use lancet ejector • Uses silicone coated Microlet lancets. • AST capability: Yes (with AST cap) • Compatible with some other generic lancets on the market. 	<ul style="list-style-type: none"> • Locking endcap prevents accidental lancing • 5 clearly visible depth settings • Easy to use lancet ejector • Uses silicone coated Microlet lancets. • AST capability: Yes (with AST cap) • Compatible with some other generic lancets on the market.
Additional considerations on choice of meter	Nipro offer patients using the 4SURE meters free premium access to the Diabetes:M app which offers, electronic log book, comprehensive food diary, carb counting, bolus advisor.	<ul style="list-style-type: none"> • If peripheral circulation is impaired, capillary blood might not be a true reflection of the physiological blood glucose level. This may apply in the following circumstances: Severe dehydration as a result of diabetic ketoacidosis or due to a hyperglycaemic hyperosmolar non-ketotic syndrome, hypotension, shock, decompensated heart failure NYHA class IV or peripheral arterial occlusive disease. 	<ul style="list-style-type: none"> • Compatible with Telehealth • The Performa nano is similar to the AccuChek Aviva® but has more cost effective test strips. • Measures blood glucose values between 0.6 to 33.3 mmol/l • Lancets enclosed in drum, no exposed sharps 	<ul style="list-style-type: none"> • Contour® test strips are included in each meter starter kit. 	<ul style="list-style-type: none"> • The Contour® Plus meets the EN ISO 15197:2015 demonstrated remarkable accuracy in the hands of users even at tighter error limits of $\pm 10\%$ or ± 0.56 mmol/L . • Standard meals can be tagged and reminders set to recheck blood sugar. • Targets can be easily set on the meter. • Second chance sampling saves on strip wastage. The meter comes ready to use out of the box. • Control tests are marked and not included in average reading. • Meter will show 7, 14 and 30 day average readings.

	Glucomen Areo (Medicon Ireland)	GlucoRx Nexus (GlucoRx)	GlucoRx Nexus Mini Ultra (GlucoRx)	GlucoRx Nexus Voice (GlucoRx)	Mylife Unio Neva (Ypsomed Ltd)
					
Free meters provided	Yes: Direct from Jim McGroy Phone: 07771863108 or 028 30835500 Email: jimmcg@mediconire.com	Yes: Direct from Darren Curran Phone: 07392198501 Email: darren@glucorx.co.uk	Yes: Direct from Darren Curran Phone: 07392198501 Email: darren@glucorx.co.uk	Yes: Direct from Darren Curran Tel no: 07392198501 Email: darren@glucorx.co.uk	Halen Campbell +44 7572 702536 halen.campbell@ypsomed.com Or 0344 856 7820 info@ypsomed.co.uk
Free replacement batteries	Yes, 0800 7837286 from a landline 028 30835500 from a mobile phone	Yes	Yes	Yes	Yes
Technical support provided via Freephone number	Yes: NI 0800 7837286	Yes: 01483 755133 0800 0075892	Yes: 01483 755133 0800 0075892	Yes: 01483 755133 0800 0075892	Yes
Haematocrit range	10% to 70%	30 to 60%	30 to 60%	30 to 60%	Yes (20 – 60 % when blood glucose > 11.1 mmol/L)
Expiry date of strips	Normal expiry date of unopened packs is usually 18 months. After opening pack, strips should be discarded after 9 months.	GlucoRx Nexus Test Strips expire after the date printed on the box (up to 18 months). They are best preserved providing the pot is closed immediately after opening.	GlucoRx Nexus Test Strips expire after the date printed on the box (up to 18 months). They are best preserved providing the user closes the pot immediately after taking out a strip.	GlucoRx Nexus Test Strips expire after the date printed on the box (up to 18 months). They are best preserved providing the user closes the pot immediately after taking out a strip.	12 months
50 Strips (<£10) & name of compatible strips	Glucomen Areo £9.95	GlucoRx Nexus £9.95 (£8.95 from May 2019)	GlucoRx Nexus £9.95 (£8.95 from May 2019)	GlucoRx Nexus £9.95 (£8.95 from May 2019)	Mylife unio test strips £9.50






	Glucomen Areo	GlucorX Nexus	GlucorX Nexus Mini Ultra	GlucorX Nexus Voice	Mylife Unio Neva
Sample under-fill detection Y/N	Yes	Yes	Yes	Yes	Yes
Able to apply more blood to the same test strip; if under-fill Y/N	Yes	Yes (until meter begins countdown)	Yes (until meter begins countdown)	Yes (until meter begins countdown)	No
Sample size required	0.5µL	0.5µL	0.5µL	0.5µl	0.7 µL
Measurement time	5 seconds	5 seconds	5 seconds	5 seconds	5 Seconds
Memory capacity	730 tests	1000 tests	1000 tests	450 tests	1000 tests
Allow electronic download to personal computers and clinical systems. Y/N	Yes	Yes. Nexus meter has a PC download link facility and is compatible with Diasend and Diabetes Complete.	Nexus Mini Ultra meter has a PC download link facility and is compatible with Diasend and Diabetes Complete. Data can also be transferred to the GlucoRx Blue App (integrated with Apple HealthKit) via the GlucoRx Dongle.	Nexus Voice meter has a PC download link facility and is compatible with Diasend and Diabetes Complete	Yes
Contraindications	No interference with medication/drugs in normal ranges	Not for use in newborns	Not for use in newborns	Not for use in newborns	N/A
Partially sighted Y/N	Yes. Meter has a 'glow in the dark display' which can also be read in strong sunlight.	Meter has backlit screen	Meter has backlit screen	Yes - meter gives audio feedback	Yes, although the meter itself is small, the display is high contrast with large numbers for BG results.
Compatible with Diasend (transmitter and uploader)	Yes (both)	Yes (both)	Yes (both)	Yes (both)	Not at present

	Glucomen Areo	GlucorX Nexus	GlucorX Nexus Mini Ultra	GlucorX Nexus Voice	Mylife Unio Neva
Lancing device	Glucoject dual plus	GlucorX Lancing device	GlucorX Lancing device	GlucorX Lancing device	Mylife AutoLance lancing device
Cost of and gauge size of lancets	0.20mm/33 gauge 100 £3.77 200 £5.50	0.31mm/30 gauge 200 £5.50(Price reducing to £4.50 from May 2019)	0.31mm/30 gauge 200 £5.50(Price reducing to £4.50 from May 2019)	0.31mm/30 gauge 200 £5.50m(Price reducing to £4.50 from May 2019)	0.3mm/30 Gauge Mylife lancets/Mylife multi-coloured lancets £5.50 per 200
Summary of specific lancing device features	<ul style="list-style-type: none"> • The Glucoject Lancet PLUS 33G is the finest lancet available on prescription • 5 penetration depth settings, adjustable for all skin types. • Safe, fingers-free lancet ejection • AST available with clear tip 	<ul style="list-style-type: none"> • Dual coloured for ease of use • 6 depth settings for all users • Lancets ejection facility to avoid needle stick injury • AST cap available for alternate site testing 	<ul style="list-style-type: none"> • Dual coloured for ease of use • 6 depth settings for all users • Lancets ejection facility to avoid needle stick injury • AST cap available for alternate site testing 	<ul style="list-style-type: none"> • Dual coloured for ease of use • 6 depth settings for all users • Lancets ejection facility to avoid needle stick injury • AST cap available for alternate site testing 	<ul style="list-style-type: none"> • Automatic load and release function in one step • Automatic pressure control to produce steady pricking pressure. • 7 variable puncture depths • Practical bayonet lock and stop function for easy lancet replacement • Simple exchange of lancet through twisting off the cap • Safety button prevents unintentional release.
Additional considerations on choice of meter	<ul style="list-style-type: none"> • Local company, based in Newry (Medicon Ireland). • Large memory capacity which may be useful for group 2 drivers. • Large sized test strips • Wireless NFC connectivity to smart phones. 	<ul style="list-style-type: none"> • Large memory capacity which may be useful for group 2 drivers. • Bluetooth version available connecting to a free app 	<ul style="list-style-type: none"> • May be useful for those who prefer a small compact device. • Large memory capacity which may be useful for group 2 drivers. 	<ul style="list-style-type: none"> • Suitable choice for visually impaired patients as meter gives audio feedback. 	<ul style="list-style-type: none"> • Mylife Unio Neva is designed for patients receiving CSII therapy via the Mylife YpsoPump or for patients on MDI therapy who wish to receive bolus advice via the accompanying Mylife App (Android/IOS). • The Mylife Unio automatically transmits data via Bluetooth to the Mylife App. Optional connection to the Mylife Cloud enables therapy data to be shared seamlessly with Healthcare Professionals.

	One Touch Select Plus (Lifescan)	Suresign Resure (CIGA Healthcare)	Tee 2 (Spirit Healthcare)	TEE2+ (Spirit Healthcare)
				
Free meters provided	Yes: Belfast /South Eastern/western Trust Deborah Stewart Phone: 07920084318 Email: dstewa33@its.inj.com Southern/Northern Trust Aoibhinn Higgins Phone: 07770882238 Email: ahiggins@its.inj.com	Yes: CIGA Healthcare Ltd. Kildowney Road, Ballymena, Tel: 02825 68585 Email: sales@cigahealthcare.com	Yes: Direct from Jim Swift Tel: 07880385464 Email: jims@spirit-healthcare.co.uk Or through Customer Services team on 0800 881 5423 Email: cs@spirit-healthcare.co.uk	Yes: Direct from Jim Swift Tel: 07880385464 Email: jims@spirit-healthcare.co.uk Or through Customer Services team on 0800 881 5423 Email: cs@spirit-healthcare.co.uk
Free replacement batteries	No	Yes	Yes	Yes
Technical support provided via Freephone number	Customer Care Helpline on 0800 121200 for the UK customercare@lifescan.co.uk Multi-lingual Customer Care Service	Tel: 0800 0430318	Yes, Customer support line, freephone 24/7 Tel no. 0800 881 5423	Yes, Customer support line, freephone 24/7 Tel no. 0800 881 5423
Haematocrit range	30 to 55%	20 to 60%	30 to 55%	15% - 65%
Expiry date of strips	18 months from date of manufacture, whether the vial is closed or has been opened, due to strip stability.	6 months from opening or until expiration date on bottle	Up to 2 years expiry from manufacture (opened or unopened)	Up to 2 years expiry from manufacture (opened or unopened)
50 Strips (<£10) and name of compatible strips	One Touch Select Plus £9.99	Suresign Resure £8.49	Tee 2 Strips £7.75	TEE2 Strips are £7.75

	One Touch Select Plus	Suresign Resure	Tee 2	TEE2+
Sample under-fill detection Y/N	Yes	Yes	Yes	Yes
Able to apply more blood to the same test strip; if under-fill Y/N	No	No	No	No
Sample size required	1.0µL	0.6µl	0.5µl	0.5µl
Measurement time	5 seconds	5 seconds	5 seconds	5 seconds
Memory capacity	500 tests	480 tests	500 tests	1,000 test results
Allow electronic download to personal computers and clinical systems. Y/N	Yes	No	Yes, USB cable and software available from customer support line, for download to PC	Yes, results can be downloaded to personal computers Bluetooth enabled, so can download to mobile applications e.g. SmartLog
Contraindications	Interference with results accuracy in patients taking levodopa	No	Patients on oxygen therapy may receive inaccurate results	TEE2+ should not be used for diagnosing diabetes or for testing newborns. However, caution should be exercised in the following circumstances, as inaccurate results are given when patients are:- undergoing Oxygen therapy, are in a hyperosmolar / hypoglycaemic state, severely hypotensive or in shock or are critically ill or are out-with the system's haematocrit range
Partially sighted Y/N	Yes, large Number display and backlit screen	Large display	Medium display but no backlight	It has a large screen 6.8 X 4.3cm and large text sizes 2.9 X 1.1cm make for easier reading for visually impaired.
Compatible with Diasend (transmitter and uploader)	Yes (both)	No	Yes (both)	Yes (both)

	One Touch Select Plus	Suresign Resure	Tee 2	TEE2+
Lancing device	One Touch Delicia	Apollo Twist	Caresens Lancing Device	CareSens Lancing Device
Cost of and gauge size of lancets	0.32mm/30 gauge 200 £5.85	0.36mm/28 gauge 200 £4.50	0.31mm/30 gauge 100 £2.95 0.36mm/28 gauge 100 £2.95	0.31mm/30 gauge 100 £2.95 0.36mm/28 gauge 100 £2.95
Summary of specific lancing device features	<ul style="list-style-type: none"> • Easy-to-use ergonomic design • 7 depth settings allow for personal comfort • Quiet lancing experience • Designed specifically to avoid risk of needle stick injury – ejection facility • Not suitable for AST testing 	<ul style="list-style-type: none"> • AST cap available for alternate site testing • 5 depth settings • Lancets ejection facility to avoid needle stick injury 	<ul style="list-style-type: none"> • 5 depth settings • Audible click when adjusting depth setting • Options for alternative site testing including a clear adjustable tip 	<ul style="list-style-type: none"> • 7 depth settings • Audible click when adjusting depth setting • Window turns red when cocked. All areas to be touched are colour coded grey and contrast with the other areas of the lancet (white), which aids those with impaired visual acuity • Lancet ejector • Options for alternative site testing.
Additional considerations on choice of meter	<ul style="list-style-type: none"> • Has programmed target BG range. • Has backlight screen • OneTouch Select Plus has ColourSure Technology, which instantly shows patients if their blood glucose result is in or out of range, with an arrow indicating blue (low), green (in range) or red (above range). • Adjustable target ranges to match individual needs. • Meal tagging is also available. 	<ul style="list-style-type: none"> • Local company • Good screen size. • Insertion of test strip (at the top of the meter) is different from most other meters on market. 	<ul style="list-style-type: none"> • Non-automated customer service helpline 	<ul style="list-style-type: none"> • SmartLog (The App) syncs with the TEE2+ meter and graphs patients' glucose • TEE2+ and SmartLog use BlueTooth to share data. BlueTooth unlike Near Field Communication is supported by both IOS (Apple) and Android operating systems. • SmartLog was designed to be used with CareSens Dual and TEE2 meters and is free on both the App store and GooglePlay.



	TRUE Metrix AIR (Trividia Health)	TRUE Metrix GO (Trividia Health)	Vivacheck Ino (JR Biomedical Ltd)	Wavesense Jazz (Agamatrix)	JAZZ wireless (Agamatrix)
					
Free meters provided (contact for ordering meters)	Yes Paul Bowman : Mobile : 07870 733212 Email : pbowman@trividiahealth.co.uk	Yes Paul Bowman : Mobile : 07870 733212 Email : pbowman@trividiahealth.co.uk	Yes: Direct from company. Freephone 0800 612 7531 (no local rep - Wales based company)	Yes, order direct from the company: 01235 838639 Company Representative in Northern Ireland: Irene Jacobs - Diabetes Care Manager Phone: 07342 880 081 Email: jjacobs@agamatrix.com	Yes, order direct from the company: 01235 838639 Company Representative in Northern Ireland: Irene Jacobs - Diabetes Care Manager Phone: 07342 880 081 Email: jjacobs@agamatrix.com
Free replacement batteries	Yes	Yes	Yes, Email: catherine.rees@jrbiomedical.com	Yes, spare batteries can be left with Trusts/GP practices for patients (device comes with 2 spare replacement batteries)	Yes, spare batteries can be left with Trusts/GP practices for patient (device comes with 2 spare replacement batteries)
Technical support provided via Freephone number	Yes Freephone 0800 689 5035	Yes Freephone 0800 689 5035	Freephone 0800 612 7531 and online chat. Nurse led customer care	Yes: 0800 093 1812 or Email: customercare@agamatrix.co.uk	Yes: 0800 093 1812 or Email: customercare@agamatrix.co.uk
Haematocrit range	20 – 70 %	20 – 70 %	20% to 70%	20% to 60%	20% to 60%
Expiry date of strips	18 months shelf life (4 months on opening) The 2x50 count available June 2019 will provide 8 months in total once opened	18 months shelf life (4 months on opening). 2x50 pack available in June 2019 will provide 8 months in total once opened	2 sealed vials, 25 test strips each. The vial is stable until the expiry date printed on the label or 6 months after opening	6 months after opening (12 months duo pack)	6 months after opening (12 months duo pack)
50 Strips (<£10) and name of compatible strips	£6.95 for 1x50 True Metrix Test Strips 2X50 pack size available June 2019 Cost is £12.50 (£6.25/50)	£6.95 for 1x50 True Metrix Test Strips. 2x50 pack size available June 2019. Cost is £12.50 (£6.25/50)	Vivacheck Ino Strips £8.99	WaveSense JAZZ - (50ct) - £8.74 WaveSense JAZZ DUO - (2x25ct) £8.74	WaveSense JAZZ - (50ct) - £8.74 WaveSense JAZZ DUO - (2x25ct) £8.74

	TRUE Metrix AIR	TRUE Metrix GO	Vivacheck Ino	Wavesense Jazz	JAZZ wireless
Sample under-fill detection Y/N	Yes	Yes	Yes	Yes	Yes
Able to apply more blood to the same test strip; if under-fill Y/N	No	No	No	No	No
Sample size required	0.5µl	0.5µl	0.5µl	0.5µl	0.5µl
Measurement time	4 seconds	4 seconds	5 seconds	5 Seconds	5 Seconds
Memory capacity	1000 tests	500 tests	900 tests	1,865 Test Memory: Enough memory to store 5 tests a day for a year	300 tests stored in meter but if the meter has been synced with the App, unlimited results can be reviewed in the App.
Allow electronic download to personal computers and clinical systems. Y/N	Yes	Yes	Mini USB connection to download results	Yes	Yes (but needs to sync with another device before operating - see details below) Compatible with other diabetes management apps, Apple Health and android apps.
Contraindications	Do not use during a xylose absorption test. This may falsely raise glucose results DO NOT use venous whole blood collected in sodium fluoride blood collection tubes for testing, as this may cause inaccurate results.	Do not use during a xylose absorption test. This may falsely raise glucose results DO NOT use venous whole blood collected in sodium fluoride blood collection tubes for testing, as this may cause inaccurate results	Patients on oxygen therapy may receive inaccurate results	Patients on oxygen therapy may receive inaccurate results	Patients on oxygen therapy may receive inaccurate results
Partially sighted Y/N	Yes	No	Large display but no back light	Yes. Large, Backlit Display: Large digits and backlight for easy viewing	Yes, LED Display with higher contrast.
Compatible with Diasend (transmitter and uploader)	Yes both Diasend transmitter and uploader AND Diasend Mobile App	Yes both Diasend transmitter and Uploader	No	Yes(both)	New meter to market, currently awaiting integration by Diasend.

	TRUE Metrix AIR	TRUE Metrix GO	Vivacheck Ino	Wavesense Jazz	JAZZ wireless
Lancing device	Truedraw Lancing device	Truedraw Lancing device	VivaChek Lancing Device	AgaMatrix Lancing Device	AgaMatrix lancing device
Cost of and gauge size of lancets	TRUEplus Lancets 0.32mm/30gauge 100 pack £ 2.90 0.195mm/33gauge 100 pack £2.90	TRUEplus Lancets 0.32mm/30gauge 100 pack £2.90 0.195mm/33gauge 100 pack £2.90	Vivacheck Lancets 0.37mm/28 gauge 100 £2.99	AgaMatrix Ultra-Thin Lancets 0.2mm/33G: 200 pack £5.43 0.35mm/28G: 200 pack £5.43	AgaMatrix Ultra-Thin Lancets 0.2mm/33G: 200 pack £5.43 0.35mm/28G: 200 pack £5.43
Summary of specific lancing device features	<ul style="list-style-type: none"> • Ergonomic, tri-lobular design for comfortable grip • Quick, easy lancet insertion and disposal • Precise penetration for less pain • Clear cap available for Alternative Site Testing (AST) 	<ul style="list-style-type: none"> • Ergonomic, tri-lobular design for comfortable grip • Quick, easy lancet insertion and disposal • Precise penetration for less pain • Clear cap available for Alternative Site Testing (AST) 	<ul style="list-style-type: none"> • 11 adjustable depth settings for gentle test • Clear cap available for Alternative Site Testing (AST) • Ergonomic design for easy to hold 	An Alternative Site Testing (AST) lancing device cap is included with the lancing device 8 depth settings	An Alternative Site Testing (AST) lancing device cap is included with the lancing device 8 depth settings
Additional considerations on choice of meter	<ul style="list-style-type: none"> • No coding required • Active Haematocrit Correction- information on request • Active Temperature compensation – information on request • True Manager App free to download on Android and Apple Phones • Utilizes Bluetooth Smart to transmit data to compatible mobile devices. • Simple meter/mobile device pairing • Ultralow battery consumption 	<ul style="list-style-type: none"> • No coding required • Active Haematocrit Correction- information on request • Active Temperature compensation – information on request • One of smallest meters in the world • Meter twists on to vial of test strips • Separate Go-Pak combines meter, test strips and mini lancing device in to a compact convenient all-in-one unit 	<ul style="list-style-type: none"> • Large memory capacity which may be useful for group 2 drivers. • Auto detect control solution reading • Hypo warning, ketone warning and meal markers • GlucoWell App for IOS and Android phones allows patients to manually record measurements 	<ul style="list-style-type: none"> • Large memory capacity , may be suitable for group 2 drivers • Rubber side grips and feet plus backlit display - suitable to the visually impaired and people with poor dexterity. 	<ul style="list-style-type: none"> • Small and portable, may be suitable for patients who may wish to download results. • All devices that communicate via Bluetooth® wireless technology need to first “pair” with each other so they can establish a connection and get authorized to communicate with each other.

Appendix B: Cost effective choice meters which test for both blood glucose and blood ketones

(Prices correct as per April 2019 NI Drug tariff)


	4Sure Smart Duo meter (Nipro Diagnostics)	Caresens Dual (Spirit Healthcare)	Glucomen Area 2K (Medicon Ireland)	Glucorx HCT meter (Glucorx)	Glucorx HCT Connect (Glucorx)
					
Free meters provided (contact for ordering meters)	Yes. Louise Wilshire Sales Support T: +44 2380 604 304 E: Louise.Wilshire@nipro-group.com Shona Shaw Territory Sales Manager T: +44 7990 012689 E: Shona.Shaw@nipro-group.com	Yes (Jim Swift 07880385464) Email: jims@spirit-healthcare.co.uk	Yes: Direct from Jim McGrory Phone: 07771863108 or 028 30835500 Email: jimmcg@mediconire.com	Yes: Direct from Darren Curran Tel no: 07392198501 Email: darren@glucorx.co.uk Or orders@glucorx.co.uk	Yes: Direct from Darren Curran Tel no: 07392198501 Email: darren@glucorx.co.uk or orders@glucorx.co.uk
Free replacement batteries	Yes	Yes	Freephone Helpline 0800 7837286 from a landline 028 30835500 from a mobile phone	Yes	Yes
Technical support provided via freephone number	Yes Customer services UK - 0800 08 588 08 www.nipro-diagnostics.co.uk	Yes, Customer support line, non-automated freephone 24/7 – 0800 881 5423	Yes: NI 0800 7837286	Yes: 01483 755133 0800 0075892	Yes: 01483 755133 0800 0075892
Haematocrit range	10-70% Blood Glucose 10-70% B-Ketones	15% to 65%	10% -70% for Glucose 20% - 60% for Ketones	0 to 70% Haematocrit (glucose test) 10 to 70% Haematocrit (ketone test)	0 to 70% Haematocrit (glucose test) 10 to 70% Haematocrit (ketone test)

	4Sure Smart Duo meter	Caresens Dual	Glucomen Areo 2K	GlucorX HCT meter	GlucorX HCT Connect
Expiry date of strips	Glucose strips: 24 months from date of manufacture (Shelf life is unaffected after first opening vial) Ketone strips: 18 months from date of manufacture	12 months from opening, if unopened then okay until the printed expiry date	Glucose: Normal expiry date of unopened packs is usually 18 months. After opening pack, strips should be discarded after 9 months. Ketones: Expiry can be up to 18 months (individually wrapped strips).	GlucorX HCT Glucose Test Strips expire after the date printed on the box (up to 18 months). Users should close the pot immediately after removing a strip. GlucorX HCT ketone test strips have 18 months expiry, or until individual foil packet is opened.	GlucorX HCT Glucose Test Strips expire after the date printed on the box (up to 18 months). Users should close the pot immediately after removing a strip. GlucorX HCT ketone test strips have 18 months expiry, or until individual foil packet is opened.
Strips (<£10) and name of compatible strips	4SURE test strips £8.99 for 50 4SURE B-Ketone test strips £9.92 for 10	CareSens PRO Glucose strips £9.95 for 50 KetoSens Blood β -Ketone Test Strips £9.95 for 10	Glucomen Areo sensors £9.95 for 50 Glucomen Areo B-Ketone Sensors £9.95 for 10	GlucorX HCT Glucose £9.95 for 50 (price reducing to £8.95 from May 19) GlucorX HCT Ketone £9.95 for 10	GlucorX HCT Glucose £9.95 for 50 (price reducing to £8.95 from May 19) GlucorX HCT Ketone £9.95 for 10
Sample under-fill detection Y/N	Yes	Yes	Yes	Yes (until meter begins countdown)	Yes (until meter begins countdown)
Able to apply more blood to the same test strip; if under-fill Y/N	No	No	Yes	Yes	Yes
Sample size required	0.5 μ L (Blood Glucose) 0.8 μ L (B-Ketone)	0.4 μ L	0.5 μ L for Glucose 0.8 μ L for Ketones	1.0 μ L for glucose test 1.0 μ L for ketone test	1.0 μ L for glucose test 1.0 μ L for ketone test
Measurement time	5 sec (Blood Glucose) 10 sec (B-Ketone)	5 seconds	5 seconds for Glucose 8 seconds for Ketones	5 seconds for glucose test Up to 10 seconds for ketone test	5 seconds for glucose test Up to 10 seconds for ketone test
Memory capacity	1000 tests	1000 tests	730 position memory on meter all results can be uploaded to app for unlimited memory.	1000 tests	Unlimited readings stored on iPhone

	4Sure Smart Duo meter	Caresens Dual	Glucomen Areo 2K	GlucoRx HCT meter	GlucoRx HCT Connect
Allow electronic download to personal computers and clinical systems. Y/N	Yes, results can be downloaded via a USB cable or Bluetooth.	Yes, CareSens Dual is Bluetooth enabled and works with a free SmartLog app (iOS and Android)	Yes	Yes, this meter has a PC download link facility.	This Smart phone dongle has an Export function to CSV file.
Contraindications	Concentrations of the following substances outside therapeutic ranges may cause interference: Acetaminophen (Paracetamol), Ascorbic acid, Dopamine, Levodopa, Methyl dopa, Tolazamide, Uric acid, Xylose and Lipemic Samples (Triglycerides). Pralidoxime Iodide and Reduced Glutathione within the therapeutic or physiologic concentration range may produce elevated glucose results. Do not test blood glucose during or soon after a xylose absorption test.	Compounds of xylose ≥ 0.54 mmol/L at glucose concentrations of 2.8–5.6 mmol/L may cause overestimation of blood glucose results.	No interference with medication/drugs in normal ranges. Ketone test not to be used on new-borns.	Only ketone testing prohibited in newborns	Only ketone testing prohibited in newborns
Partially sighted Y/N	Large Backlit display	Yes, clear large backlit display	Yes. Meter has a 'glow in the dark display' which can also be read in strong sunlight.	Meter has large, backlit screen	No
Compatible with Diasend (transmitter and uploader)	Yes	Yes (both) Results stored in the SmartLog App can be shared with healthcare professionals by email	Yes (both)	Yes (both)	Pending

	4Sure Smart Duo meter	Caresens Dual	Glucomen Areo 2K	Glucorx HCT meter	Glucorx HCT Connect
Lancing device	4SURE Lancing Device	CareSens Lancing Device	Glucoject dual plus	Glucorx Lancing device	Glucorx Lancing device
Cost of and gauge size of lancets	4SURE Lancets 30G (Fine) £2.90 for 100 4SURE Lancets 33G (Extra Fine) £2.90 for 100	CareSens lancets come in both 0.31mm/30 gauge, 100 quantity, £2.95 and 0.36mm/28 gauge, 100 quantity, £2.95	0.20mm/33 gauge 100 £3.77 200 £5.50	0.31mm/30 gauge 200pcs for £5.50 (Price reducing to £4.50 from May 2019)	0.31mm/30 gauge 200pcs for £5.50 (Price reducing to £4.50 from May 2019)
Summary of specific lancing device features	<ul style="list-style-type: none"> • Robust easy to use device that includes lancet eject feature and indicator to show that the device is loaded 	<ul style="list-style-type: none"> • 7 depth settings • Audible click when adjusting depth setting/ • Options for alternative site testing including a clear, adjustable tip 	<ul style="list-style-type: none"> • The Glucoject Lancet PLUS 33G is the finest lancet available on prescription • 5 penetration depth settings, adjustable for all skin types. • Safe, fingers-free lancet ejection • AST available with clear tip but not for ketone testing 	<ul style="list-style-type: none"> • Dual coloured for ease of use • 6 depth settings for all users • Lancets ejection facility to avoid needle stick injury • AST cap available 	<ul style="list-style-type: none"> • Dual coloured for ease of use • 6 depth settings for all users • Lancets ejection facility to avoid needle stick injury • AST cap available
Additional considerations on choice of meter	<ul style="list-style-type: none"> • Nipro offer patients using the 4SURE meters free premium access to the Diabetes: M app which offers, electronic log book, comprehensive food diary, carb counting, bolus advisor. 	<ul style="list-style-type: none"> • As well as glucose results, patients can track and graph insulin dose, carbs, calories and track them over time in Original meter pack comes with starter pack of blood glucose and ketone strips App. 	<ul style="list-style-type: none"> • Local company based in Newry (Medicon Ireland). • Glucose strips in pot and Ketone strips in foil so easy for patients to differentiate. • Large easy to read backlit display • No coding required • Large memory capacity which may be useful for group 2 drivers. • Large sized test strips suitable for those with dexterity or eyesight issues. • Wireless NFC connectivity to smart phones. 	<ul style="list-style-type: none"> • 0.5 to 38.9mmol/L range for Glucose test • 0.1~8.0 mmol/L range for Ketone test • New stock no longer requires coding when measuring ketones. 	<ul style="list-style-type: none"> • 0.5 to 38.9 mmol/L range for Glucose test • 0.1~8.0 mmol/L range for Ketone test • New stock no longer requires coding when measuring ketones.

Appendix C: Smart Glucometer. NOTE: This NOT a cost effective choice and so should only be supplied to patients in accordance with the guidance above.(Prices correct as per April 2019 NI Drug Tariff)

	<p style="text-align: center;">Accu-chek Expert (Roche) (SMART GLUCOMETER)</p> 
Free meters provided	Yes. Direct from Emma Meneely Phone : 07793306202 Email: emma.meneely@roche.com Or Geraldine Sayee Phone: 07783 156676 geraldine.sayee@contractors.roche.dc
Free replacement batteries	Yes. Batteries for life via voucher. Contact Careline 0800 701 000
Technical support provided via Freephone number	0800 701 000
Haematocrit range	20 - 70%
Expiry date of strips	18 months from opening or expiry date listed on package (whichever comes first)
50 Strips (<£10) and name of compatible strips	Aviva test strips £16.21 (50 pack size)
Sample under-fill detection Y/N	Yes
Able to apply more blood to the same test strip; if under-fill Y/N	No

	Accu-chek Expert (SMART GLUCOMETER)
Sample size required	0.6µL
Measurement time	5 seconds
Memory capacity	500 test memory
Allow electronic download to personal computers and clinical systems. Y/N	Yes
Contraindications	Solutions containing maltose (including metabolites of icodextrin) such as peritoneal dialysis solution and certain immunoglobulin preparations.
Partially sighted Y/N	Yes. Bright coloured screen
Compatible with Diasend (transmitter and uploader)	Yes
Lancing device	Fastclix
Cost of and gauge size of lancets	0.3mm/30 gauge 204 £5.90
Summary of specific lancing device features	<ul style="list-style-type: none"> • 6 lancets in a drum, no single lancets to see or touch • AST capability: yes (with AST cap - available on request) • Penetration range: 0.7 to 2.2mm • Penetration depth setting 11 setting comfort dial
Additional considerations on choice of meter	<ul style="list-style-type: none"> • Measures blood glucose values between 0.6 to 33.3 mmol/l • Accu-Chek Aviva[®] are used with Aviva, Roche Expert Advisor, Combo Insulin Pump and Insight Insulin Pump. • Lancets enclosed in drum, no exposed sharps • Similar handset as insulin Combo pump. Compatible with Telehealth

Appendix D

{Insert relevant Trust logo
Department and address}

Patient Information Leaflet (New Blood Glucose Meter)

Dear Patient,

Your diabetes team has recently supplied you with two blood glucose meters (glucometers). Your diabetes healthcare professional will have explained how and when to use your glucometer to test your blood sugars.

The Health and Social Care Board has provided diabetes healthcare professionals and GPs with a list of glucometers which are suitable to use for patients with type 1 diabetes. These glucometers have all been reviewed: they will provide you with accurate blood glucose results and are cost-effective.

We would encourage you to:

- As soon as possible, please register your new glucometer with the relevant pharmaceutical company. Their phone number is in the instruction booklet provided with your new glucometer. By registering your glucometer, the company will provide a replacement, if required. Some pharmaceutical companies also provide free replacement batteries.
- Only use one glucometer at a time. The second glucometer is a spare, only to be used if your original glucometer breaks.
- If your glucometer breaks, use your replacement glucometer and remember to contact the relevant company **as soon as possible** to get a new replacement glucometer.
- To follow the recommended quality control test for their specific glucometer.
- As your GP has been advised to ONLY prescribe test strips and lancets from the recommended list of glucometers, please **DO NOT** purchase or accept a free upgraded glucometer without first checking with your diabetes healthcare professional.
- **Using glucometers that are not on the list may require you to buy your own tests strips and lancets**

If you have any questions about the information in this letter or your glucometer, please contact *{insert name and contact details of relevant diabetes healthcare professional}*