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Recommended Meters for Patient Blood Glucose Monitoring

June 2019 update pending All Wales guidance

Home Blood Glucose Monitoring in Adults.

1. To ensure the benefit of self-monitoring of blood glucose, it should only be offered as an integral part of self-management education, discussing its purpose and agreeing how it should be interpreted and acted upon.
2. Self monitoring of blood glucose in type 2 diabetes should be available to: those on insulin, those on oral glucose lowering medications to provide information on hypoglycaemia, assess changes in glucose control resulting from medications and lifestyle changes, monitor changes during inter-current illness, ensure safety during activities, including driving.
3. If self-monitoring is appropriate but glucose monitoring is unacceptable to the individual, discuss the use of urine glucose monitoring.
4. There should be no blanket ban on Home Blood Glucose Monitoring. Some people may need to test more frequently than others. Some people are currently testing more than they need to. The recommendations on frequency and timing of testing are intended for **medically stable** patients. Patients are not regarded as stable if the following apply and people need to test more frequently if: **-In times of acute illness, attending for outpatient procedures (e.g. dialysis, chemotherapy), if symptomatic, following medication (e.g. steroid started)/dose changes/insulin started, if pregnant or planning a family or breast feeding, if specifically advised to do so by medical staff, pre and post exercise, pre and during a car journey if driving over 2 hours, suspected or confirmed unawareness of hypoglycaemia, regular and/or disabling hypoglycaemia and those living alone who may be at increased risk of falls.**
5. Those self-monitoring blood glucose should be assessed at least annually with continuing education in a structured way to ensure: self-monitoring skills, the quality and appropriate frequency of testing, acting on results, interpreting signs and symptoms, the impact on quality of life, continued benefit of testing, the equipment used (coding, quality assurance, cost effectiveness), HbA1c.
6. Meter choice should be based on individual patient needs and ongoing cost of HBGM. Changing existing meters may cause confusion to some patients-where appropriate patients existing supply of strips should be utilised before changing meter. Currently, One Touch Select +, Accu-Chek Performa, Contour and Contour Next strips are available at a considerably lower NHS price than alternative products.
7. Patients should be encouraged not to buy their own meters as they will be provided free of charge by the Diabetes Clinic or practice nurses - **this will allow appropriate training on use.**
8. DVLA guidelines for all patients on insulin recommend testing before driving and at 2-hour intervals during long journeys. In many cases this will increase the number of testing strips needed. Group 2 drivers also have more frequent testing requirements. Sulphonylurea/nateglinide/repaglinide patients are advised to monitor blood glucose regularly at times relevant to driving.
(<http://www.dft.gov.uk/dvla/medical/ataglance.aspx>)

The importance of 3-6monthly Hb1Ac levels as an excellent indicator of long-term control should be emphasised to provide clinicians with information on the management of the condition.

Urine and Blood glucose test strips and lancets should not be issued on a repeat prescription without 6-monthly review.

Recommended Meters for Initiation in primary Care

The meters in the following section should be considered as 'suggested' meters for patient monitoring in adults with non complex type 2 diabetes. Patient clinical needs, choice and preferences should be respected in order to establish compliance with their suggested monitoring programme.

Upgrading existing meters may be undertaken if there is a need, however no changes should be made unless a comprehensive review of the patients monitoring requirements, compliance with monitoring parameters and monitoring technique with their existing meter has been completed.

Patients must be trained on how to use their meter and made aware of the purpose of monitoring (why, how, when and action). For cost effective monitoring to be achieved, patients must be able to interpret and analyse their results and decide what action to take – or – to provide the Health Professional with appropriate information to assess and maintain their glycaemic control.

The suggested meters will be subjected to constant review, to accommodate any improvement in meter technology.

These recommended meters hopefully encompass most patient requirements such as:

- Simplicity / ease of use / easy to carry around
- Features that will accommodate patient problems with visual impairment, dexterity, sore fingers, needle phobias etc.
- Elimination of interfering factors / substances / operator errors
- Wide haematocrit range
- Good IT, meal markers, computer download facility
- Greater strip stability to prevent wastage
- Improved accuracy and precision. ($\pm 15\%$ working towards $\pm 5\%$)
- Patient preference
- Manufacturers support with education, literature, supplies etc
- Ketone testing










The selected meters have all shown good accuracy and precision when compared with corresponding YSI 2300 results obtained in our laboratory. Unfortunately the MHRA have stopped their independent evaluation service, but where possible other evaluation data has been sourced and the selected meters show compliance with the new ISO 15197 June 2013 standards, and have a CE quality mark.

“While test strips dispensed in primary care may appear to have a premium cost, the wider cost to the patient’s quality of life, their safety, ability to work, drive and to the NHS of complications of uncontrolled diabetes and hospital admissions, far outweigh these costs.” Diabetes UK.


















Recommended Meters for Patient Blood Glucose Monitoring

(For patients new to monitoring and upgrading meters as required)











| Roche | Ascensia | Lifescan |
|---|--|--|
| Accu-Chek Performa Nano | Contour Black | One Touch Select Plus |
|  |  |  |
| Name of Strips | | |
| Performa blood glucose strips | Contour test strips | One Touch Select Plus Test Strips |
|  |  |  |
| Cost of 50 Strips | | |
| £9.95 | £9.95 | £9.99 |
| Opened strip pot stable until expiry | Opened strip pot stable until expiry | Opened strip pot stable until expiry |
| Features of Meter | | |
| Larger strip ♦easier to handle ♦easy-fill with wide sample area ♦safe sharps disposal ♦meal marker facility and reminder alarms to test can be defined by user. | Delivered preset as a basic easy to use meter, but also has optional access to more advanced features. Memory will store 480 results. Results can be downloaded to computer via USB cable. | No longer marketed in the UK |
| Ideally suited for | | |
| Suitable for most Type 2 diabetic patients and Type 1 patients requiring an uncomplicated meter. ♦Safe sharps disposal eliminates the need for a sharps bin. *Suitable for alternative site testing. | Suitable for most Type 2 diabetic patients and Type 1 patients requiring an uncomplicated meter. *Ideally suited for a direct switch (no additional training required) with the old (non ISO compliant) Contour meter. *Not suitable for alternative site testing. | Enabling patient awareness and appropriate action of results. ♦Suitable for most Type 2 diabetic patients and Type 1 patients requiring an uncomplicated meter. ♦ Not suitable for patients on oxygen therapy. *Not suitable for alternative site testing. |
| Name of Lancets | | |
| FastClix Lancets £5.90/204 | Microlet lancets £7.44/200 | One Touch Delica Lancets £5.85/200 |
| Lancing Device | | |
|  |  |  |
| Customer Care Contact Details | | |
| 0800 040 7221 | 0845 600 6030 | 0800 121 200 |
| Company Representative Details | | |
| Liz 07525 766455 Liz.grace@roche.com | Chris 07836 567102 chris.phennah@ascensia.com | Julia 07813 878597 Jcoffey4@its.jnj.com |

Meters for Patients with Special Requirements

The meters in the following section can be considered for patients with specialist requirements. They may be started in primary care but only by nurses who have specialist knowledge of diabetes and of the meters which they are recommending.

| Roche | LifeScan | Abbott | Ascensia | Ascensia |
|--|---|--|---|---|
| Accu-Chek Mobile | One Touch Verio / Verio IQ | FreeStyle Optium Neo | Contour XT / Next | Contour Next One |
|  |  |  |  |  |
| Name of Strips | | | | |
| Mobile cassette | One Touch Verio Test Strips | Optium Plus test strips | Contour Next Test Strips | Contour Next Test Strips |
|  |  |  |  |  |
| Cost of 50 Strips | | | | |
| £9.99 | £15.12 | £15.64 (£20.63 ketone) | £15.04 | £15.04 |
| Cassette stable for 3 months after opening | Strip pot stable for 6 months after opening | Strips foil wrapped; stable until expiry | Opened strip pot stable until expiry | Opened strip pot stable until expiry |
| Features of meter | | | | |
| Accu-Chek Mobile is an all-in-one strip free meter with an integrated lancing device *Safe sharps disposal eliminates the need for a sharps bin. *Discreet testing. | Colour-coded No longer marketed in the UK codes displayed on screen. | Glucose and ketone testing on same meter ♦blood glucose trend indicators and insulin dosing guide helps users take an active role in managing their diabetes. Trust meter for POC testing ♦used by district nurses. | Incorporates simple mode or patient empowering mode ♦meal marker facility ♦ reminder alarms to test | Colour-coded indicators for low, high and in range results.*wirelessly transfers results to app on Smartphone *sharing of reports *capture notes on food, carbs, medication, activity |
| Ideally suited for | | | | |
| All in one design encourages adherence to suggested monitoring regime.*Favoured by patients 'on the go' as 'hassle free' testing anywhere. *Useful for patients with poor dexterity. | Patients that would benefit from enhanced IT facilities. ♦Identifies and alerts high and low glucose patterns ♦Empowering patient understanding and action of results | Ketone testing for patients at risk of DKA. Meter includes features that that would benefit type1 and type2 patients on insulin ♦patients where district nurse calls | For patients on insulin or other therapies that put them at risk of hypoglycaemia | Patients that would benefit from enhanced IT facilities. ♦Identifies and alerts high and low glucose patterns ♦Empowering patient understanding and action of results *sharing of results |
| Name of lancets | | | | |
| FastClix lancets £5.90/204 | One Touch Delica Lancets £5.85/200 | Abbott Thin Lancets | Microlet lancets £7.47/200 | Microlet lancets £7.47/200 |
| Lancing device | | | | |
|  |  |  |  |  |
| Customer Care Contact Details | | | | |
| 0800 040 7221 | 0800 121 200 | 0500 467 466 | 0845 600 6030 | 0845 600 6030 |
| Company Representative Details | | | | |
| Liz 07525 766455 | Julia 07813 878597 | Michelle 07760 254486 | Chris 07836 567102 | Chris 07836 567102 |

Specialist Meters Only for Initiation by DSN

| Accu-Chek Aviva Expert / Combo / Insight | | | |
|---|---|---|---|
|  | <ul style="list-style-type: none"> • Bolus calculator • Useful for patients adjusting insulin dose • Carbohydrate counting • Insulin pump therapy |  | <p><u>Prescription Details</u></p> <ul style="list-style-type: none"> • Aviva test strips • FastClix Lancets |
| Spirit Healthcare / CareSens N Voice | | | |
|  | <ul style="list-style-type: none"> • Talking meter • Strip pot stable until expiry date / cost £12.75 • Suitable for blind and visually impaired patient • Must be ordered specifically for individual patient • Ordering and patient training available via the diabetes centre. |  | <p><u>Prescription Details</u></p> <ul style="list-style-type: none"> • CareSens N Test Strips • Mylife Safety lancets • Mylife safety lancets are single use and require no insertion into a lancing device, thus enabling less handling for visual impairment. • Contact: 07880 195470 david.inglefield@spirit-healthcare.co.uk • Customer Care: 0800 8815423 |
| Abbott FreeStyle Insulinx | | | |
|  | <ul style="list-style-type: none"> • Flexible mealtime insulin calculator • Dosing advice based on blood glucose target range, active insulin and carbohydrates consumed. • Takes into account all the variables that make calculating dose difficult |  | <p><u>Prescription Details</u></p> <ul style="list-style-type: none"> • FreeStyle Lite Test Strips • FreeStyle Lancets |
| Contour Next Link | | | |
|  | <ul style="list-style-type: none"> • Wireless transmission of blood glucose test results to Medtronic insulin devices. • Fast and easy bolus dosing and continuous glucose monitoring calculation • Connects directly to computer for instant access to test results and trends, as well as for recharging the battery |  | <p><u>Prescription Details</u></p> <ul style="list-style-type: none"> • Contour NEXT test strips • Microlet Lancets |
| Contour Next USB | | | |
|  | <ul style="list-style-type: none"> • Logs blood glucose, carbohydrate and insulin information for a more complete picture • 2000 on board test memory • On board Glucofacts software • Useful backup meter for Contour Next Link (pump meter) if a problem should occur. |  | <p><u>Prescription details</u></p> <ul style="list-style-type: none"> • Contour NEXT test strips • Microlet lancets |

Healthcare Professionals must be trained on these recommended meters – certified (MHRA compliant) training, thus enabling HCP to train their patient on use of meter and address any problems patient might be experiencing.

RECOMMENDED HOME BLOOD GLUCOSE MONITORING FREQUENCY IN MEDICALLY STABLE ADULT TYPE 2 DIABETES PATIENTS.

Diabetes managed via: -Diet & Exercise.

If clinically appropriate home blood glucose monitoring (HBGM) once or twice weekly, at varied times, pre or post prandial.

Diabetes managed via: -Diet & Exercise and Metformin and/or a glitazone and/or exenatide/liraglutide

6 monthly Hba1c if stable/2-3 monthly HbA1c if unstable and/or

HBGM 2- 3 times a week at varied times to include pre or post prandial and including a fasting result.

Diabetes managed via: - Diet & Exercise + insulin secretagogue e.g. gliclazide, or, post-prandial regulator e.g. repaglinide, nateglinide with or without other oral agents and/or exenatide/liraglutide

HBGM 3 times a week at varied times, including pre and 2 hours post prandial, and fasting result.

Diabetes managed via: - Once daily insulin such as glargine, insulin detemir or insulatard, with/without combined oral agent e.g. metformin.

Once daily HBGM, initially fasting during basal dose titration, then varied times – pre meal/2 hours post prandial to identify trends.

DVLA guidelines for all patients on insulin: recommend testing before driving and at 2 hour intervals during long journeys. Meter memory should be sufficient to store 3 months data or data should be recorded using computer download facility.

Diabetes managed via: - insulin pumps with or without oral agents.

Minimum of 6 times daily, pre and post prandial including a fasting result.

Diabetes managed via: Basal/Bolus insulin regime e.g. Glargine or detemir or insulatard, combined with novorapid or glulisine or actrapid. (+/- oral agents).

3-4 times daily HBGM at varying times to include a fasting and pre or 2 hours post prandial.

Diabetes managed via: -Twice daily insulin mixtures with or without oral agents.

Once/ Twice daily HBGM varying the time between fasting, pre-meals and 2 hours post prandial to identify trends

Gestational Diabetes: Diet & Exercise.


3-4 times daily HBGM, varying times to ensure target levels are maintained.

Insulin therapy- 4-6 times daily, pre and 1 hours post prandial, including a fasting result ensuring target levels are maintained. Target levels at least 3 months prior to conception to be maintained.

Abertawe Bro-Morgannwg University Health Board

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