

Guideline for Self-monitoring of Blood Glucose in Adults

NICE guideline (NG 17, August 2015)-self-monitoring of blood glucose in type 1 diabetes: Advise routine self-monitoring of blood glucose levels for all adults with type 1 diabetes, and recommend testing at least 4 times a day, including before each meal and before bed. More frequent testing may be required in certain circumstances.

Educate adults with type 1 diabetes about how to measure their blood glucose level, interpret the results and know what action to take. Review these skills at least annually.

NICE guideline (NG 28, December 2015)-self-monitoring of blood glucose in type 2 diabetes: Do not routinely offer self-monitoring of blood glucose levels for adults with type 2 diabetes unless:

- the person is on insulin or
- there is evidence of hypoglycaemic episodes or
- the person is on oral medication that may increase their risk of hypoglycaemia while driving or operating machinery or
- the person is pregnant, or is planning to become pregnant.

The agreed formulary first line blood glucose meters and testing strips are:

TEE2 and Microdot+

The aim is for the agreed formulary meter to be used in the majority of patients. Patients should be reviewed, and following patient involvement and discussion they can be changed to the formulary test strips.

It is recognised that alternative blood glucose testing systems may be required for some patients (specialist recommendation). The following groups of patients may be less suitable for the formulary blood glucose testing strips:

- Patients using insulin pumps (may have their own meter with pump, or may use FreeStyle InsuLinx system or Accu-Chek Aviva Expert, depending on pump).
- Type 1 diabetics at risk of diabetic ketoacidosis who need to test blood for ketones (these patients may be prescribed FreeStyle Optium β -Ketone or GlucoMen LX Ketone).
- TEE2 and Microdot+ meters are suitable for all women with gestational diabetes regardless of treatment management. GlucoMen LX PLUS meters for all pregnant women with type 1 or 2 diabetes **prior to pregnancy**, to allow monitoring of both blood glucose (GlucoMen LX Sensor test strips) and blood ketones (GlucoMen LX ketone test strips).
- Some patients who are counting carbohydrates (FreeStyle InsuLinx or Accu-Chek Aviva Expert).
- Children and young people with type 1 diabetes (usually up to the age of 19, although caution in patients in their early 20s) are not suitable for a change to the formulary blood glucose testing strips. Please refer to guideline for self-monitoring of blood glucose in children and young people for information on first line blood glucose meter and testing strips.

Patients choosing to purchase a meter and self-test where there is no clinical indication for self-monitoring, or who are not advised to test by their management plan, will NOT have their testing strips supplied on the NHS by FP10. They may purchase their own testing strips.

Guideline for Self-monitoring of Blood Glucose in Children and Young People

NICE guideline (NG18, August 2015): Children and young people with type 1 diabetes should routinely perform at least 5 capillary blood glucose tests per day.

More frequent testing is often needed, for example during times of physical activity and during intercurrent illness.

Please ensure that sufficient testing strips are available to facilitate testing. Approximately **150 to 200 test strips (3 to 4 boxes)** may be needed on prescription each month (1 box contains 50 strips).

The agreed first line blood glucose meter and testing strips for children and young people:

Accu-Chek Expert meter, using Aviva test strips

Occasionally, alternative blood glucose meters are used in children and young people with type 1 diabetes. However, generally TEE2 and Microdot+ are not suitable and there should not be a change without prior consultation with the diabetes team at Basildon Hospital.

Guideline for Blood Ketone Monitoring in Children and Young People

NICE guideline (NG18, August 2015): Offer children and young people with type 1 diabetes blood ketone testing strips and a meter, to test for ketonaemia if they are ill or have hyperglycaemia.

The agreed first line blood ketone meter and testing strips for children and young people:

GlucorxHCT and Ketone meter, using Glucorx HCT Ketone test strips

The clinic will provide the ketone meter and an initial supply of test strips. Please do not add the ketone test strips to the repeat prescription template. Children and young people will be using a separate meter to test blood glucose (see above).

Please ensure that blood ketone testing strips are not used after the specified ('use-by') date.

Children and young people are advised to test ketones:

- If they are unwell
- If they have two consecutive high readings without any known cause
- If a correction dose of rapid acting insulin has not brought their high levels back to target

All children and young people are informed of their 'sick-day rules' and are encouraged to call the diabetes team for advice if they have ketones developing to prevent admission to hospital.

Paediatric Diabetes Nursing Team Contact Details:

Mayflower Community Hospital
Blunts Wall Road
Billericay
CM12 9SA

Tel no: 0300 3001521, option 2. URGENT Pager service 07659131041

Monitoring Regimens

Diabetes Type	Treatment Group	Recommended frequency of testing when stable	Approximate number of test strips needed on prescription (1 box contains 50 strips)	Additional Information
Type 1 Diabetes	All people with type 1 diabetes	Up to 4 times a day	2-3 boxes/month	Greater risk of hypoglycaemia and hyperglycaemia. More frequent testing indicated in certain circumstances e.g. patients on insulin pump therapy, frequency of hypoglycaemic episodes increases, in line with DVLA
Type 1 and type 2 diabetes in pregnant women, gestational diabetes. Type 1 diabetes in children.	Insulin therapy, oral antidiabetic agents or diet controlled	Between 4 to 6 times a day	3 to 4 boxes/month	Under specialist advice
Type 2 Diabetes	Multi-injection insulin therapy (more than 2 times per day)	Up to 4 times a day	2-3 boxes/month	
Type 2 Diabetes	Insulin therapy injected once or twice daily	Usually twice daily 2 to 3 times a week at varying times	1 box/2 months (6 boxes per year)	
Type 2 Diabetes	Combined insulin therapy and oral antidiabetic agents	Usually once daily, varying the times of day of testing.	1 box/2 months (6 boxes per year)	
Type 2 Diabetes	Sulfonylurea alone or in combination with other oral agents or with injectable GLP-1 analogues. Rapid acting insulin secretagogues (glinide).	May require monitoring due to increased risk of hypoglycaemia (most patients will not need to test) e.g. Once daily 3 times a week at varying times.	1 box every 4-6 months if stable (3 boxes per year)	May need to test regularly when suffering from intercurrent illness or unstable condition, and when driving as detailed in the DVLA requirements.
Type 2 Diabetes	Diet controlled, metformin, pioglitazone, gliptins or GLP-1 analogues used as monotherapy or in combination (once stable)	Not routinely recommended- patient is not at risk of hypoglycaemia	None	HbA1c is the outcome measure. Testing is appropriate in certain circumstances where need and purpose is clear and agreed with patient. This should be supported by education.

DVLA requirements for SMBG (www.dft.gov.uk)	Group 1 Entitlement-car, motorcycle	Group 2 Entitlement – LGV/PCV (lorry/bus) (updated Dec 2011 & Apr 2012)
Insulin treated patients	Test 2 hours before the start of the first journey and every 2 hours while driving.	Regularly tests at least twice daily and at times relevant to driving (2 hours before the start of the first journey and every 2 hours while driving).
Oral agents with a risk of inducing hypoglycaemia (sulfonylureas and glinides)	May need to test regularly and at times relevant to driving to enable the detection of hypoglycaemia.	Test at least twice daily and at times relevant to driving.