

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

NICE guideline (NG17, 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 (NG28, 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.

NICE guideline (NG18, August 2015) - self-monitoring of blood glucose in children and young people: 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.

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

TEE2 test strips for TEE2 or TEE2+ meter

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

GlucoMen areo Ketone Sensor test strips for GlucoMen areo 2K meter

GlucRx HCT Ketone test strips for GlucRxHCT meter

KetoSens test strips for CareSens Dual meter

For patients who need to monitor blood glucose, and ketones, it is recommended that TEE2 is used to test blood glucose, and a separate formulary ketone testing system is used. However, in exceptional circumstances if a single meter is required to test both blood glucose and ketones, GlucoMen areo 2K meter, GlucRxHCT meter and CareSens Dual meter, are dual glucose-ketone meters, and can be used for this purpose.

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, including patients using insulin pumps. However, the formulary blood glucose testing strips and ketone testing strips will be suitable for most patient groups, including, gestational diabetes (regardless of treatment management), pregnant women with type 1 or 2 diabetes prior to pregnancy, and children and young people.

All-in-one meters containing a strip cassette and finger pricker, such as Accu-Chek Mobile device, are non-formulary and not routinely recommended for prescribing.

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.

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.

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