

## KEY PRINCIPLES OF PRACTICE

- 95% of the care people with Diabetes receive is self-care and all people should have access to high quality structured education programmes e.g. X-PERT, DESMOND, conversation maps
- The ability to monitor their own glucose level gives people with Diabetes the feedback they need in order to learn how to manage their condition optimally.
- The ability to self-monitor may be affected by their mental health: use PHQ4 (in primary and community care) to screen for anxiety and depression OR DDS2 (in secondary care) to screen for diabetes distress. Use 6 item COG for cognitive impairment (more prevalent in Diabetes after age 50). See slide [31](#) for tools
- Monitoring should be based on the individual's clinical needs and in the context of Diabetes education and self-management.
- People should receive appropriate training in the technique and the actioning of the results.
- The frequency of testing will be different for different people and will change with their circumstances. Any guidelines can only be used as a framework and then adapted to meet individual needs.
- People may move between different methods of monitoring dependent on their needs at that time.
- Monitoring equipment used should be based on choice & agreed with patient.

## TYPE 2 DIABETES

- Routine self-monitoring of blood glucose is not usually required if people are achieving targets on therapy without the potential to cause hypoglycaemia (see the table on the next page).
- HbA1c is important in assessing the adequacy of blood glucose control and should be tested every 3-6 months.
- Structured education is essential for people with newly diagnosed and existing Diabetes.
- Checking for wellbeing is essential as 40% of people with diabetes have poor mental health (see slide [50](#)) and this affects their ability to self-care
- People with Type 2 Diabetes usually have more stable glycaemic control. In practice, the level of monitoring will vary according to the treatment regimen used and the target level of glycaemic control set for/with the patient.
- DVLA requirements for testing when driving apply to people with Type 2 Diabetes treated with insulin, gliclazide, glimepiride, glibenclamide or another sulfonylurea, nateglinide or repaglinide.

## DIABETES AND DRIVING

### People with Diabetes must inform the DVLA.

- Those on insulin or oral hypoglycaemic agents which carry a risk of hypoglycaemia, such as sulfonylureas should monitor their glucose before driving. <https://www.gov.uk/government/publications/information-for-drivers-with-diabetes>
- Group 2 drivers (bus and lorry), on insulin or oral medicines which carry a risk of hypoglycaemia, are still required to check their blood glucose using finger prick testing for the purposes of driving.
- Must have awareness of hypoglycaemia. If there is a total loss of 'hypo' warning signs their license will be withdrawn.
- Must not have had >1 episode of severe hypoglycaemia requiring third party assistance while awake within the preceding 12 months. If they have had more than one episode they must inform the DVLA and their licence will be withdrawn for one year following the first episode.
- [Trend Driving Leaflet](#); [DVLA: A guide to insulin treated diabetes and driving](#)
- All results should be recorded with the time and date to provide a cumulative record as a basis for day-to-day changes in therapy. Most meters will store this information and some will allow download to a computer or smart phone
- **People with blood glucose levels <5.0mmol/L should not drive until they have eaten; If <4.0mmol/L they should not drive.**

### GROUP 2 ENTITLEMENT

People with Diabetes on insulin can apply for any Group 2 licence providing the patient has:

- Had no episodes of hypoglycaemia requiring third party assistance within the previous 12 months.
  - Full awareness of hypoglycaemia and can demonstrate understanding of its risks.
  - Meter recorded evidence of regular monitoring (twice a day and at times relevant to driving).
  - Been reviewed annually by an independent consultant diabetologist and provide at least 3 continuous months of readings.
- Visit [www.dft.gov.uk/dvla/medical](http://www.dft.gov.uk/dvla/medical)

|                             | ADULTS WITH TYPE 2 DIABETES  |   |  |                             |
|-----------------------------|--|---|--|-----------------------------|
| <b>Treatment</b>            | Diet and exercise<br>Metformin<br>Pioglitazone<br>DPP-4 inhibitors<br>SGLT-2 inhibitors<br>GLP-1 analogues*  | sulfonylureas/meglitinides alone or in combination with other suitable hypoglycaemic agents except insulin  | Insulin - Basal, twice daily fixed regimens or mixed insulins  | <b>Treatment</b>            |
| <b>Usual Monitoring</b>     | Not usually necessary (* except when initiating GLP-1 analogues in people taking a sulfonylurea – see next column)<br><br>Do not offer a meter unless a clear action based on test results has been agreed and for short term use only, e.g. to allow patient to adjust lifestyle when newly diagnosed | 4 tests per week, usually testing once week before each of the three daily meals and before bedtime<br><br>See advice on Diabetes and driving on previous page.                 | <b>Basal insulin:</b><br>1-2 tests per day<br><br><b>Premixed insulin:</b><br>2-4 tests per day  | <b>Usual Monitoring</b>     |
| <b>Intensive Monitoring</b> |  | Before meals and 2 hours after evening meal<br><br>*Intensive monitoring is essential during initiation of GLP-1 analogues for people already on sulfonylureas until stabilised | People who rely on others for administration of mixed insulins may require more frequent testing, which is recommended prior to administration.<br>See advice on driving<br>Before meals and 2 hours after main meal<br>Tests before breakfast are essential to achieve the target fasting glucose<br>Additional tests pre-meal or 2 hours after food are helpful if fasting glucose is at target but HbA1c remains high | <b>Intensive Monitoring</b> |
| <b>Prescribing</b>          | Prescribe the minimum appropriate number of strips on acute  | Prescribe on repeat<br>Additional supplies may be necessary for driving and intensive monitoring  | Prescribe on repeat<br>Additional supplies may be necessary for driving and intensive monitoring   | <b>Prescribing</b>          |

### Intensive monitoring may be required in any of these situations

During intercurrent illness  
Intermittent steroid therapy  
Osmotic symptoms  
Postprandial hyperglycaemia  
Terminal care/end of life  
People on the Diabetes Prevention Programme (diabetes remission programme i.e. REWIND)

To prevent development of acute complications  
Pre-conception and pregnancy  
Increased or regular intensive exercise  
When HbA1c testing is unavailable  
Impaired awareness of hypoglycaemia

## PRINCIPLES

People and health care professionals should be clear about what they hope to achieve by self-monitoring blood glucose because monitoring in itself does not improve control. It is the interpretation of the result and the action taken that makes the difference.

Assessment of monitoring at least once a year is desirable and should include:

- Self-monitoring skills including the cognitive ability of the person using 6 item cognitive impairment test (especially if there are microvascular changes in other organs apart from the brain)
- The quality and frequency of testing
- The use made of the results obtained
- The continued benefit
- The impact on quality of life
- The equipment used

If the patient does not benefit from monitoring or if it is adversely affecting their quality of life, then it should be stopped.

Self-monitoring of blood glucose does not replace HbA1c testing, which should be carried out at suitable intervals as part of regular care.

Remember other health education (healthy diet, regular physical activity, maintaining a healthy psychological state, maintaining a normal body weight and avoiding tobacco) to help people reduce their risk of Diabetes-related complications.

Provide Diabetes lifestyle leaflets and actively promote structured education and referral to IAPT if necessary.

## CHOOSING A BLOOD GLUCOSE METER

For people with type 2 diabetes, prescribed blood glucose test strips should cost less than £10 for a pack of 50 strips. A wide variety of blood glucose meters are available where the cost of test strips are less than £6 per pack of 50. When offering a new blood glucose meter or a change of meter, clinicians should consider a meter which uses test strips costing less than £6 per pack of 50.

A decision to change meters should be used as an opportunity to review the purpose of testing and the interpretation of results as well as provide basic lifestyle advice and leaflets. If usage is low enough that one pot of strips lasts longer than its expiry date, review of the need for blood glucose monitoring is recommended.

The choice of meter and its functionalities and features should reflect the needs of the user. Some of the key functionalities to consider are shown in the table below.

| Function/Feature                                       | Comments   |
|--|--|
| Memory   | Memory of at least 500 and cannot be deleted by the user                                     |
| Display screen   | Size and readability of the information displayed on the screen                              |
| Voice function   | For users who are blind or have visual impairment  |
| Replacement batteries                                  | Does the manufacturer replace batteries free of charge?                                      |
| Customer support                                       | Does the manufacturer provide a freephone number to a customer support service?              |
| External data output                                   | Can data be transferred from the meter? Is data transfer wireless or via a cable?            |
| Compatibility with Remote diabetes management software | Is the meter compatible with remote diabetes management software (e.g. Diasend or Tidepool)? |

| BLOOD GLUCOSE TEST STRIP REQUIREMENTS  |               |                                   | LANCET REQUIREMENTS   |               |                       | INSULIN PEN NEEDLE REQUIREMENTS  |         |                      |
|--|---------------|-----------------------------------|---|---------------|-----------------------|--|---------|----------------------|
| <p>Test strips usually come in packs of 50 which cannot be split. This table indicates quantities for usual testing. Additional supplies may be necessary for intensive testing e.g. to meet DVLA requirements for driving. If people are required to test regularly please prescribe on repeat prescriptions. People should be encouraged not to over order or stockpile supplies. Additional supplies to meet a short term need should be prescribed on acute prescriptions.</p> |               |                                   | <p>Prescribe a low cost brand of lancets (<math>\leq</math> £5 per pack of 200)</p> <p>Lancers (the finger pricking devices) are not available on prescription and replacement lancing devices are available from companies (usually free of charge). Lancets are for single use only and should be prescribed in quantities which correspond to the expected frequency of testing.</p> |               |                       | <p>Prescribe a low cost brand of insulin pen needles (<math>\leq</math>£4 per pack of 100 pen needles). Most brands of pen needles are compatible with all devices. Pen needles come in packs of 100.</p> <p>Shorter needle lengths reduce the risk of intramuscular injection of insulin. <a href="#">The Forum for injection Technique (FIT)</a> Uk considers the 4mm needle to be the safest pen needle for adults and children regardless of age, gender and body mass index (BMI).</p> <p>For those currently using longer pen needle lengths (8mm or longer), it is advisable to change to a shorter needle length (6mm or less) but only after discussion with a healthcare professional, to ensure they receive advice on the correct injection technique.</p> |         |                      |
| Tests per day  | Tests/28 days | Packs/frequency                   | Tests per day   | Tests/28 days | Packs/frequency       | Injections per day   | 28 days | Packs/frequency      |
| 1  | 28            | 8 /year                           | 1   | 28            | 2 x 200 packs / year  | 1  | 28      | 4 x 100 packs /year  |
| 2  | 56            | 1 pack /month;<br>14 packs/year   | 2   | 56            | 4 x 200 packs / year  | 2  | 56      | 8 x 100 packs /year  |
| 4  | 112           | 2-3 packs/month;<br>29 packs/year | 4   | 112           | 8 x 200 packs / year  | 3  | 84      | 11 x 100 packs /year |
| 6  | 168           | 3-4 packs/month;<br>44 packs/year | 6   | 168           | 11 x 200 packs / year | 4  | 112     | 15 x 100 packs /year |
| 8  | 224           | 4-5 packs/month;<br>58 packs/year | 8   | 224           | 15 x 200 packs / year |  |         |                      |