Blood glucose test strips for patients with type 2 diabetes mellitus

Self-monitoring of blood glucose (SMBG) is essential for people with diabetes on insulin therapy and can be beneficial for some people on other hypoglycaemic agents. Where SMBG is not serving a specific purpose in the management of the condition however, it is a waste of resources and can cause unnecessary pain to the patient. NICE recommends that SMBG should be used only if it is going to be an integral part of the patient’s self-management education, and the continued benefit of self-monitoring should be assessed in a structured way each year.¹

In recent years the cost of prescribing blood glucose test strips (BGTS) has grown rapidly. In the NHS Midlands and East in 2012/13, 22% of the spend on diabetes was for BGTS at a cost of £48.3 million.²

**Recommendations**

- Review current prescribing of BGTS and evaluate the need for self-monitoring on an individual patient basis; where there is no need for SMBG, discontinue prescribing.
- Determine appropriate frequency for testing and make necessary adjustments to quantity of test strips prescribed.
- Remove BGTS from repeat prescriptions for patients who only need to test intermittently.
- Use the guidance provided in Appendices 2 and 3 to help produce a preferred list of blood glucose testing strips and meters to be used locally.
- Ensure a wide stakeholder engagement including GPs, practice nurses, specialist community diabetes teams, community pharmacists, hospital diabetes teams and patient representatives.
- Implement a switch program to the formulary blood glucose meters.

**Background**

Around 4.5% of the adult population in the UK have been diagnosed with diabetes and it is estimated that 10% of these have type 1 diabetes and 90% have type 2 diabetes.³

A report published by NHS Information Centre states that in the financial year 2010/11 ‘drugs for diabetes’ was the BNF section of highest cost and greatest increase in cost and accounted for 8.4% of the total cost of prescribing for that year.⁴ Over the same period there was a 6.3% increase in the number of items prescribed for blood glucose monitoring agents and devices resulting in a rise in net ingredient cost from £142.3 million to £152.6 million.

SMBG is an essential component in managing patients treated with insulin to help them to achieve tight blood glucose control and to prevent severe hypoglycaemia. The purpose of this is to allow a patient to make necessary adjustments to their insulin dose (applicable in type 1 diabetes) and also to make informed lifestyle changes. In non-insulin treated type 2 diabetes the benefits of regular SMBG are unclear. It is recognised that patients treated with sulfonylureas are at risk of severe hypoglycaemia and SMBG may benefit people who are less able to identify early signs of hypoglycaemia. The usual method for monitoring blood glucose control is by measuring glycated haemoglobin (HbA1c) which gives an average of the blood glucose over three months. The benefit of SMBG is that it gives the patient information on their blood glucose on a day to day basis and at different times of the day showing them the impact of their lifestyle on their blood glucose.

A Cochrane review found the overall beneficial effect of SMBG on glycaemic control in patients with type 2 diabetes (who were not using insulin) was small up to six months after initiation, and subsided after 12 months.⁵
SMBG reduced HbA1c by a statistically significant 0.3% (about 3mmol/mol) at up to six months follow-up but the reduction was not statistically significant at 12 months.

There was no evidence that SMBG affected patient satisfaction, general well-being or general health-related quality of life.

A previous Health Technology Assessment (HTA) report found SMBG reduced HbA1c by a statistically significant 0.2% (about 2 mmol/mol) however this was not considered clinically significant as it was less than 0.5% (5.5 mmol/mol).

NICE Guideline CG87 on the management of type 2 diabetes\(^4\) recommends that SMBG should only be used if it is going to be an integral part of the patient’s self-management education. The continued benefit of SMBG should be assessed in a structured way each year, and clinicians should ensure that patients using SMBG are clear about the purpose of the monitoring, how results should be interpreted, and what action to take in response to results.

NICE recommends that SMBG is appropriate in some people with type 2 diabetes and should be available to:

- Those on insulin treatment
- Those on oral glucose-lowering medications to provide information on hypoglycaemia
- Assess changes in glucose control resulting from medication and lifestyle changes
- Monitor changes during inter-current illness
- Ensure safety during activities, including driving.

### Guidance for reviewing the need to test for blood glucose

**Key points to note:**

1. SMBG should only be provided routinely to people with type 2 diabetes not treated with insulin or sulfonylureas where there is an agreed purpose or goal to testing.

2. Patients being treated with insulin or other diabetes agents that carry a risk of hypoglycaemia (sulfonylureas, glinides) must be prescribed BGTS to allow them to satisfy the level of testing stipulated by the Driver and Vehicle Licensing Agency (DVLA). See table 1 below.

### Table 1: Summary of DVLA requirements with regards to self-monitoring of blood glucose

<table>
<thead>
<tr>
<th>Group 1 Entitlement – Car, motorcycle</th>
<th>Group 2 Entitlement – LGV/PCV (updated Dec 2011 &amp; Apr 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insulin treated patients</strong></td>
<td>There must be appropriate blood glucose monitoring. This is defined as 2 hours before the start of the first journey and every 2 hours while driving.</td>
</tr>
<tr>
<td><strong>Patients managed by tablets which carry a risk of inducing hypoglycaemia (includes sulfonylureas and glinides)</strong></td>
<td>It may be appropriate to monitor blood glucose regularly and at times relevant to driving to enable the detection of hypoglycaemia.</td>
</tr>
</tbody>
</table>

The DVLA further advises drivers treated with insulin to always carry a glucose meter and to test blood sugar at least 2 hours before driving and every two hours whilst driving. Full details available on the [DVLA website].\(^7\)

3. SMBG should be used to optimise blood glucose control prior to conception and during pregnancy, including gestational diabetes.

4. SMBG should be used only within a care package, accompanied by structured education with regular review. The education should include clear instructions as to the place of monitoring and how results can be used to reinforce lifestyle change, adjust therapy or alert healthcare professionals.
5. The quantity of test strips on prescription should reflect the frequency of testing required by the individual patient. Where testing is only required intermittently, prescriptions should be generated only when needed and not as a repeat prescription.

Patient assessments should include the following:

- Self-monitoring skills
- The quality and appropriate frequency of testing
- The use made of the results obtained
- The impact on quality of life
- The continued benefit
- The equipment used.

Frequency of testing blood glucose should be agreed by local specialist diabetes team and guidelines should be clearly communicated to all healthcare professionals involved in diabetes care. A decision to amend the quantity of BGTS or to stop prescribing altogether should be clearly communicated to patients.

Organisations should audit prescribing of BGTS to ensure that it is in line with recommendations in NICE guidance and by the DVLA. Prescriptions should be discontinued, quantities reduced as appropriate. Appendix 1 (found at the end of this document) provides an audit to support you with this activity.

**Review of blood glucose testing meters/strips**

Approximately £48.3million was spent on BGTS in the NHS Midlands and the East from March 2012 to February 2013. Table 2 represents a summary of cost of prescribing for diabetes care which highlights the significant spend on BGTS alone.

**Table 2: Total cost over 12 months (March 2012 - February 2013)**

<table>
<thead>
<tr>
<th></th>
<th>Insulin</th>
<th>Antidiabetic drugs</th>
<th>Glucose blood testing reagents</th>
<th>Grand total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>West Midlands</strong></td>
<td>£36,921,802</td>
<td>£33,233,020</td>
<td>£16,869,593</td>
<td>£87,024,416</td>
</tr>
<tr>
<td><strong>East of England</strong></td>
<td>£31,297,844</td>
<td>£24,235,985</td>
<td>£17,368,453</td>
<td>£72,902,281</td>
</tr>
<tr>
<td><strong>East Midlands</strong></td>
<td>£28,627,112</td>
<td>£18,088,635</td>
<td>£14,019,292</td>
<td>£60,735,039</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td>£96,846,758</td>
<td>£75,557,639</td>
<td>£48,257,338</td>
<td>£220,661,736</td>
</tr>
</tbody>
</table>

Source: NHS Prescription Services, ePACT data

There is a wide variety of blood glucose meters to choose from and prescribing data shows that 41 different brands of testing strips were prescribed over this period with prices ranging from £7.50 to £16.30 per 50 strips. BGTS with an acquisition price ≤ £10 (this does not take into consideration locally agreed rebates) are deemed to be cost-effective and highlighted on chart 1 (page 4). The share of different testing strips prescribed is shown in chart 2 (page 5).

There is little variation between the different meters in their ability to provide an accurate reading of blood glucose so it stands to reason that prescribing should be streamlined to include only cost-effective testing strips.

By switching patients on to cost-effective blood glucose meters and testing strips the cost of prescribing can be reduced by 31% assuming a 100% switch or 25% assuming an 80% switch. This saving has been calculated using £10 as the cost limit for 50 testing strips. This will generate a **saving of £12 million to £15 million in the NHS Midlands and East** which can then be invested in improving the care of patients with diabetes.

Some manufacturers of blood glucose meters may offer rebate schemes to CCGs to bring the price of testing strips in line with the recommended £10 or less/50 strips. Whilst the legitimacy of primary care rebates is somewhat unclear nationally, and not endorsed by PrescQIPP® especially without appropriate governance, CCGs may find the terms of these schemes to be favourable. We recommend that CCGs have a plan to assess the ongoing cost-effectiveness both during and after the rebate period.
**Chart 1: Cost* of blood glucose testing strips**

<table>
<thead>
<tr>
<th>Product</th>
<th>Cost/50 strips of BGTS [DT April 2013]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensocard (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Compact (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Mobile (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Advantage Plus (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>FreeStyle (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>FreeStyle Lite (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Aviva (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoMen Visio (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>FreeStyle Optium (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>OneTouch Ultra (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoMen LX Sensor (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Contour (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>OneTouch Vita (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>MediSense SoftSense (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Contour Next (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>TrueTrack System (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>TRUEone (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>OneTouch Verio (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>TRUEresult (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoDock Glucose (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Mendor Discreet (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>BGStar (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Breeze 2 (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoMen Sensor (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>IME-DC (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>CareSens N (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Microdot+ (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>WaveSense JAZZ Duo (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoRx Nexus (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoMen GM (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Active (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>TRUEyou (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Omnitest 3 (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoLab (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Element (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>WaveSense JAZZ (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>iCare Advanced (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>GlucoRx Original (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>Mylife Pura (Reagent), Strips</td>
<td>£17.99</td>
</tr>
<tr>
<td>SuperCheck 2 (Reagent), Strips</td>
<td>£17.99</td>
</tr>
</tbody>
</table>

*These list prices correct as at April 2013.
Blood glucose meter selection: Implementation guide

There is a wide variation in prescribing for the different brands of BGTS and costs are very high. It is worthwhile considering implementing a project to choose a preferred meter (or meters) for the following reasons:

- Patients are often offered free meters by the companies through diabetes groups and magazines. These are more often the newer meters with high cost strips and inevitably the patients will then request a prescription for these strips from their GP practice. Having a preferred formulary meter and a clear policy to review each patient for clinical appropriateness before initiating prescribing of testing strips will ensure that this does not occur and will minimise spend on testing strips.

- There is no evidence to suggest greater clinical benefits are achieved by using the more expensive BGTS over the less costly ones and therefore the products with the lowest acquisition cost that meet requirements outlined in the meter selection process below should be chosen.
Secondary care clinicians often lead on meter choice as they work with companies and get certain added benefits by using a particular meter (i.e. nurse support, patient information etc.). It is therefore important that this project is implemented with a wide group of stakeholders and includes secondary care clinicians as the group will need to have discussions about the current perceived benefits of choosing a particular more costly meter over the actual benefits of being able to re-invest savings into diabetes care locally.

A project process for reviewing BGTS and choosing a formulary choice product or products is outlined below. Organisations may adapt this process to suit local requirements. Meters should be systematically reviewed for accuracy, ease of use for meter, strip and lancet device, company customer services and the cost of strips.

**Step 1 - Why undertake the project**

Determine the benefit to patients and your local health economy for undertaking the meter switch. A SWOT analysis would help you to identify the benefits and anticipate the potential difficulties for the project. An example SWOT analysis may look like:

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>OPPORTUNITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Significant savings which can be re-invested in other diabetes programs</td>
<td>• Patient review – consider if SMBG is needed, appropriate frequency, monthly quantities required. Stop SMBG where this adds no benefit to patient care</td>
</tr>
<tr>
<td>• Supports use of cost-effective products by the NHS.</td>
<td>• Ensure care package and structured review available to patient</td>
</tr>
<tr>
<td></td>
<td>• Review patient’s technique and use of results</td>
</tr>
<tr>
<td></td>
<td>• Change old meters which may no longer be accurate</td>
</tr>
<tr>
<td></td>
<td>• Educate all healthcare professionals involved in the care of diabetes.</td>
</tr>
<tr>
<td></td>
<td><img src="https://www.prescqipp.info/blood-glucose-testing-strips/viewcategory/200" alt="SWOT Analysis" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEAKNESSES</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Time consuming exercise</td>
<td>• Some patients e.g. the elderly will be confused with new product</td>
</tr>
<tr>
<td></td>
<td>• Pharmaceutical company antagonism towards change.</td>
</tr>
</tbody>
</table>

**Step 2 – Working group**

- Identify a working group to carry out a review of blood glucose testing strips and meters, including representatives of key stakeholders.
- Establish a list of stakeholders and keep them informed throughout the project.
- Stakeholders would include: pharmaceutical advisers, specialist diabetes nurses (community and secondary care), GPwSI diabetes, practice nurses, community nurses, Local Pharmaceutical Committee, patient representatives, pharmaceutical industry (if considering rebates).

**Step 3 – Selection of meters for initial evaluation for technical requirements**

- Select meters with cost-effective testing strips - ≤ £10/50 strips (if CCGs have rebate agreements in place around particular test strips, this should be taken into consideration).

Review these meters using the data or template provided by the Centre for Evidence-based Purchasing - Market review of blood glucose monitoring systems². Relevant information on primary care and self-testing meters which were available before 2008 can be found in Appendix 2: http://www.prescqipp.info/blood-glucose-testing-strips/viewcategory/200

You can use this template to review meters introduced to the market after this date using information available from the manufacturers.
• Eliminate any meters that do not meet the ISO requirements for blood glucose monitoring systems\(^1\),
• Produce a shortlist of 6 meters (or more if capacity available locally) following this evaluation for further analysis and patient evaluation.

**Step 4 – Product comparison**

Develop a scoring matrix to compare the meters to assess the more practical aspects of these meters. A sample is provided in Appendix 3 [http://www.prescqipp.info/blood-glucose-testing-strips/viewcategory/200](http://www.prescqipp.info/blood-glucose-testing-strips/viewcategory/200)

- Product comparison should include - cost of testing strips, display features, memory capacity, ease of use, customer service facilities.
- Select the two (or more) highest scoring meters for further evaluation (step 5).
- Views of expert patients are key at this stage of the decision making process.

**Step 5 – Final meter selection**

- Select a group of patient representatives to use the short-listed meters for a short period (e.g. 2 weeks) and collate feedback. This will provide a more realistic picture of the expected level of uptake when rolled out to the wider population.
- The working group should then agree a choice of preferred meter(s) for your CCG medicines formulary. Consider having more than one meter to accommodate patient choice.

**Step 6 – Formulary change**

- Obtain agreement from appropriate prescribing committees (Hospital Drugs and Therapeutics Committee, Area Prescribing Committees) on the choice of preferred blood glucose testing strips and meters.
- Update CCG formulary (and acute trust formulary where a joint approach has been agreed) for blood glucose testing meters/strips.
- Note that the decision by an organisation to select a preferred blood glucose meter should be a formulary choice and rather than a procurement process. This distinction should be clearly documented.
- Clearly identify patients groups that may not be suitable for the formulary meter such as those with visual impairment, patients with type 1 diabetes using an insulin pump or testing for ketone, children, people on dialysis etc. These patients should be given meters that meet their individual needs.

**Step 7 - Implementation**

- Determine time scale for carrying out the switches.
- Outline implementation plan for meter switching and determine resource required to undertake this change. Such resources may include:
  » Patient information leaflets and FAQ documentation.
  » Clinic or appointment times for demonstrating use of new meters. This can be particularly time consuming especially where patients need to make a choice. Consider alternative resources such as HCA led clinics and commissioning community pharmacy staff\(^*\).
  » Active use of formulary meters by specialist nurses initiating new patients including use for gestational diabetes.
  » Change of repeat medication list for BGTS on GP computer system.
  » PALs engagement in handling queries and complaints.

\(^*\)An example of a community pharmacy service to implement the meter switching is available in the from the Best Practice section of PrescQIPP website: [http://www.prescqipp.info/resources/viewcategory/117-best-practice](http://www.prescqipp.info/resources/viewcategory/117-best-practice)

Once the project is implemented, prescribing data can be monitored to assess the uptake of formulary choice meters. Consider including all cost effective meters as part of monitoring indicator to ensure practices are not penalised for using an alternative cost effective meter.
Summary

- The cost of prescribing blood glucose testing strips is growing rapidly and there are significant savings to be made by rationalising prescribing.
- Self-monitoring of blood glucose in type 2 diabetes is only beneficial for a selective group of patients and this practice should be restricted in line with NICE guidelines.
- Prescribing should be rationalised by ensuring that self-monitoring is appropriate (including quantities issued on prescription) and that a selection of cost-effective meters and testing strips are used where appropriate.
- The cost of blood glucose testing strips can be reduced by 25% if 80% of prescribing represents cost-effective (£10/50 strips) testing strips.
- Cost savings realised from identifying a formulary choice of blood glucose meter and implementing a switch can be re-invested in the local diabetes programme budget.

References

2. Prescribing data from NHSBSA, ePACT. The prescribing data for the 12 months from March 2012 to February 2013 has been used to calculate this figure.
3. Diabetes UK
7. DVLA, At a glance guide to the current Medical Standards of Fitness to Drive. http://www.dft.gov.uk/dvla/medical/aag.aspx June 2013
9. Centre for Evidence-based Purchasing Market Review; Blood glucose monitoring systems CEP09028, October 2009

Acknowledgements

Bedfordshire Clinical Commissioning Group - Intergrated Community Diabetes Service: Introduction of formulary Blood Glucose Meters

Information prepared by Belinda Ekuban, NHS PrescQIPP Programme, July 2013, and reviewed by Katie Smith, East Anglia Medicines Information Service, August 2013. This bulletin is also accompanied by a briefing version, which is available at: http://www.prescqipp.info/blood-glucose-testing-strips/viewcategory/200

Please note that the accompanying appendices are provided in separate documents so materials can be adjusted to suit local requirements.
Appendices

Appendix 1 - Audit of blood glucose test strips in type 2 diabetes
- 1a – Audit guide (contained in this document)
- 1b – Audit template (available on link below)

Appendix 2 – Market review, blood glucose monitoring systems, CEP09028 (available on link below)
Appendix 3 – Meter evaluation scoring matrix template (available on link below)

Link: [http://www.prescqipp.info/blood-glucose-testing-strips/viewcategory/200](http://www.prescqipp.info/blood-glucose-testing-strips/viewcategory/200)

Appendix 1

Audit of self-monitoring of blood glucose in people with type 2 diabetes

The cost of blood glucose test strips (BGTS) has increased significantly in recent years and this audit will help to ensure that prescribing is in line with NICE guidelines and quantities issued are appropriate. The high cost of BGTS is attributable to a combination of excessive prescribed quantities and the choice of products being used. The audit will determine the need for self-monitoring, assess the frequency and allow a switch to a cost-effective blood glucose meter and test strip if necessary.

Self-monitoring of blood glucose (SMBG) is essential for people with diabetes on insulin therapy and can also be beneficial for some people on other hypoglycaemic agents. Where SMBG is not serving a specific purpose in the management of the condition however, it is a waste of resources and can cause unnecessary pain to the patient. NICE recommends that SMBG should be used only if it is going to be an integral part of the patient’s self-management education, and the continued benefit of self-monitoring should be assessed in a structured way each year. For patients with type 2 diabetes who use diet control alone or are well controlled on oral agents, clinical data shows that self-monitoring with blood testing strips does not in itself lead to better control of blood glucose levels.

Self-monitoring should be available to:
- Those on insulin treatment
- Those on oral glucose-lowering medications to provide information on hypoglycaemia
- Assess changes in glucose control resulting from medication and lifestyle changes
- Monitor changes during intercurrent illness
- Ensure safety during activities, including driving.

Recommendations for self-monitoring regimens in non-insulin dependent type 2 diabetes patients (should be adjusted to reflect your local guidelines):
- Type 2 diabetes patients not on insulin, no symptoms, HbA1c normal and urinalysis normal (Stable); no blood glucose monitoring required* – BGTS should not be issued on prescription
- Type 2 diabetes patients not on insulin but either newly diagnosed, with symptoms or changing clinical picture (Unstable); Test 3-6 times a week. This is equivalent to 12-25 strips a month (1 pack of 50 every 2-4 months). Prescriptions should not be on repeat issue as this will be short-term use only
- Type 2 diabetes patients treated with insulin; test 1-4 times daily depending on dosing regimen
- Patients on sulfonylureas and glinides who need to monitor blood glucose for purposes of driving, should be prescribed test-strips to meet DVLA testing requirements. The quantity prescribed will be dependent on the type of licence and the level of driving activity for the individual.

*Exception will be DVLA requirements for drivers.

Decisions to either stop prescriptions for BGTS or change the recommended frequency of testing should be clearly communicated to patients and if required patients should be given the opportunity to discuss this with their GP, practice diabetes nurse, nurse diabetes specialist or Diabetes Education and Self Management for Ongoing and Newly Diagnosed (DESMOND). If after this discussion, a patient wishes to continue testing more frequently than recommended, they can opt to buy test strips over the counter.
**Choice of blood glucose meter**

There are several blood glucose meters on the market, often available free of charge to the patient, with a wide variation in the cost of corresponding test strips. Most of these meters meet the industry requirements for accuracy and precision and are adequate for self-monitoring by patients. As part of this audit, consider switching patients to a cost-effective test strip in line with your local formulary. Patients with special needs for e.g. those with visual impairment or poor dexterity may need more specialised meters and will be exempt from a switch.
1a: Audit guide

<table>
<thead>
<tr>
<th>Aim</th>
<th>To assess appropriate prescribing of self monitoring blood glucose tests in people with type 2 diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Audit criteria</strong></td>
<td></td>
</tr>
</tbody>
</table>
  - To identify quantities of current test strip prescribed on repeat  
  - To identify frequency of prescribing test strips  
  - To identify that HbA1c has been measured and recorded within the last 9 months  
  - To identify brand of test strip prescribed on repeat  
  - To ensure that SMBG is appropriate  
  - To determine if BGTS is cost-effective. |
| **Patient identification** |  
  - Search for all type 2 diabetes patients currently prescribed BGTS. |
| **Data collection** |  
  - Indication for SMBG as noted in patient records  
  - Number of BGTS brands on current repeat medication  
  - Quantity of strips issued per prescription and frequency of requests  
  - HbA1c levels recorded in relation to individual targets. |
| **Analysis** |  
  - Percentage of patients inappropriately monitoring on above criteria.  
  - Percentage of current repeats showing more than one brand of BGTS.  
  - Percentage of patients achieving HbA1c agreed target.  
  - Percentage of patients on cost-effective test strips (£10 / 50 strips or formulary choice) |
| **Proposed actions** |  
  - Produce a patient letter for all non-insulin treated type 2 diabetes informing them that test strips will not be routinely available on prescription and any request for test strips would have to go directly through the practice diabetes nurse.  
  - Where SMBG is deemed appropriate, the reason for this indication should be recorded in the patient’s notes. If monitoring is required for a limited period only (e.g. following a course of oral steroids) this should be clearly communicated to the patient and the duration of use should be documented in the notes.  
  - BGTS should only be included on repeat medication lists if ongoing use is necessary and ensure only one brand is listed.  
  - Implement a plan to switch patients to a cost-effective blood glucose meter.  
  - Where SMBG is deemed to be inappropriate or excessive, discuss appropriate monitoring and re-educate patient on how to manage their condition effectively.  
  - Review treatment plan and lifestyle choices for patients not achieving their target HbA1c levels.  
  - Implement a practice policy for SMBG in T2DM and review practice regularly. |

Appendix 1 references

1. NICE Clinical Guidelines CG87. Type 2 diabetes: The management of type 2 diabetes.  

2. At a glance guide to the current Medical Standards of Fitness to Drive.  