DIABETES UK

POSITION STATEMENT

Self-monitoring of blood glucose (SMBG) for adults with Type 2 diabetes

Last reviewed: March 2017

KEY POINTS:

- Self-monitoring of blood glucose levels (SMBG) in people with Type 2 diabetes on insulin and medication that carries a risk of hypoglycaemia should be regarded as an integral part of treatment and should not be restricted.
- For people not in these treatment groups, SMBG should be available based on an individual assessment of need. Arbitrary withdrawal of SMBG in those who clearly benefit from doing so should not occur. People have the right to ask for a review and challenge these decisions if necessary.
- DVLA guidance requires some treatment groups to carry out testing for licensing and safety reasons.
- Use and frequency of testing, choice of meter and target blood glucose should be agreed between the person with diabetes and their healthcare team. Local medicines management policies should allow sufficient choice and flexibility for individual circumstances to be taken into account.
- Structured assessment of self-monitoring skills, the equipment used, and the quality and use made of the results obtained should be performed at least annually, or more frequently according to need.
- SMBG should be integrated with a care package, accompanied by education, and should enable the individual to either interpret results and adjust treatment accordingly or inform their healthcare team.

Introduction

Self-monitoring of blood glucose (SMBG) is an effective tool to support the self-management of blood glucose levels in people with Type 2 diabetes using insulin therapy and medication that carries a risk of hypoglycaemia.

Tight glycaemic control in adults with Type 2 diabetes is associated with a significant reduction in serious long term diabetes-related complications (1). SMBG helps people using insulin and medication that carries a risk of hypoglycaemia to achieve tight glycaemic control and identify low blood glucose levels before the development of severe hypoglycaemia.

The exact role of SMBG in glycaemic control for

people with Type 2 diabetes who are not on insulin or other medication that carries a risk of hypoglycaemia is less clear, particularly in the long-term (2). However, people with Type 2 diabetes report self-monitoring improves their quality of life and that SMBG supports them to self-manage their diabetes.

Evidence base for offering SMBG

There is conflicting evidence regarding the benefits of SMBG for people with Type 2 diabetes.

In 2009, an NHS Diabetes Working Group examined the role of SMBG in people with Type 2 diabetes (3) and found that:

- SMBG helped some people to self-manage their diabetes by informing them of the impact of any lifestyle changes;
- SMBG can provide reassurance, empower people to take control of their healthcare, and understand the relationship between their feelings and their blood glucose readings;
- There were notable reductions in HbA1c for people with Type 2 diabetes managed by oral medication or through lifestyle changes when SMBG was used as part of a structured education plan.

Conversely, a 2012 systematic review (2) identified a number of issues:

- In some individuals, SMBG is associated with negative psychological outcomes, including depression. However, it has been acknowledged that this could be because the person with diabetes was not given the education to interpret and therefore be empowered by the data.
- There was a lack of interest in the results from healthcare professionals. However, this may be because of a mismatch in expectations, with professionals expecting people with diabetes to use SMBG to self-manage and people with diabetes expecting the professional the use the result to adjust treatment.
- Failue to act on results was common, though this may be linked to a lack of education in how to interpret and use the results. Unless offered education by healthcare professionals, individuals who purchase blood glucose meters from pharmacists or stores may only receive basic instuctions with no guidance on how to integrate the information into their care.
- The reduction of HbA1c was not found to be clinically signicant. However, there is a lack of agreement about what represents a clinically signicant amount.

A recent article in the British Journal of Healthcare Management identifies clinical studies on either side of the debate about routinely offering SMBG to people with Type 2 diabetes whose diabetes is controlled with oral anti-hypoglycaemic agents (4).

It concludes that SMBG is an empowering tool in all cases of diabetes but, to be effective, it should be used as an adjunct to HbA1c and in conjunction with education.

Testing for a defined period may be an appropriate way of informing people with diabetes about the effect of treatment and management on their blood glucose levels to inform an assessment of their treatment plan. Care must be taken in how this is managed so as not to raise expectations that this will become a standard part of their treatment.

National guidelines

England, Wales and Northern Ireland

The NICE guidance for adults with Type 2 diabetes (5) recommends that healthcare professionals do not routinely offer SMBG to adults with Type 2 diabetes unless:

- The person is on insulin;
- There is evidence of hypoglycaemic episodes;
- The person is on oral medication that may increase risk of hypoglycaemia when diriving or operating machinery, or
- The person is pregnant, or planning to become pregnant.

However, it has been suggested (4) that this stipulation is likely influenced by increasing cost pressures. It is worth noting that the American

Diabetes Association has advocated SMBG for all those with Type 2 diabetes.

NICE further recommends:

- considering short-term SMBG when starting treatment with oral or intravenous corticosterois or to confirm hypoglycaemia;
- reviewing treatment during acute intercurrent illness as necessary, due to risk of worsening hyperglycaemia;
- a structured assessment of people who use SMBG at least annually.

Scotland

SIGN do not recommend routine SMBG in people with Type 2 diabetes who are using oral glucose-lowering drugs, with the exception of sulphonylureas (6).

SMBG may be considered for people not using insulin in certain circumstances:

- increased risk of hypoglycaemia
- acute illness
- undergoing significant changes in pharmacotherapy or fasting
- unstable or poor glycaemic control (HbA1c>8.0%)
- pregnancy or when planning pregnancy

Choice of meter

A choice of blood glucose meters and monitoring equipment should be available based on individual need in relation to acceptability and ease of use (5).

Healthcare professionals should ensure prescribed meters are compliant with ISO15197 standards for blood glucose meters and therefore CE certified (7).

Pregnancy

NICE have published a specific guideline about SMBG for women who are or are planning to become pregnant (8). Recommendations include:

- offering women with diabetes who are planning to become pregnant a meter for SMBG;
- more frequent SMBG in the first trimester to achieve optimal blood glucose control and reduce risk of miscarriage.

Driving

The DVLA requires insulin treated drivers to carry out testing for licensing and safety reasons (9).

People who hold licenses to drive cars and motorcycles (Group 1) should monitor blood glucose no more than 2 hours before start of driving and every 2 hours whilst driving, with more frequent self-monitoring if they have a greater risk of hypoglycaemia.

In addition, **people who hold licenses to drive buses and lorries (Group 2)** should also conduct regular blood glucose testing at least twice daily including on days of not driving. They will need to show 3 months of consecutive blood glucose readings at their annual or biannual assessment to review their license, so they will need to use one or more glucose meters with memory functions.

People in either license group who are managed by tablets carrying hypoglycaemic risks, which include sulphonylureas and glinides, should be offered access to SMBG which enables them to meet these requirements.

Current situation in the UK

We have conducted three surveys since 2013 (10, 11, 12) to monitor restrictions and assess the impact on people with diabetes. Each found that access to blood glucose test strips for people with Type 2 diabetes is subject to geographical variation and not always based on need.

In our most recent survey, conducted from March to May 2016, 27 per cent of the 1,000 respondents said that they had, in the past 12 months, been refused a prescription for blood glucose test strips or had the number of test strips on their prescription restricted. Of these, 48 per cent have Type 2 diabetes.

It seems likely financial constraints are leading to restrictions on the numbers of test strips being prescribed and reduction of choice on meters. Although we recognise the increasing financial challenges facing the NHS, we are concerned that cost should not become the leading criteria

on which prescribing decisions are made.

We asked people with Type 2 diabetes in this survey what reasons they were given for the restriction of test strips on their prescription.

Test strip restriction

Budget constraints or "excessive testing" were often given for the reason a restriction was occurring:

"A blanket limit on the number of test strips available to diabetics across the CCG"

People stated they had to ration the number of times they tested and had to make difficult decisions about when to test or not. Many people with diabetes had bought or considered buying test strips from pharmacies or online, where the quality cannot be guaranteed.

As in past surveys, respondents reported that this had an impact on their diabetes control and state of mind:

"Increased stress, increasing blood sugar levels…"

In the survey, focus groups, and personal correspondence, people have commented on how testing helped them stay in control of their diet and motivated them to follow a healthy lifestyle and effectively manage their weight:

"Difficult to manage my diet and fitness to ensure I'm reducing my sugar levels"

Worryingly, the DVLA guidance is not always being considered by GPs when prescribing test strips. Too frequently respondents commented that they were being provided with too few test strips or even none at all to meet DVLA legal requirements:

"Testing not required despite being a driver on gliclizide. Practice nurse totally unaware of DVLA and testing requirements. Strips reinstated by GP"

Reception staff and Practice Managers are reportedly sometimes preventing people with Type 2 diabetes having access to the number of test strips they need:

"…had to get my diabetes specialist nurse to ring my GP receptionist who was the one who questioned my use of strips on several occasions"

Meter restriction

In addition, 66 per cent of respondents were given no choice of blood glucose meter. Of these, one in four were not happy with the meter provided. For instance, the meter was too large to easily carry around or didn't upload the data to a computer.

Commentary

Rationing blood glucose test strips can be unsafe and can put the health of people with Type 2 diabetes at risk. It is an unacceptable example of short-termism, storing up long-term costs for the NHS if more diabetes complications, which are extremely expensive to treat, result as a lack of glycaemic control. Less than a quarter of the current NHS expenditure correlates to the ongoing management of diabetes, with the overwhelming majority being spent on treating diabetes complications (13).

Adults with Type 2 diabetes must be supported to effectively manage their diabetes and be provided with the necessary tools and technologies to do this. Any decision made should involve the person with diabetes in a joint decision making process and ensure their needs are met. Individuals have the right to challenge any decision and should be supported to do so.

Recommendations

These recommendations have been developed taking into account the views of people with Type 2 diabetes gathered in our most recent survey, previous focus group work and consultation with our Council of Healthcare Professionals and Council of People with Diabetes.

Healthcare professionals

Healthcare professionals should work in a supportive care planning partnership together with the person with diabetes, to assess whether SMBG is appropriate. This involves carrying out an individual assessment, discussing options and making an agreed/joint decision based on individual needs and circumstances to ensure resources are adequately used. Consultation should address use and frequency of testing, and agree target blood glucose level.

DIABETES UK
CARE. CONNECT. CAMPAIGN.

Healthcare professionals should encourage those who treat their diabetes with insulin or medication that carries a hypoglycaemic risk to monitor for safety reasons.

Healthcare professionals should support people who are motivated by SMBG and use the information to maximise the effect of lifestyle and medication in self-management.

SMBG should be integrated within a care package and accompanied by education which includes maintaining good blood glucose control. Where a person with diabetes is prepared to self fund SMBG, this should be considered as part of their care package, with similar access given to structured education and assessment.

Healthcare professionals should be trained to assess the use of SMBG in people with Type 2 diabetes so they can offer SMBG to support a lifestyle change and self-adjustment of medication, or support withdrawal for those who don't find it of any benefit.

Healthcare professionals should ensure that they provide appropriate education concerning SMBG, including timely reviews. Structured assessment of self-monitoring of skills, the quality and use made of the results obtained and the equipment used should be performed annually, or more frequently according to need, and reinforced where appropriate.

For those people not benefitting from SMBG, or who do not wish to continue, consideration should be given to having their HbA1c monitored more than once a year. All people with diabetes should have their HbA1c measured annually as a minimum. The frequency should be determined on a case by case basis.

Healthcare professionals need to be familiar with DVLA licensing guidance and help facilitate the recommendations.

Healthcare professionals should not carry out arbitrary withdrawal of SMBG in those individuals who do not take insulin or hypoglycaemic medication but clearly benefit from measuring their glucose.

Healthcare professionals should support people with Type 2 diabetes to address any issues they are having with SMBG before requesting another repeat prescription. This will enable a decision to be made as to whether it is appropriate to continue with SMBG or to stop. However, before a decision is made it is important to establish if the person with diabetes has been given adequate education around SMBG to effectively self-manage their diabetes.

People with diabetes also have a responsibility to ensure resources are used wisely and could be encouraged to regularly review the benefit of SMBG to their self-management. They could consider how they are using the results, their goals for SMBG, and whether they are testing appropriately, e.g. the right number of times.

Prescribers and those who commission healthcare services

Access to self-monitoring for people with Type 2 diabetes should be based on an individual assessment. It should be informed by NICE guidance and any local policies, but ultimately decided in a joint decision making process between the person with diabetes and their clinician to ensure maximum benefit and effective use.

People have individual needs so flexibility is paramount. Local medicines management policies should only be used as a guide, and should allow sufficient choice to reflect individual circumstances.

Commissioners need to examine their approach to the availability of blood glucose testing equipment (meters and strips) to increase value but ensure that people with Type 2 diabetes can choose an appropriate meter for their own needs.

Greater provision of education which includes SMBG should be available for people with diabetes so they can use the equipment effectively.

GP policies

When GPs are prescribing test strips, allowance should be made for increased need, for example, through illness or holidays, to prevent people from having to undertake repeated trips to their doctor and pharmacists for repeat prescriptions.

GP reception staff and Practice Managers should have training in the basic needs of

people with diabetes in order that they can respond to prescription requests appropriately.

Further information

If adults with Type 2 diabetes or their carers are experiencing restriction on test strips and blood glucose meters they can contact the following for support:

- Diabetes UK Advocacy Service

The Diabetes UK advocacy service is here for all people with diabetes, their family, friends and carers to help with issues connected to diabetes. We give you the information and support you need to make sure you know your rights, understand your options and help you get your voice heard.

www.diabetes.org.uk/How_we_help/Advocacy/

- Diabetes UK helpline

Call: 0345 123 2399, Monday to Friday, 9am–7pm

Or email helpline@diabetes.org.uk

If you're in Scotland:

Call: 0141 212 8710, Monday to Friday, 9am–7pm.

Email: helpline.scotland@diabetes.org.uk

Find out more about Helpline Scotland.

References

(1) UKPDS UK Prospective Diabetes Study Group: Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). Lancet 352:837–853, 1998.

(2) Self-monitoring of blood glucose in patients with type 2 diabetes mellitus who are not using insulin (review). Malunda UL et al. Cochrane Database Syst Rev.2012.Jan 18; 1:CD005060. Pub 3. https://www.ncbi.nlm.nih.gov/pubmed/22258959

(3) Self monitoring of blood glucose in non-insulin-treated Type 2 diabetes: A report prepared by an NHS Diabetes Working Group. 2009. http://webarchive.nationalarchives.gov.uk/20130513172055/http:/www.diabetes.nhs.uk/document.php?o=238

(4) To test of not to test? Blood glucose monitoring in type 2 diabetes mellitus. Meetoo DD, Wong L. British Journal of Healthcare Management 23(3):96-101, 2017. http://www.magonlinelibrary.com/doi/10.12968/bjhc.2017.23.3.96

(5) NICE NG28, Type 2 diabetes in adults: management, December 2015.Updated July 2016. https://www.nice.org.uk/guidance/ng28/chapter/1-Recommendations#self-monitoring-of-blood-glucose

(6) 116 Management of diabetes: A national clinical guideline. SIGN; Health Improvement Scotland. March 2010. Updated September 2013. http://www.sign.ac.uk/pdf/sign116.pdf

(7) In vitro diagnostic test systems – Requirments for blood-glucose monitoring systems for self-testing in managing diabetes mellitus www.iso.org/iso/catalogue_detail?csnumber=54976

(8) NICE NG3, Diabetes in pregnancy: management from preconception to the postnatal period. February 2015. Updated August 2015. https://www.nice.org.uk/guidance/ng3

(9) Assessing Fitness to drive: a guide for medical professionals. DVLA. March 2016. Last updated March 2017. https://www.gov.uk/government/publications/assessing-fitness-to-drive-a-guide-for-medical-professionals

(10) Access to test strip report, Diabetes UK, 2013.

(11) Access to test strip report, Diabetes UK, 2014.

(12) Test strip and meter survey, Diabetes UK, 2016.

(13) Estimating the current and future costs of Type 1 and Type 2 diabetes in the UK, including direct health costs and indirect societal and productivity costs. Hex N, Bartlett C, Wright D, Taylor M, Varley D. Diabet Med. 2012.Jul; 29(7):855-62.

DIABETES UK
CARE. CONNECT. CAMPAIGN.

https://jdrf.org.uk/wp-content/uploads/2015/10/Hex-and-Bartlett.pdf

DIABETES UK
CARE. CONNECT. CAMPAIGN.