

14 November 2012

PBS Post-Market
Department of Health and Ageing
MDP 900
GPO Box 9848
CANBERRA ACT 2601

Dear Sir/Madam

Re: Review of Blood Glucose Test Strips

Thank you for giving the Royal Australian College of General Practitioners (RACGP) the opportunity to provide feedback on the review of the Blood Glucose Test Strips. The RACGP, through its National Faculty of Specific Interests Diabetes Network, has provided the below feedback for your consideration.

General Practice Overview on the review of Blood Glucose Test Strips

1. Clinical implementation of (Self-monitoring of blood glucose) SMBG in noninsulin using people with type 2 diabetes (if measured by linkage to significant improvement in HbA1c) is now seen to be controversial by published recent research.
2. Clinical utility of SMBG may assist general practitioner decision making in a small number of type 2 diabetes noninsulin requiring patients with higher hypoglycaemic risks, including but not limited to those patients using sulphonylurea agents, with renal impairment or chronic kidney disease, and the elderly.
3. General practice guidelines need to take into consideration current evidence and note that changes in treatment algorithms may lead to confusion in advising and/or prescribing glucose testing strips for SMBG.
4. Educational opportunities exist for general practice in appropriate decision making and the use of SMBG in clinical settings.

1. Clinical implementation of SMBG in non-insulin using people with type 2 diabetes, if measured by linkage to significant improvement in HbA1c is now seen to be controversial by recently published research.

Published studies, including systematic reviews and meta-analyses^{1,2,3,4,5} (NHMRC Evidence level I), question the clinical utility and economic benefit from SMBG in people with non-insulin requiring type 2 diabetes. Though positive changes correlating the use of SMBG with lowering of HbA1c, the effect size was of the order of < 0.5%, which authors have suggested makes any such interventions of minimal clinical utility and possibly not cost effective¹. Based upon UKPDS data,¹⁷ this would be equivalent to an estimated 18.5%, 10.5%, 7% and 7% calculated relative reduction for microvascular disease, diabetes related death, myocardial infarction, and all cause mortality respectively (NHMRC Level III-2).¹⁷ A minimal effect was seen on general well being and health related quality of life but, balanced against this was a more definite effect in the first year of newly diagnosed diabetes¹

2. Clinical utility of SMBG may assist general practitioner decision making in small numbers of type 2 diabetes noninsulin requiring patients with higher hypoglycaemic risks, including but not limited to those patients using sulphonylurea agents, with renal impairment or chronic kidney disease, and the elderly.

A counter argument to the evidence pointing against SMBG mentioned above, is that HbA1c does not provide data in 'realtime' clinical situations,⁶ addressing "fasting, pre-prandial, and postprandial hyperglycemia; detect glycemic excursions; identify and assist in monitoring resolution of hypoglycemia; and provide immediate feedback to patients about the effects of food choices, activity, and medication on glycemic control."¹⁰

Is this clinically relevant?

- **Quality of life** - (NHMRC Level I) The recent Cochrane analysis by Malanda UL et al, clearly identified a lack of effect on quality of life measures.¹
- **Structured SMBG testing versus adhoc or other testing methods** (NHMRC Level III-2)
Recent studies have discussed the the value of SMBG is related to the clinical utilization of results by the health professionals as described as "intensity" of application of the SMBG.¹⁸ Other papers have expanded these concepts to exploration of the benefits of structured SMBG to guide clinical decision making with demonstrated effects on lowering HbA1c levels.^{19,20} one of these studies support improved and targeted SMBG may improve clinical utilisation plus improvements in several other parameters, including clinicians' intensification of treatment; depression and diabetes-related distress; and patient self-efficacy and autonomous motivation in managing their diabetes.²⁰ It remains undetermined whether these strategies are fully applicable in Australian General Practice with need for further research and incorporation into management guidelines.
- **Hypoglycaemia** - A Canadian analysis (NHMRC Level III1) with subset detailed analysis revealed that SMBG does not reduce the risk of hypoglycaemia² (which is linked to choice of pharmacotherapeutics and lifestyle issues not just SMBG), but other authors suggest that SMBG may assist the reduction in symptomatic hypoglycaemia in patients taking sulphonylureas.¹¹ **Comparative** rates of hypoglycaemia per year in observational studies (NHMRC Level III-2), had been shown to be equivalent between those on sulphonylurea drugs and those patients using insulin for a duration of less than 2 years.¹²

With respect to Sulphonylureas – published data varies as to the significant incidence of hypoglycaemia ranging from 0.8% to 1.2% annual rates.^{13,14} The clinical effects are observed less commonly in glicazide, than longer acting sulphonylureas, however rates increase with combination therapy including Glucagon Like Peptide1 agents combined with sulphonylureas.¹³ Other oral agents, such as metformin and Dipeptidyl Peptidase-4 inhibitors, have a low rate of hypoglycaemia in monotherapy but again, combination therapy with sulphonylurea agents, elevate hypoglycaemia compared to monotherapy.

Though the overall incidence of hypoglycaemia may be lower than those with advanced disease on insulin regimes, considering the NDSS driving guidelines alone, there may be cases that will now be unrecognized (or not relevantly measured), which carry potential medical, legal and health risks as exemplified:

- Driving with a blood glucose less than 5 mmol/L and, or users of heavy equipment/transport on sulphonylurea agents, or those in occupations with hypoglycaemic risks
- Sick day management where level of hyperglycaemia is also a clinically useful measure
- Advancing renal impairment and CKD where rates of hypoglycaemia can double normal expected levels.¹⁵
- The elderly are also groups that have been identified at especial risk of hypoglycaemic complications.¹⁶
- Type 2 diabetes patients on oral hypoglycaemics, with abnormal glycaemic responses to surgery, and those doing strenuous exercise.

Specific consideration for availability of testing in gestational diabetes as per the ADIPS Consensus Guidelines for the Testing and Diagnosis of Gestational Diabetes Mellitus in Australia ²¹ – where SMBG is considered helpful to guide therapy as included in the guidelines: “In general at least 2 elevated levels, at a given testing time, in 1 week, after consideration of dietary factors, should be a prompt to consider additional therapy” ²¹

3. General practice guidelines need to be take into consideration current evidence and note that changes in treatment algorithms may lead to confusion in advising and or prescribing glucose testing strips for SMBG.

4. Educational opportunities exist for general practice in appropriate decision-making and the use of SMBG in clinical settings.

At this present time, the availability of glucose monitoring strips on the National Diabetes Services Scheme (NDSS) or Pharmaceutical Benefits Scheme (PBS) combined with the following General Practice Guidelines, have led to general practitioners recommending the use of SMBG in many patients with type 2 diabetes, independent of therapy used.

GUIDELINE SUMMARY

The NHMRC type 2 diabetes guidelines ⁶ state that:

- “Self monitoring of blood glucose (SMBG) should be considered in all people with type 2 diabetes, but the decision to perform SMBG and the frequency and timing of testing, should be individualised. (Grade C).
- “While HbA1c provides a measure of long-term blood glucose control and reliably predicts future complications of diabetes, it does not provide information or feedback on real-time blood glucose levels, which are required to make short term adjustments to therapy.” This observation does not reference class or individual hypoglycaemic agent used in the study, and further states that the SMBG should allow “realtime measurements of blood glucose readings, allowing confirmation of hypoglycaemia or hyperglycaemia and allowing action to be taken to correct these.”

RACGP Diabetes Australia type 2 diabetes management guidelines ⁷ states:

- “Blood glucose monitoring is recommended for those on agents that can cause hypoglycaemia (eg. sulphonylureas and insulin). A balance should be reached considering the patient’s age, need for ideal control, and ensuring long-term cooperation. Despite some recent controversial studies, the current view is that blood glucose monitoring is recommended.”

Diabetes Australia type diabetes 2 management guidelines 2012/13 ⁸ recommend:

- Self-monitoring for those on agents that can cause hypoglycaemia
- Home blood glucose monitoring is the method of choice in most patients
- The method and frequency of testing need to reflect therapeutic aims.

National Diabetes Services Scheme (NDSS) Diabetes and Driving. Aug 2011 guidelines ⁹ recommend:

- Capillary blood glucose testing prior to driving in all persons with diabetes with a level > 5 mmol/l
<http://www.ndss.com.au/Documents/NDSS/Resources/DrivingDiabetes/DrivingandDiabetesBooklet.pdf>

These Australian General Practice guidelines may now create confusion, arising from the contrast between Australian General Practice clinical recommendations and the aforementioned recent meta-analysis research. The Pharmaceutical Benefits Scheme review may help align SMBG to best practice and prevent over-utilisation of this clinical method, resulting in government cost saving on resources that would be better placed in areas of proven benefit or need for people with type 2 diabetes.

Should access to SMBG be changed, it would seem prudent (independent of any cost savings) to:

- Expand education of health providers and patients about the clinical scenarios outlined above, including hypoglycaemia and its risks in the presence of continuing use of sulphonylureas alone or in combination with other hypoglycaemics or interacting drugs, such as sulpha based or tetracycline antibiotics.
- Reassess General Practice guidelines on SMBG based upon the outcomes
- Target education programmes on the appropriate evidence-based utility of SMBG in the patients relevant to this review. This would be focussed within both General Practice, allied health professionals, and within the community.
- Review the evidence to support the clinical utility of pharmacy based diabetes programmes where SMBG is integral to clinical assessment like the Diabetes MedsCheck service²²

The RACGP and its Diabetes Network would be happy to be consulted about any such program for General Practice, including collaborating with other independent agencies such as the National Prescribing Service, Diabetes Australia or the NDSS.

CONCLUSION

It is appropriate to reconsider the role of SMBG in the management of type 2 diabetes. In Australia, we are uniquely supported by the NDSS, which allows provision of glucose testing strips that up to now have assisted the implementation of SMBG as outlined in clinical practice guidelines. If the evidence is accepted that people not on insulin may be recommended not to routinely test because of a failure of adequate outcome data and because SMBG has not been shown to reduce the general risk of hypoglycaemia, then clearly a need arises for:

- Expanded education programs on changing treatment algorithms to accommodate these evidence based changes.
- Clinical access should continue for SMBG testing, where clinically appropriate (in non-insulin requiring type 2 diabetes), possibly through the current PBS script provisions. This would allow for general practice management of those patients with type 2 diabetes in the detection of unrecognised hypoglycaemic events, and the management of severe hypoglycaemia in small, but significant numbers of patients NOT using insulin – particularly with suphonylurea agents as outlined above.

I again thank you for the opportunity to provide feedback and encourage you to contact Dr Gary Deed via email at drdeed@mediwell.com.au should you wish to discuss this submission further.

Yours sincerely,



Dr Liz Marles
President



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NHMRC Levels of Evidence

Table 1
Designations of levels of evidence [1]

Level of evidence	Study design
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
II	Evidence obtained from at least one properly-designed randomised controlled trial
III-1	Evidence obtained from well-designed pseudorandomised controlled trials (alternate allocation or some other method)
III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case-control studies, or interrupted time series with a control group
III-3	Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group
IV	Evidence obtained from case series, either post-test or pre-test/post-test

Merlin *et al.* *BMC Medical Research Methodology* 2009 **9**:34 doi:10.1186/1471-2288-9-34