

# Self monitoring of blood glucose


## for people with non-insulin treated type 2 diabetes: An update

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### Key Concepts

- For people with non-insulin treated type 2 diabetes, self-monitoring of blood glucose (SMBG) appears to have little or no effect on glycaemic control
- SMBG is associated with higher costs and lower quality of life
- HbA1c remains the most useful tool for assessing glycaemic control in people with non-insulin treated type 2 diabetes

SELF MONITORING OF BLOOD GLUCOSE (SMBG) for people who have diabetes treated with insulin is necessary. The role of SMBG for people with type 2 diabetes who are not treated with insulin is less clear. A recent Best Practice Journal article recommended a pragmatic approach to the use of SMBG.

 See BPJ 10, December 2007, “Self monitoring in diabetes”

The decision to use SMBG comes down to an individual patient level and relies upon the doctor and patient reaching agreement on the best course of action.– *BPJ10*

Evidence from two new research trials has recently been published in the BMJ.<sup>1,2</sup> BMJ editorial comment concludes that SMBG “may not be clinically beneficial or cost effective and may reduce quality of life.”<sup>3</sup> Previous randomised trials which have often been limited to patients with established diabetes, have rarely considered quality of life and the results have been conflicting.<sup>1</sup>

This is not a new debate. Most of the controversy revolves around the clinical benefit of SMBG versus the escalating costs associated with it. There has also been concern from people with diabetes that any restrictions on SMBG would limit their freedom to manage their own illness.<sup>3</sup>

### The ESMON study

The ESMON study (Efficacy of self monitoring of blood glucose in patients with newly diagnosed type 2 diabetes) was a prospective randomised controlled trial comparing self monitoring to a control group with no monitoring.<sup>1</sup>

The conclusion of the study was that SMBG in people with newly diagnosed type 2 diabetes gave no advantage in improvement in glycaemic control compared to those who did not monitor. Both groups were able to reduce HbA1c to satisfactory levels. In addition those who used SMBG were more depressed at the conclusion of the trial.

Study participants were aged less than 70, with newly diagnosed type 2 diabetes, referred to outpatient diabetic

clinics in two centres in Ireland and were not using insulin. The 184 participants were randomised to two groups – self monitoring for one year or no monitoring at all. Both groups participated in an identical education programme which included input from medical staff, diabetic nurse practitioners, dieticians and podiatrists. Three monthly visits included a review of all aspects of diabetic care, HbA1c, lipids and electrolytes. Questionnaires about treatment satisfaction, attitude (control and seriousness of diabetes, implications and impact of diabetes) and wellbeing were completed at these visits. The wellbeing questionnaire considered four subcategories – depression, anxiety, energy and positive wellbeing and an overall total score relating to general wellbeing.

The self monitoring group were requested to take four fasting and four postprandial readings every week. Throughout the study they were given information on the appropriate response to readings that were too high or too low.

### There was no significant difference in HbA1c control between the two groups.

- HbA1c results reduced from 8.8% and 8.6% in self monitoring and control groups respectively, to 6.9% for both groups after one year.
- There were no significant differences between the groups for BMI, the use of oral hypoglycaemics or the reported incidence of hypoglycaemia.

### Participants in the self monitoring group were more depressed.


- Participants in the self monitoring group scored 6% higher on the depression questionnaire at 12 months (indicating a more depressed state). There was also a trend towards increased anxiety in this group.
- There were no significant differences between the groups on any of the other subcategories of the wellbeing questionnaire or in the diabetes attitude questionnaire.

## The DiGEM study

The Diabetes Glycaemic Education and Monitoring (DiGEM) trial concluded that SMBG had little or no effect on blood glucose control over the medium term for people with non-insulin treated type 2 diabetes.<sup>4</sup> An economic analysis of data from the DiGEM trial to assess the cost effectiveness of SMBG in people with non-insulin treated type 2 diabetes has now been completed.<sup>2</sup>

The outcome measures used were the actual cost of healthcare and quality adjusted life years. SMBG was associated with higher costs and lower quality of life. Reduced quality of life was due to significant increases in both anxiety and depression between baseline assessments and 12 month follow up.

Taking into consideration both DiGEM study analyses, it was concluded that SMBG in non-insulin treated type 2 diabetes is “unlikely to be cost effective and should not be recommended for routine use”.<sup>2</sup>

 See BPJ 10, December 2007, “Self monitoring in diabetes” for more information about the DiGEM trial.

## The ongoing debate

The reaction to the publication of these papers in the BMJ has varied. Opponents of the studies believe that any short term cost savings may not be seen in the long term if by not monitoring, an increase in complications and subsequent higher health costs results. The increased rate of depression for people with type 2 diabetes who are self monitoring, is also questioned. It is suggested that there may be many factors leading to feelings of anxiety and depression and that it is unlikely that the actual self monitoring alone is the cause.

## What does this mean for New Zealand GPs?

New Zealand dispensing data from 2007 shows that patients using only oral medications for diabetes were dispensed on average 250 test strips for the year. Patients who did not receive any diabetes medications (diet controlled) were dispensed on average 130 test strips for the year. We have to ask the question why? This represents a significant cost for what these studies suggest is of little or no benefit. We recommend GPs review their prescribing of test strips for patients with non-insulin treated type 2 diabetes to reduce inappropriate use.

HbA1c remains the most useful tool that GPs have for assessment of glycaemic control in people with non-insulin treated type 2 diabetes.

If SMBG is used, GPs can emphasise that the results are not a judgement of the patients self-management efforts but a guide to appropriate lifestyle changes, which may reduce any possible feelings of anxiety and depression.<sup>5</sup>

## References

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