INAHTA Brief

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Title Self-monitoring of blood glucose (SMBG) for adults with type 2 diabetes not treated with insulin

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Aim

The objectives of the present health technology assessment (HTA) report are to (1) summarize the evidence on efficacy, safety and cost effectiveness of self-monitoring of blood glucose (SMBG) for adults with type 2 diabetes not treated with insulin, (2) analyze social aspects related to use of SMBG, and (3) examine pharmacoepidemiological aspects of using SMBG test strips in Québec.

Conclusions and results

Considering the examinedevidence, we have obtained the following findings with regards to SMBG in type 2 diabetes not treated with insulin:

- Clinical practice guidelines and the recent scientific literature recognize the vital contribution of diabetes self-management education, which is viewed as a necessary requirement for the optimal use of SMBG.
- Despite the association between SMBG and short-term improvement in some clinical indicators including HbA1c level, detection of hypoglycemic episodes, and medium-term decrease in morbidity, frequent use of this tool may cause adverse effects, especially depression and anxiety.
- Although no firm conclusions could be formulated on the balance between the risks and benefits of SMBG for most of the target population, some subgroups were identified that could benefit more from SMBG than others. These include, in particular, adults with poorly controlled blood glucose levels, adults who have been newly diagnosed with diabetes, and adults treated with antidiabetic agents with the potential to cause hypoglycemia. As a result, an individualized approach to use of SMBG is recommended rather than a strategy based on general clinical advice addressed to all, regardless of the patient's particular condition.
- The available evidence suggests that the frequency of SMBG use should not exceed one blood glucose test per day, taking into account the balance between the benefits and risks of SMBG in terms of both clinical and psychosocial indicators.

Methods

A systematic review was performed to evaluate efficacy, safety and cost effectiveness of SMBG. Several databases were searched, including Medline (PubMed), EMBASE (Ovid), The Cochrane Library, CIHAHL and PsycINFO. The studies selected were systematic reviews, HTA reports and guidelines published between 2007 and 2012 that addressed using SMBG versus no SMBG, or the use of SMBG at different frequencies, by adults with type 2 diabetes not treated with insulin. For social and ethical aspects related to SMBG in the target population, a narrative review of articles retrieved from our search and published between 2003 and 2012 was performed. In addition, a grey literature search was carried out on the Web, and the references lists of all publications selected for analysis were examined. In parallel with these review processes, an analysis of pharmaco-epidemiological aspects of SMBG was conducted, using a historicalcohort study designed to provide an overview on use of SMBG test strips by people covered by the Québec Public Prescription Drug Insurance Plan (PPDIP). Four administrative databases from the Régie de l'assurance maladie du Québec (RAMQ) were consulted. Adescriptive quantitative data analysis was performed using SAS statistical software.

Further research/reviews required

The results presented in this HTA have helped inform the development of the optimal use guide for SMBG.

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