



## COMPUS Diabetes Project – Optimal Self-Monitoring of Blood Glucose

### Condition

Diabetes mellitus is a chronic disease characterized by the body's inability to produce enough insulin or to use it properly.

- Type 1 diabetes results when little or no insulin is made by the body.
- Type 2 diabetes results when the body makes insulin but is unable to use it effectively.

### Technology

Self-monitoring of blood glucose is used to collect information about glucose levels at various time points. This information can be used to inform appropriate action should levels be outside of the desired range.

Self-monitoring of blood glucose requires obtaining a small blood sample. The blood sample is applied to a reagent strip (or blood glucose test strip), and glucose concentration is determined by an electronic device (blood glucose monitor).

### Issue

Within diabetes management, optimal self-monitoring of blood glucose in patients with type 1, type 2, and gestational diabetes was identified by the Canadian Optimal Medication Prescribing and Utilization Service (COMPUS) Advisory Committee as a priority topic. Despite widespread use, there is uncertainty regarding the benefits of self-monitoring of blood glucose, especially in patients with type 2 diabetes not using insulin. Costs associated with self-monitoring of blood glucose are high and rising steadily because of the increasing prevalence of type 2 diabetes. Given the increasing number of people who are diagnosed with diabetes each year, health care providers, consumers, and policy-makers need evidence-based information on optimal self-monitoring of blood glucose.

### Methods

Research efforts evaluating the use and frequency of self-monitoring of blood glucose by patients with diabetes focused on:

- clinical evaluation (systematic reviews)
- economic evaluation (cost-effectiveness, cost-utility, and cost-consequence analyses)
- current utilization analysis
- current practice analysis
- identification of practice and knowledge gaps
- identification of barriers to optimal use.

The clinical and economic evaluations were used by the COMPUS Expert Review Committee (CERC) to generate recommendations for the optimal prescribing and use of self-monitoring of blood glucose.

### Results

- Optimal therapy recommendations were produced.
- Gaps were revealed between recommendations and current practice and use.
- Key messages were developed based on the gaps and recommendations.
- Intervention tools will encourage the evidence-based optimal prescribing and use of self-monitoring of blood glucose.

### Key Messages

1. For people with type 1 or type 2 diabetes using basal-bolus insulin regimens, self-monitoring of blood glucose should be individualized to guide adjustments in insulin therapy to achieve optimal blood glucose control.
2. In adults with type 2 diabetes using basal insulin, self-monitoring of blood glucose should be individualized, but testing of up to 14 times per week should be sufficient for most patients at most times.
3. Most adults with type 2 diabetes managed on oral antidiabetes drugs do not require routine self-monitoring of blood glucose. Periodic testing in selected patients (e.g., those with unstable glucose levels, acute illness, pharmacotherapy changes, risk of hypoglycemia with insulin secretagogues like glyburide) should be linked to specific patient actions (e.g., prevention or management of hypoglycemia, self-directed dosage adjustment).
4. Most adults with type 2 diabetes controlled by diet alone should not require routine self-monitoring of blood glucose.

This summary is based on the CADTH Optimal Therapy Reports on self-monitoring of blood glucose.

For complete Optimal Therapy Reports and Intervention Tools: [www.cadth.ca](http://www.cadth.ca)

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