

Routine self-monitoring of blood glucose

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Clinical question

What are the pros and cons of routine self-monitoring of blood glucose (SMBG) for patients with type 2 diabetes (T2D) who do not use insulin?

Evidence

- Recent meta-analyses¹⁻³ examined routine SMBG in patients with T2D who do not use insulin.
 - Largest analysis had 26 studies with 5373 patients.¹
 - With SMBG, HbA_{1c} levels improved 0.21% to 0.31%.¹⁻³
- Only 3 of the trials that compared SMBG with no SMBG were of high quality.¹
 - A 6-month trial (DINAMIC study)⁴ found
 - SMBG improved HbA_{1c} by 0.25% ($P=.0097$) and
 - no difference in weight, fasting glucose, or gliclazide dose.
 - Two 12-month trials (DiGEM⁵ and ESMON⁶) found no difference in HbA_{1c} levels, drug initiation, or weight.
- Self-monitoring of blood glucose has not been shown to attain a minimum clinically important difference in HbA_{1c} ($\geq 0.5\%$)⁷ in any meta-analysis or high-quality trial.

Context

- Important harms of routine SMBG include worsening of depression scores,^{6,8} reduced quality of life,^{8,9} and poor value for dollar^{9,10}; in patients with T2D who do not use insulin, there is also little to no clinical value.
 - This evidence does not apply to patients with T2D who use insulin, patients with T1D, or pregnant patients with gestational diabetes.
- Reasons for nonroutine blood glucose testing include
 - having symptoms of hypoglycemia or feeling unwell, as these symptoms often do not correlate well with actual blood sugar levels,¹¹
 - seeing the effects of changes to medication, diet, or lifestyle behaviour on sugar status, and
 - nonroutine circumstances (eg, driving).

Bottom line

Routine SMBG in patients with T2D who do not use insulin has no clinical benefits, is not cost-effective, and reduces the quality of life.

Implementation

The burden of SMBG should be minimized to the amount necessary to inform decision making. For patients with T2D who use only oral medications, routine SMBG rarely leads to changes in management, so discouraging this might benefit patients. Reactive SMBG (eg, in response to symptoms or specific circumstances)

remains appropriate. Patients taking medications that can cause hypoglycemia require education on recognizing and managing these symptoms. The National Diabetes Information Clearinghouse website has handouts available (<http://diabetes.niddk.nih.gov/dm/pubs/hypoglycemia/index.aspx>).

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The opinions expressed in Tools for Practice articles are those of the authors and do not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.

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