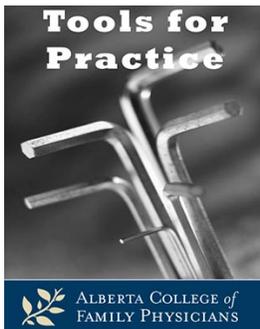


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**Reviewed: August 19, 2016**  
**Evidence Updated: New evidence**  
**Bottom Line: No change**  
**First Published: June 15, 2009**



## **Glucose Self-Monitoring in Type 2 Diabetics Not Using Insulin: Is it Bitter Sweet?**

**Clinical Question: What are the pros and cons of self-monitoring blood glucose for Type 2 diabetics not using insulin?**

**Bottom-line: Routine self-monitoring of blood glucose in Type 2 diabetics who do not use insulin has no clinical benefits, is not cost-effective, and may reduce quality of life.**

### **Evidence:**

- An individual-patient-level meta-analysis<sup>1</sup> of six Randomized Controlled Trials (RCTs) with 2,552 patients managing their Type 2 diabetes without insulin:
  - Mean HbA1c at baseline 8.3% (~1/4 had baseline HbA1c >9%).
  - Self-monitoring of blood glucose reduced HbA1c by:
    - 0.2% at six months.
    - 0.35% at one year.
    - This is below the minimum difference thought to be clinically important (>0.5%).<sup>2</sup>
- Systematic review<sup>3</sup> of 12 RCTs (3,259 patients) also found:
  - No difference in:
    - Overall wellbeing or quality of life.
    - Symptomatic hypoglycemic episodes.
  - HbA1c reduced by 0.3%.
- RCT of 1,024 patients with median baseline HbA1c 7.3%
  - Self-monitoring blood glucose weekly lowered HbA1c by only 0.12% compared to monitoring twice yearly.
- Despite highly-motivated patients and intensive follow-up in these RCTs, only one-third to one-half of patients adhered to the self-monitoring protocol over 12 months.<sup>4-7</sup>

### **Context:**

- Other systematic reviews<sup>8,9</sup> and RCTs with more intensively-structured self-monitoring plans<sup>7</sup> show similar, clinically insignificant differences.
- Trials thus far have been underpowered to evaluate the effect on clinical outcomes

- The achieved 0.2-0.35% HbA1c reduction would be expected to reduce clinical outcomes related to diabetes by a mere relative 3-8%.<sup>10</sup>
- Some RCTs<sup>6,11</sup> and supporting studies<sup>12</sup> show worsening depressive symptoms<sup>6,12</sup> and negative impact on quality of life<sup>11,12</sup> with self-monitoring.
- Regular self-monitoring is not cost-effective.<sup>11</sup>
- Eight public drug plans are spending \$247 million/year on test strips,<sup>13</sup> so the total Canadian expenditure would be far more.
- While regular self-monitoring in Type 2 diabetics not on insulin appears unnecessary, this population should still know how to test their blood glucose in case they have symptoms of hypoglycemia, they are feeling ill, or they are interested in seeing the impacts of lifestyle behaviors.

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