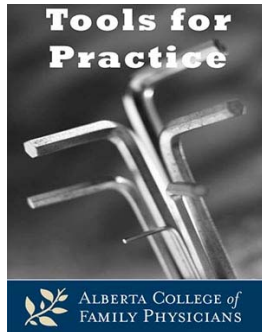


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February 16, 2010



Strategies for initiating insulin in Type 2 Diabetics

Clinical Question:

What is the optimal regimen for initiating insulin in type 2 diabetes?

Evidence

Four reasonably sized randomized controlled trials address regimes for initiating insulin in type 2 diabetes with poor glucose control.

- 4-T study¹: Followed 708 patients for 3 years comparing long-acting basal insulin once per day, biphasic mixed insulin twice a day or prandial insulin with meals.¹
 - HbA1c levels were not significantly different between the three groups
 - Significantly more patients in the basal and prandial groups attained HbA1c $\leq 7.0\%$ (63% and 67% vs 49% biphasic).
 - Basal insulin had statistically significant
 - Less weight gain (3.6kg) than prandial (6.4kg) or biphasic insulin (5.7kg),
 - Fewer symptomatic confirmed hypoglycemic events/person/yr (1.7 basal vs 3.0 biphasic, vs 5.7 prandial)
 - More patients requiring a second type of insulin (82% basal, 74% prandial and 68% biphasic)
 - Higher total dose of insulin (by weight).
- The 3 remaining studies (APOLLO², INITIATE³ and JDDM 11⁴) followed 160 to 418 patients (total 811) for 6 months to almost a year and compared basal to prandial², basal to biphasic³, biphasic to prandial⁴ insulin.
 - HbA1c was generally similar except biphasic improved HbA1c 0.5% more than basal in one study and got more people to a HbA1C $\leq 7.0\%$ ³
 - Basal insulin had significantly less hypoglycemia (than prandial² or biphasic³) and weight gain (than biphasic³).

Context

4-T study¹ is given priority because it is the largest, longest and compares the 3 options. Fortunately, the remaining studies²⁻⁴ generally supports those findings.

- INSIGHT⁵ found initiating basal insulin in poorly controlled type 2 diabetes resulted in significantly lower HbA1C than continued oral hypoglycemic agents.
 - Mean HbA1c and hypoglycemic rates were not different between patients of

- family practitioners or diabetes experts.⁶
- Specialists are five times more likely to initiate insulin than family practitioners.⁷

Bottom-line: In type 2 diabetes poorly controlled with oral agents, initiating basal insulin results in similar HbA1c reductions compared to prandial or biphasic insulin and may cause less weight gain and hypoglycemia. Family practitioners who start insulin are as effective as specialists.

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1. [N Engl J Med 2009;361:1736-47.](#)
2. [Lancet 2008; 371\(9640\): 1073-84.](#)
3. [Diabetes Care 2005; 28 \(2\): 260-5.](#)
4. [Diabetes Res Clin Pract. 2008;79\(1\):171-6.](#)
5. [Diabet Med 2006;23:736-42.](#)
6. [Can Fam Physician, April 2008; 54: 550 - 558.](#)
7. [Diabetes Care 2005;28\(3\):600-6.](#)

Tools for Practice is a biweekly article summarizing medical evidence with a focus on topical issues and practice modifying information. It is coordinated by G. Michael Allan, MD, CCFP and the content is written by practising family physicians. Archived articles are available on the [Toward Optimized Practice](#) and [ACFP](#) websites.

This communication reflects the opinion of the author and does not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.