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*Best Health Care Medical Group, Inc.*  
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### Comparison of Three Insulin Regimens

*Adding once-daily basal insulin to oral therapy conferred some advantages over alternate regimens.*

The industry-sponsored "4-T" study was designed to examine various insulin regimens in patients with type 2 diabetes. Researchers randomized 708 patients with type 2 diabetes who were taking metformin and a sulfonylurea (glycosylated hemoglobin [HbA<sub>1c</sub>] level, 7%–10%) to receive one of three insulin regimens, added to their oral drugs:

- Once-daily basal insulin detemir (Levemir)
- Twice-daily biphasic insulin aspart (NovoMix 30)
- Thrice-daily prandial insulin aspart (NovoRapid)

During the trial, if HbA<sub>1c</sub> levels remained higher than 6.5% despite insulin titration, sulfonylurea was stopped and a second insulin was added (3 prandial injections added in the basal group; 1 lunchtime prandial injection added in the biphasic group; or 1 basal insulin injection added in the prandial group). One-year outcomes were reported in 2007 ([JW Gen Med Oct 23 2007](#)).

The researchers now report 3-year findings: HbA<sub>1c</sub> levels were similar in the three groups — about 7%. Mean weight gain was lower in the basal group (3.6 kg) than in the other two groups (about 6 kg). Hypoglycemia was least common in the basal group and most common in the prandial group.

**Comment:** The authors conclude that addition of once-daily basal insulin to oral therapy, with later addition of prandial insulin if needed, is preferred when one wishes to improve glycemic control in patients with type 2 diabetes. This conclusion is reasonable, given equivalent glycemic control and modestly less weight gain and hypoglycemia in the basal group compared with the other groups. However, these results should be viewed in the context of recent trials that failed to show improved outcomes with intensive glycemic control in similar patients ([JW Gen Med Jun 6 2008](#) and [JW Gen Med Dec 24 2008](#)).

— [Allan S. Brett, MD](#)

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