

Optimizing Insulin Doses: Step by Step

How long does a bolus dose last (when and how to see effect)?

Take a dose of insulin and test blood glucose 3,4, and 5 hours later. The time when the glucose stops dropping is the time to test to see the effect of that insulin dose.

Example:

Time after insulin:	3 hours	4 hours	5 hours
Blood Glucose:	183	134	140

Conclusion: Insulin is active in this person's body for approximately 4 hours.

What is my insulin sensitivity?

Take a correction dose by itself without eating any food and determine the fall in blood glucose after your specific duration of time (3,4, or 5 hours).

Calculate the sensitivity by dividing the drop in glucose by the number of units injected.

Your sensitivity may vary by time of day or from day to day. This test will need to be repeated occasionally.

Example:

4 hours after a correction dose of 3.2 units, the blood glucose fell from 269 to 134.

$$\begin{array}{r} 269 \\ - 134 \\ \hline 135 \end{array}$$

135 point drop from 3.2 units of insulin

Conclusion: The insulin sensitivity is 42 (3.2 units lowers the blood glucose 135 points, broken down 1 unit lowers the blood glucose 42 points).

Is my meal dose accurate and is it the same for all meals?

Pick a meal to test with a blood glucose already in your target range. Count the grams of carbohydrates carefully or eat only food with a known carbohydrate content. Take your usual meal dose. Check glucose after your specific duration.

If the glucose is in the target range, your meal dose is ideal. If the glucose is too low, decrease the meal dose by 10-20%. If the glucose is too high, increase the dose by 10%.

Test each meal independently. Many patients need more insulin at some meals.

Is my basal rate correct?

Bolus either for a meal or correction, the basal rate testing can begin following your active insulin time that you previously tested (usually three or four hours).

Example: Sara's active insulin time is 4 hours. She ate lunch and gave insulin at noon.

With the four hour active insulin time her test would begin at 4pm. She has eaten no carbs since lunch. She then tests her bg at 4pm, 5pm, 6pm, etc. on the hour. This determines if the basal insulin is accurate looking to see if the number trend up or down.

4pm: 130

5pm: 126

6pm: 110

7pm: 88

8pm: 63

Conclusion: Sara's basal rate is probably too high during this time since her blood sugars are trending down. Consider adjusting her basal rates.