

Insulin Dose Adjustment

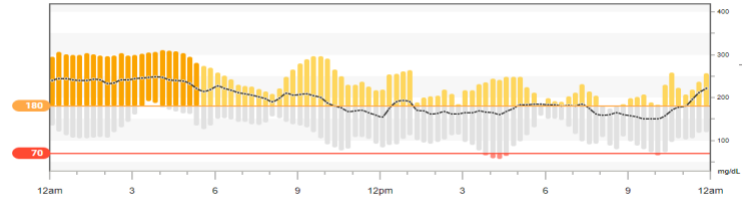
Goal: To have the *majority* of pre-meal blood sugars in the target range: 70-150
Some high and low blood sugars are still to be expected.

Getting Started:

1. Make sure you know your target blood sugar, Insulin to Carb Ratio (ICR), Insulin Sensitivity Factor (ISF), and long-acting dose or basal rates.
2. Make sure the time and date are correct on your glucometer, CGM, and/or insulin pump.
3. Test and record blood sugars at least 4 times per day in a logbook or use a CGM daily.
4. To find a pattern, you will need 7-14 days' worth of blood sugars.
5. Food, insulin, and exercise log can be helpful if there is a lot of variability in schedule.
6. Need to understand the insulin action time (see table on reverse side).

Start by Looking for a Pattern

Low Blood Sugars	High Blood Sugars
<ul style="list-style-type: none"> • More than two unexplained low blood sugars below 70 in one week during a certain time of day • Any blood sugars below 70 overnight • Frequently needing a snack at bedtime in order to get blood sugar >100 before going to sleep • Any severe lows (use of emergency medicine [Glucagon/Baqsimi/Gvoke], seizure, loss of consciousness) 	<ul style="list-style-type: none"> • More than half the blood sugars at a certain time of day are above target • Example: 3 days out of the week you are above target range at dinner • Consistently running near the upper end of your target • Other causes of high BG have been eliminated: eating without dosing, missing doses, inaccurate carb counting



Considerations: Always keep in mind insulin action time, type of food being eaten, size of meal, timing of insulin, type of bolus, time and type of exercise, rotating sites, changing out insulin, changing pump site earlier, eliminating unnecessary snacks, consistent schedule/routine

Can you find a pattern of highs or lows?

Pre-meal blood sugar?	May need insulin dose adjustment for ICR or ISF.
Snacking without taking insulin?	Give insulin for snacks. Total carbs / ICR = Dose.
Higher or lower with activity?	May need insulin dose adjustment or snack before exercise.
Sick Day?	Check Ketones. Will need additional insulin for moderate or large ketones. Check Sick Day Action Plan or call the office.
Missed dose?	Set reminders on phone. Note that correction at next meal will be higher.
Leakage?	Check injection technique.
No obvious reason/pattern?	Consider keeping a consistent schedule of mealtimes, sleep, and activity.

Insulin Dose Adjustment

General Rules for Making Insulin Dose Adjustments:

1. Make one change at a time.
2. Fix low blood sugars first.
3. Consider patterns. If pattern is not consistent changing the dose could cause more highs or lows.
4. Adjust dose by 10%.
 - a. If needing to increase dose (give more insulin), multiply by 1.1 and add to current dose
 - b. If needing to decrease dose (give less insulin), multiply by 0.90 and subtract from current dose
5. Give changes 3-5 days for lows or 5-7 days for highs before making any more changes to your doses.

Insulin Action Times

Type of Insulin	Starts Working (onset)	Working Hardest (peak)	Lasts (duration)
Fiasp (aspart) Approved for ages 2 and up	5 minutes	60 minutes	3 to 4 hours
Humalog, Admelog, Novolog or Apidra (lispro, aspart, glulisine)	10 to 15 minutes	60 to 90 minutes	3 to 4 hours
Lantus, Basaglar (glargine)	2 to 4 hours	No peak	20 to 24 hours
Levemir (detemir)	3 to 8 hours	No peak	6 to 23 hours
Tresiba (degludec)	1 hour	No peak	42 hours

How do I know if I should change Insulin to Carb Ratio (ICR) or Insulin Sensitivity Factor (ISF)?

- Blood sugar in range + meal → High at next meal → Change ICR. You need more insulin for meals.
- Blood sugar high + meal → High at next meal → Change ICR and/or ISF. You need more insulin for meals and/or blood sugar correction.
- Blood sugar high + meal → Low between meals or at next meal → Change ICR and/or ISF. You need less insulin for meals and/or blood sugar correction.
- Blood sugar in range + meal → Low between meals or at next meal → Change ICR. You need less insulin for meals.

Making Changes to ICR and ISF:

- If you need **more** insulin for meals, the ICR number will **decrease**.
 - For example: If your ICR is 1:10 and you need more insulin, a 10% change would be ICR of 1:9.
- If you need **more** insulin for your blood sugar correction, the ISF number will **decrease**.
 - For example: If your ISF is 50 and you need more insulin, a 10% change would be an ISF of 45.
- If you need **less** insulin for meals, the ICR number will **increase**.
 - For example: If your ICR is 1:10 and you need less insulin, a 10% change would be an ICR of 1:11.
- If you need **less** insulin for your blood sugar correction, the ISF number will **increase**.
 - For example: If your ISF is 50 and you need less insulin, a 10% change would be an ISF of 55.

Making Changes to Basal insulin (Long-Acting Insulin or Basal Rates):

- Basal insulin should keep your blood sugar steady during periods of fasting (overnight and in between meals)
- If your blood sugar rises from bedtime to morning (without eating snacks or treating lows) → You need more basal insulin
- If your blood sugar drops from bedtime to morning → You need less basal insulin