

Guidelines for Using Subcutaneous Insulin for Hospitalized Adult Patients with Diabetes Mellitus

1. Background

- When ordering subcutaneous insulin for patients who are eating, orders should include basal, prandial, and correction insulin
 - **Basal insulin** (NPH, glargine and detemir) assists with continuous glucose control
 - **Prandial insulin** (aspart, lispro, glulisine and Regular) assists with glucose control from the effect of a meal; to be given in addition to the correction dose
 - **Correction insulin** (aspart, lispro, glulisine and Regular) treats pre-meal hyperglycemia; to be given if premeal blood glucose results exceed a target level
- Basal insulin is usually given before breakfast, dinner and/or bedtime.
- Lispro should be used instead of Regular insulin if the patient is using carbohydrate counting to determine prandial insulin dose or if used by the patient at home.
- In the hospital **lispro should be given only after the meal has been served**, i.e. food is in front of the patient ready to be consumed.
- Regular insulin should be given 30 minutes before or at meal consumption.
- Correction insulin should be given prior to a meal (see specific lispro and Regular instructions directly above).
- Both doses of prandial and correction insulin can be drawn up into the same syringe and given as one injection. Glargine cannot be mixed with any other insulin in the same syringe.
- Some patients use carbohydrate counting to determine prandial insulin doses required to cover post-meal glucose rise. For insulin-sensitive patients, start with 1 unit per 15 grams carbohydrate and for less insulin-sensitive patients, use 1 unit per 10 grams carbohydrate.
- Some patients use an insulin sensitivity factor to determine the dose of correction insulin to take; this ratio is based on the number of points 1 unit of insulin will drop their blood glucose. Common starting correction doses are: for insulin sensitive patients (lean), 1 unit reduces glucose by 50 points; for less insulin sensitive patients, 1 unit reduces glucose by 25 points or less.

2. Indications

- Patients with type 1 diabetes must be given basal insulin to prevent ketosis even when not eating or made NPO. Anyone on insulin for more than 10 to 15 years should be treated like type 1 diabetes.
- Patients with type 2 should continue insulin in the hospital if they have been taking it at home; doses may need to be adjusted.
- Per Endocrinology recommendations

3. Guidelines for ordering subcutaneous insulin

	Breakfast	Lunch	Dinner	Bedtime
Basal insulin	Give ____ units of: <input type="checkbox"/> NPH <input type="checkbox"/> Glargine		Give ____ units of: <input type="checkbox"/> NPH <input type="checkbox"/> Glargine	Give ____ units of: <input type="checkbox"/> NPH <input type="checkbox"/> Glargine
Prandial insulin	Give ____ units of: <input type="checkbox"/> Lispro* <input type="checkbox"/> Regular**	Give ____ units of: <input type="checkbox"/> Lispro* <input type="checkbox"/> Regular**	Give ____ units of: <input type="checkbox"/> Lispro* <input type="checkbox"/> Regular**	
Correction insulin (see algorithm below)	Give ____ units of: <input type="checkbox"/> Lispro* <input type="checkbox"/> Regular**	Give ____ units of: <input type="checkbox"/> Lispro* <input type="checkbox"/> Regular**	Give ____ units of: <input type="checkbox"/> Lispro* <input type="checkbox"/> Regular**	

*Give Lispro immediately before eating (food in front of patient)

**Give Regular 30 minutes before or at meal consumption

Correction Insulin Algorithm Guidelines

Doses should be adjusted based on the individual's blood glucose response and insulin resistance

Pre-meal Blood Glucose (mg/dl)	Low-dose Units (requiring less than 40 units insulin daily)	Medium-dose Units (requiring 40 to 80 units insulin daily)	High-dose Units (requiring over 80 units insulin daily)	Individualized Dose
100 - 149	0	0	1	
150 - 199	1	1	2	
200 - 249	2	3	4	
250 - 299	3	5	7	
300 - 349	4	7	10	
Over 349	5	8	12	