Insulin Tip Sheet

Hospitalized Patient BG Targets

- All critically ill patients in ICU settings
  - Target BG: 140-180 mg/dL
  - Intravenous insulin preferred
- Noncritically ill patients (med / surg)
  - Pre-meal BG: <140 mg/dL
  - Random BG: <180 mg/dL
  - Scheduled subcutaneous insulin preferred
  - Sliding-scale insulin discouraged
- NYS hospital quality metric:
  - CHS reports glycemic data to the NY state, our goal is to have a minimum of 80% of the POC readings be less than 200 mg/dl in hospitalized patients.
- Hypoglycemia
  - Reassess the regimen if BG level is <100 mg/dL
  - Modify the regimen if BG level is <70 mg/dL

Type 1

Insulin for LIFE, complete loss of beta cell function

Goal is to mimic insulin delivery of the pancreas

Type 2

Progressive loss of beta cell function with decreased insulin production coupled with insulin resistance, may require insulin therapy, likely hyperglycemia in times of stress.

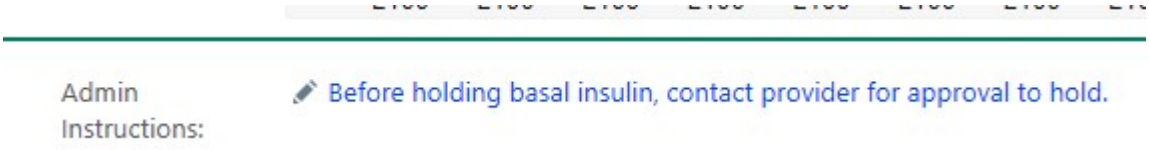
Per ADA guidelines:

- Basal, nutritional, and correctional is preferred for patients with *good nutritional intake*
- Basal plus correctional insulin is preferred for non-critically ill patients with *poor oral intake or NPO*
- Critical care patients may require an IV insulin infusion or basal insulin + correction insulin.

Basal Insulin: Long-acting

Long-acting, non-peaking insulin provides continuous insulin action over approximately 24 hours, even when the patient is fasting. Do not mix basal insulin with any other insulin in the same syringe.

Note: Should **not be held** for a patient with Type 1 diabetes, even if NPO ➔ it may increase the risk for DKA**.** It should also not be routinely be held in patients with Type 2 diabetes. Per the glargine instructions in EPIC:



DO NOT HOLD BASAL INSULIN WITHOUT AN ORDER. RN license and scope of practice does not allow independently holding this insulin without an order. It is a *medication error.*

Bolus Insulin: Fast-acting

Nutritional Set Dose: a prescribed dose of short-acting insulin is given before meals / with meals to prevent rises in blood glucose levels resulting from food intake**.** This insulin **should be held** if the patient is NPO, not eating, or if there is a question as to whether the meal will be consumed. Please contact the provider if held and not administered so that the patient can be assessed and the insulin order discontinued if appropriate. For this insulin a POC glucometer needs to be obtained within 30 minutes of the insulin / meal. If the POC is older than 30 minutes, it must be repeated.

Timing **–** It is critical that the nurse ties in nutritional insulin administration with meal delivery. Trays can be delivered in a broad time window and nutritional insulin should not be administered until the meal is in front of the patient.

Correctional dose insulin: Correction scale dose is used to facilitate glycemic control due to elevated glucose values that can occur throughout the day. It is a response to a high glucose reading therefore, is not held even if the patient is NPO.

If a patient also has Correction insulin & Nutritional insulin ordered, then the correction insulin dose should be **given with** the nutritional insulin dose (together around the meal). It is necessary to review, ahead of getting the POC, whether or not your patient has both of these insulin therapies ordered (correction + nutritional). Coordinating the timing of obtaining the glucometer is important in relation to the insulin administration and meal delivery.

- POC should be done within 30 minutes prior to the meal as POC accuracy decreases to 55-60% after 60 minutes.
- Variability in timing can lead to hypoglycemic and hyperglycemic events

Insulin

Types of insulin	When Its Usually Taken	How Soon It Starts Working	When Its Effect Is Strongest	How Long It Last
Analog insulin				
Fast- acting Insulin	Right before a meal	15 minutes	30 to 90 minutes	3 to 5 hours
Long- acting insulin	Once a day at the same time	1 hour	Steady over time	Up to 24 hours
Premixed (mixture of fasting and intermediate- acting insulin)	Before breakfast and/ or before the evening meal	5 to 15 minutes	Varies	Up to 16 hours
Human Insulin				
Short- acting insulin(also called regular insulin)	30 minutes before a meal	30 to 60 minutes	2 to 4 hours	5 to 8 hours
Intermediate- acting insulin (NPH)	30 minutes before breakfast, the evening meal, or at bedtime	1 to 3 hours	8 hours	Up to 16 hours
Premixed (mixture of short- acting (regular) and intermediate (NPH) insulin)	30 minutes before breakfast and/ or before the evening meal	30 to 60 minutes	Varies	Up to 16 hours

These are the correctional insulin scale options in EPIC:

Correction insulin

	Low Intensity		Moderate Intensity		High Intensity
Blood Glucose (mg/dL)	**Dosing AC, Q4Hrs, Q6hrs**	**QHS Dosing**	**Dosing AC, Q4Hrs, Q6hrs**	**QHS Dosing**	**Dosing AC, Q4Hrs Q6hrs**
140-180	0 Units	0 Units	2 Units	0 Units	6 Units
181-220	2 Units	0 Units	4 Units	0 Units	8 Units
221-260	4 Units	2 Units	6 Units	2 Units	10 Units
261-300	5 Units	3 Units	8 Units	4 Units	12 Units
301-350	6 Units	4 Units	10 Units	6 Units	14 Units
Greater than 350	7 Units & call provider	4 Units & call provider	12 Units & call provider	6 Units & call provider	16 Units & call provider

- **Low Intensity**: Use as initial therapy if concern for hypoglycemia or unsure if patient is diabetic. Please review glucose control daily and adjust insulin therapy as needed.

- **Moderate Intensity**: Patients with diabetes or suspected diabetes. Please review glucose control daily and adjust insulin therapy as needed.

- **High Intensity**: Not to be used as the sole method for controlling elevated glucose. Patients who require a significant amount of insulin per day or patients who have persistent severe hyperglycemia due to steroids or infection. Please review glucose control daily and adjust insulin therapy as needed.

Basal Insulin Dose Time Change

We will be moving the standard time for glargine from **9PM to Noon on September 15th 2022**. This will facilitate the ability to make dose adjustments sooner, which are a common occurrence in hospitalized patients. If, on rare occasions, glargine is ordered bid / q12h, it will stay on the usual standard bid / q12h medication schedule.

Review Questions:

a) Hold the basal glargine, the patient is NPO? *NO, contact the provider if you have a concern*
b) Hold the nutritional lispro, the patient is NPO? *YES, contact the provider for evaluation*
c) Hold both the correctional lispro and basal glargine, the patient is NPO? *NO, contact the provider if you have a concern*
d) Give both the basal glargine and correctional lispro as ordered, holding insulin without an order is not within the nursing scope of practice. *Correct, contact the provider if you have a concern.*
e) Correctional insulin is used to "correct" elevated glucose values before meals or at bedtime. *YES*
f) Correctional insulin should be given **with** the nutritional insulin dose (if ordered)? *YES*