

**Adult Inpatient Subcutaneous
Insulin Order Set**

PATIENT CARE ORDERS
Not indicated for patients receiving TPN, pregnant patients, or patients continuing on an insulin pump. Use caution patients with creatinine > 3 mg/dL.

Date: _____ Time: _____ Body Mass Index: _____ Height: _____ Weight: _____

Blood glucose targets: average 80-120 mg/dl with no readings >180 mg/dL. Consider Medicine or Endo consult if goals not met.

Diabetes Diagnosis:	Provider Guidelines:
<input type="checkbox"/> Type 1 – controlled <input type="checkbox"/> Type 1 – uncontrolled <input type="checkbox"/> Type 2 – controlled <input type="checkbox"/> Type 2 – uncontrolled <input type="checkbox"/> Hyperglycemia NOS	<ol style="list-style-type: none"> Select diabetes diagnosis and then one box on each step 1-3 of the order set Patients with type 1, and most type 2, diabetes should receive Rapid Acting <u>and</u> Basal Insulin (Step 2 and Step 3) Remember to assess success of order set daily and adjust basal insulin and/or rapid acting insulin on new order sheet Strongly consider stopping oral hypoglycemics, see notes on back page

Step 1:	Provider – Select box for diet order: <input type="checkbox"/> NPO: <u>Nursing Orders:</u> <ol style="list-style-type: none"> Check blood glucose every 4 hours at: 2400 – 0400 – 0800 - 1200 – 1600 – 2000. Give “Correction Dose” insulin based on selected Rapid-Acting Insulin table in Step 2
Diet:	<input type="checkbox"/> Eating: <input type="checkbox"/> Standard 1800 Calorie ADA diet with 60 grams of carbohydrate for each meal <input type="checkbox"/> Other diet with consistent 60 grams carbohydrate per meal: _____ <u>Nursing Orders:</u> <ol style="list-style-type: none"> Check blood glucose just <u>before</u> the patient eats meals and at 2200 Calculate and give “Nutritional + Correction Dose” insulin based on selected Rapid-Acting Insulin table in Step 2 Give only correction doses at bedtime and if the patient is eating less than 50% of meals

Step 2:	Nutritional Doses and Rapid Acting Insulin Tables using aspart (Novolog®) by subcutaneous injection						
Rapid Acting Insulin Doses (Nutritional and Correction Insulin)	Provider – Select box for ‘Low Dose,’ ‘Moderate Dose,’ or ‘Custom Dose Scale’ Table:						
	CBG mg/dL	<input type="checkbox"/> Low Dose Scale (Suggested for Normal Weight Pts, BMI <25)		<input type="checkbox"/> Moderate Dose Scale (Suggested for Overweight Pts, BMI >25)		<input type="checkbox"/> Custom Dose Scale (Use for home doses and daily adjustments)	
	≤ 70	Implement Hypoglycemia orders		Implement Hypoglycemia orders		Implement Hypoglycemia orders	
		Nutritional Dose	Correction Dose	Nutritional Dose	Correction Dose	Nutritional Dose	Correction Dose
	71-149	4 Units with each meal + correction dose	No Insulin / +0 units	7 Units with each meal + correction dose	No Insulin / +0 units	___ Units with Breakfast	No Insulin / +0 units
	150-199		+ 1 units		+ 2 units	___ Units with Lunch	+ ___ units
	200-249		+ 2 units		+ 4 units	___ Units with Dinner	+ ___ units
	250-299		+ 3 units		+ 6 units		+ ___ units
300-349	+ 4 units		+ 8 units			+ ___ units	
350-399	+ 5 units	+ 10 units		+ ___ units			
≥ 400	Treat with +6 units and inform MD		Treat with +12 units and inform MD		Treat with + ___ units and inform MD		
	<u>Nursing Orders:</u> <ol style="list-style-type: none"> <u>HUC Orders:</u> Discontinue all previous insulin orders and order Lab: HgA1c, if not already ordered during this admission Do not recheck CBG for 4 hours after insulin administration to prevent insulin dose stacking If patient eating, calculate and administer nutritional plus correction doses of insulin within 30 minutes of first bite of meal If NPO, administer correction insulin after each CBG per table 						

Step 3:	Long Acting Basal Insulin Dose using glargine (Lantus®) by subcutaneous injection	
Long Acting Insulin Doses (Basal Insulin)	Provider – Select one box and fill in dose:	
	<input type="checkbox"/> _____ units glargine subcutaneous in abdomen at 2200 or _____ schedule (continue home doses in controlled DM)	
	<input type="checkbox"/> Pts weight _____ kg x 0.2 units = _____ units glargine subcutaneous in abdomen at 2200 or at _____ daily	
	<input type="checkbox"/> No glargine dose. Use Short Acting Insulin only. (glargine should be given to almost all patients and not withheld for NPO status)	
	<u>Nursing Orders:</u> <ol style="list-style-type: none"> Do not hold or reduce glargine if the patient is only NPO for minor procedures or studies that do not require anesthesia Reduce glargine to 50% of the dose before procedures requiring general anesthesia (surgeries) 	

Step 4:	Hypoglycemia orders for blood glucose ≤ 70 mg/dl:
Hypoglycemia	<u>Nursing Orders:</u>
	1. If patient can take po: administer 15 grams of carbohydrate (6 oz of fruit juice or 15 grams of glucose gel)
	2. If patient unable to take po: administer 12.5 grams of dextrose 50% IV (25 mL) or 1 mg of glucagon IM
	3. Check blood glucose every 15 minutes and repeat above treatment until blood glucose is ≥ 100 mg/dL
	4. Notify MD if blood glucose ≤ 70 mg/dL for two readings in 24 hour period

Provider Signature _____	Pager Number _____	
Print Name _____	Provider Number _____	Patient Sticker

Insulin Terminology:

Basal insulin: long-acting insulin required in all Type 1 (and most Type 2) patients to maintain euglycemia, even when NPO (hepatic gluconeogenesis can serve as a continuous source of blood glucose).

Nutritional insulin: scheduled short-acting insulin given just before a meal, in anticipation of the glycemic spike that occurs due to carbohydrate ingestion (this dose is given even when the blood sugar is in the normal range). Also refers to scheduled insulin given to cover the carbohydrate load from tube feeds or parenteral nutrition.

Correction insulin: short-acting insulin that is given in addition to scheduled nutritional insulin (or given at other times of the day) as a response to preexisting high blood glucose levels. If correction insulin dose is required, the patient would likely benefit from an increase in the TDD the following day.

Recommended Basal Glargine adjustments every 2-3 days based on the average of 2 or 3 Fasting Blood Glucose (FBG) levels		Recommended Rapid-Acting Novolog Dose Adjustments; Based on any 2 CBGs levels: Fill Out in Custom Scale in Step 2	
Average 2-3 FBG levels: (on separate days)	Glargine Adjustment	CBG	Nutritional Dose Adjustment
< 80 mg/dL	Decrease basal dose by 20%	If <70 mg/dL	Decrease nutritional dose by 20%
80-120 mg/dL	No Change	150-200	Increase nutritional dose by 10%
120-140 mg/dL	Increase basal dose by 10% units	200-299 mg/dL	Increase nutritional dose by 20%
140-160 mg/dL	Increase basal dose by 20% units	300-399 mg/dL	Increase nutritional dose by 30%
> 180 mg/dL	Increase basal dose by 30% units	>400 mg/dL	Increase nutritional dose by 40%

Adjust Insulin Order set daily based on tables above. Consider the following recommendations as well:

- In well controlled diabetics, use the custom scale in Step 2 to continue home prandial insulin doses and fill in home glargine dose in Step 3
- Morbidly obese patients may require higher correction doses, use custom scale to increase (usually increase 1-2 units for each dose).
- Do not use Regular Insulin as your rapid acting insulin in Step 2 except for patients with Gastroparesis

Oral Hypoglycemics:

1. Sulfonylureas (Glipizide, glyburide, glimeperide) should not be given with this order set
2. Metformin should not be given if patient is hypotensive; volume depleted, has renal insufficiency, or will receive an IV contrast load but may otherwise be used with this order set.
3. Combinations of sulfonylureas and metformin are not appropriate for use with this protocol.
4. Thiazolidinediones (rosiglitazone or pioglitazone) should not be given to volume overloaded patients, those with decompensated congestive heart failure, or significant hepatic dysfunction but may otherwise be used with this protocol

Recommended discharge prescription guidelines:

Glargine and Novolog: Write for doses the patient used prior to admission or doses on final day of hospitalization. OR

Glargine 0.2-0.25 units/kg. Novolog =(Daily Glargine dose / 3) – (subtract) 1 and administer tid with meals.

NPH with Novolog or Regular:

NPH dose = 80% of Glargine dose. Give 2/3 of NPH dose at breakfast and 1/3 NPH at dinner.

½ of AM NPH dose given as units of Novolog or Regular at breakfast.

½ of PM NPH dose given as units of Novolog or Regular at dinner.

No Novolog or Regular at lunch if using NPH.

Recommended transition from IV insulin infusion to subcutaneous injections:

Option 1: Administer daily am Glargine dose before 1200 noon. Maintain infusion pump for 2 hours after Glargine administration. Start rapid acting insulin - Novolog at lunch or at 1200 blood glucose check.

Option 2: If discontinuing insulin infusion after 1200 noon, give ½ calculated Glargine dose and continue insulin infusion for 2 hours after Glargine administration. Start Novolog at next meal, HS or at next scheduled blood glucose check. Administer full dose of Glargine the next morning and continue Novolog per rapid acting insulin table.

BMI TABLE

WEIGHT		HEIGHT IN FEET/INCHES AND METERS											
LB	KG	4'8" 1.42m	4'10" 1.47m	5'0" 1.52m	5'2" 1.57m	5'4" 1.63m	5'6" 1.68m	5'8" 1.73m	5'10" 1.78m	6'0" 1.83m	6'2" 1.88m	6'4" 1.93m	6'6" 1.98m
115	52.2	25.8	24.0	22.5	21.0	19.7	18.6	17.5	16.5	15.6	14.8	14.0	13.3
120	54.4	26.9	25.1	23.4	21.9	20.6	19.4	18.2	17.2	16.3	15.4	14.6	13.9
125	56.7	28.0	26.1	24.4	22.9	21.5	20.2	19.0	17.9	17.0	16.0	15.2	14.4
130	59.0	29.1	27.2	25.4	23.8	22.3	21.0	19.8	18.7	17.6	16.7	15.8	15.0
135	61.2	30.3	28.2	26.4	24.7	23.2	21.8	20.5	19.4	18.3	17.3	16.4	15.6
140	63.5	31.4	29.3	27.3	25.6	24.0	22.6	21.3	20.1	19.0	18.0	17.0	16.2
145	65.8	32.5	30.3	28.3	26.5	24.9	23.4	22.0	20.8	19.7	18.6	17.6	16.8
150	68.0	33.6	31.3	29.3	27.4	25.7	24.2	22.8	21.5	20.3	19.3	18.3	17.3
155	70.3	34.7	32.4	30.3	28.3	26.6	25.0	23.6	22.2	21.0	19.9	18.9	17.9
160	72.6	35.9	33.4	31.2	29.3	27.5	25.8	24.3	23.0	21.7	20.5	19.5	18.5
165	74.8	37.0	34.5	32.2	30.2	28.3	26.6	25.1	23.7	22.4	21.2	20.1	19.1
170	77.1	38.1	35.5	33.2	31.1	29.2	27.4	25.8	24.4	23.1	21.8	20.7	19.6
175	79.4	39.2	36.6	34.2	32.0	30.0	28.2	26.6	25.1	23.7	22.5	21.3	20.2
180	81.6	40.4	37.6	35.2	32.9	30.9	29.1	27.4	25.8	24.4	23.1	21.9	20.8
185	83.9	41.5	38.7	36.1	33.8	31.8	29.9	28.1	26.5	25.1	23.8	22.5	21.4
190	86.2	42.6	39.7	37.1	34.8	32.6	30.7	28.9	27.3	25.8	24.4	23.1	22.0
195	88.5	43.7	40.8	38.1	35.7	33.5	31.5	29.6	28.0	26.4	25.0	23.7	22.5
200	90.7	44.8	41.8	39.1	36.6	34.3	32.3	30.4	28.7	27.1	25.7	24.3	23.1
205	93.0	46.0	42.8	40.0	37.5	35.2	33.1	31.2	29.4	27.8	26.3	25.0	23.7
210	95.3	47.1	43.9	41.0	38.4	36.0	33.9	31.9	30.1	28.5	27.0	25.6	24.3
215	97.5	48.2	44.9	42.0	39.3	36.9	34.7	32.7	30.8	29.2	27.6	26.2	24.8
220	99.8	49.3	46.0	43.0	40.2	37.8	35.5	33.5	31.6	29.8	28.2	26.8	25.4
225	102.1	50.4	47.0	43.9	41.2	38.6	36.3	34.2	32.3	30.5	28.9	27.4	26.0
230	104.3	51.6	48.1	44.9	42.1	39.5	37.1	35.0	33.0	31.2	29.5	28.0	26.6
235	106.6	52.7	49.1	45.9	43.0	40.3	37.9	35.7	33.7	31.9	30.2	28.6	27.2
240	108.9	53.8	50.2	46.9	43.9	41.2	38.7	36.5	34.4	32.5	30.8	29.2	27.7

Clinical Practice Guidelines do not represent a standard of care. They are guidelines for consideration and may be modified with appropriate documentation according to the individual patient's need.