FAQ: Glucommander SubQ Orders

**frequently asked questions for Ordering Physicians and Advanced Practice Providers**

1. **What is Glucommander™ SubQ?**
	1. Glucommander SubQ is subcutaneous (SubQ) insulin dosing support software that is integrated into your EMR to help standardize SubQ insulin prescribing, titration, and administration based on inpatient glycemic management best practices.
2. **What are the benefits of Glucommander SubQ?**
	1. Standardizes SubQ insulin prescribing, titration, and administration
	2. Supports basal/bolus insulin regimens
	3. Provides daily insulin adjustments based on patient’s blood glucose response to insulin
	4. Provides individualized meal bolus dosing based on what patient eats
	5. Provides customized correction dosing based on total daily insulin dose
	6. Includes safety guardrails to avoid insulin stacking
	7. Recommends precise hypoglycemia treatment if hypoglycemia occurs
3. **How do I use/order Glucommander SubQ?**
	1. A provider order is required to start Glucommander SubQ
	2. Access the *SubQ Basal Bolus Insulin* order set to order Glucommander SubQ
	3. Select the appropriate panel for the SubQ insulin regimen based on patient’s nutritional status:
		1. **Eating or NPO less than 48 hours** (Basal/Bolus+Correction)
		2. **NPO more than 48 hours** (Basal+Correction)
	4. Order the initial insulin doses using the patient’s weight or their home insulin regimen as a guide:
		1. Weight-based approach to calculate the Total Daily Dose (TDD)
			* Glucommander will distribute the TDD: 50% as the initial basal dose and 50% further divided by 3 as the initial meal bolus doses (*see case review on page 4 for an example*)
		2. Custom approach (when you know the initial insulin doses you would like to prescribe, such as when using a home insulin regimen as a guide)
			* Utilize Glytec’s Inpatient Insulin Calculator to determine the appropriate starting insulin doses based on a patient’s home insulin regimen

(Insert order set screenshots)

1. **Which patients ARE appropriate for Glucommander SubQ (Basal/Bolus Insulin therapy)?**
	1. Non-critically ill patients who do not meet criteria for IV insulin and have the following characteristics:
		1. Patients with type 1 diabetes
		2. Patients with type 2 diabetes managed on insulin at home or multiple oral/non-insulin agents
		3. Patients with persistent hyperglycemia (2 or more BGs >180 mg/dL in 24 hours)
2. **Which patients are NOT appropriate for Glucommander SubQ?**
	1. Patients on continuous TPN or TF, continuing concentrated or pre-mixed insulins during hospitalization, continuing insulin pumps, eating/snacking continuously throughout the day
	2. Patients whose insulin needs are unclear and may not require basal/bolus insulin therapy, e.g., a patient with type 2 diabetes who is well-controlled on metformin; for these patients, consider:
		1. Starting correction insulin with blood glucose monitoring and progress to basal/bolus insulin therapy if blood sugars are persistently >180 mg/dL
3. **How does Glucommander SubQ adjust insulin doses to reach the ordered target range?**
	1. The initial basal and bolus doses are determined by the provider’s order.
	2. Glucommander will begin adjusting doses based on the patient’s blood glucose (BG) response to the initial insulin doses.
		1. No new provider order is required.
		2. The basal dose is adjusted based on the morning fasting BG.
		3. The meal bolus doses are adjusted based on the following pre-meal BG from the day before.
	3. Glucommander will adjust doses daily, up or down, to a maximum of 30%.
4. **How can I see the Glucommander projected basal and bolus doses for the day?**

(Insert screenshot of EMR report/flowsheet for viewing Glucommander projected doses.

Example: Summary Glucose Report in Epic)

1. **How do I manage an NPO patient using Glucommander?**
	1. NPO status is not a reason to hold basal insulin. Glucommander will continue to recommend basal insulin and will recommend correction insulin if the blood glucose is above the target range.
	2. If the patient will be NPO for **more than** **48 hours**: order the *Basal+Correction insulin* regimen.
	3. If the patient will be NPO for **less than** **48 hours**: order the *Basal/Bolus+Correction insulin* regimen.
		1. **Note**: the patient will not receive meal bolus insulin while NPO because the nurse will enter “0” carbs at the mealtime.
	4. Then determine a patient’s true basal insulin needs using:
		1. Weight-based dosing to calculate the patient’s Total Daily Dose (TDD) of insulin. 50% of the TDD is the basal dose.
		2. Glytec’s Inpatient Insulin Calculator for patients on insulin at home.
			* Add up the home insulin TDD, reduce by at least 20%, then redistribute the TDD to 50% basal insulin and 50% total bolus insulin divided by 3 for each meal.
			* ***Example:*** Lantus 80 units, Novolog 5 units. TDD = 95 units. 95 reduced by 20% = 76. 50% of 76 is 38 units of basal insulin. 38 divided by 3 is 13 units of bolus insulin with each meal.
	5. Be cautious of patients on **“basal-heavy” insulin regimens** where the basal dose exceeds the patient’s true basal insulin needs. Continuing these regimens in the hospital often leads to hypoglycemia.
2. **Can the provider edit a Glucommander-recommended insulin dose?**
	1. Though rarely needed, the provider may order an edit to the next basal or bolus dose.
	2. Times when a dose edit may be needed include:
		1. Significant or sudden clinical changes such as in renal function
		2. Following a severe hypoglycemic event
		3. When steroids are stopped suddenly and not tapered
		4. If the initial doses significantly over or underestimated the patient’s needs
3. **What if my patient takes pre-mixed insulin (such as 70/30) at home?**
	1. Pre-mixed insulin is not recommended in the inpatient setting as it increases the risk for hypoglycemia, especially in patients with reduced appetites or who are NPO.
	2. Pre-mixed insulin contains a basal and meal insulin component which cannot be adjusted separately.
	3. Consider converting to a basal/bolus regimen by:
		1. Adding up the home insulin regimen to determine the home TDD. Then reduce the TDD by at least 20% and redistribute 50% as basal and 50% as bolus insulin.
			* ***Example:*** Novolin 70/30 25 units in AM and 15 units in PM. TDD = 40 units. 40 reduced by 20% = 32.  50% of 32 is 16 units of basal insulin. 16 divided by 3 is 5 units of bolus insulin with each meal.
4. **What is best practice regarding oral diabetes agents in the hospital?**
	1. Oral diabetes medications are generally not recommended for hyperglycemia management in the hospital for patients with or without diabetes.
	2. Agents such as metformin, DPP4 Inhibitors, and SGLT2 inhibitors are being used more frequently in certain patient populations, particularly those with mild hyperglycemia who are clinically stable.
	3. Glucommander SubQ is not contraindicated for patients on oral diabetes medications.
		1. If a provider determines that continuing or initiating an oral diabetes medication during hospitalization is safe and optimal for the patient, they need to consider the impact on insulin requirements and may need to adjust insulin dosing to prevent hypoglycemia.
5. **What discharge considerations apply to Glucommander SubQ?**
	1. Glucommander SubQ includes a Hospital to Home (H2H) feature that provides discharge recommendations based on the patient’s A1C and insulin requirements while on Glucommander.
	2. For H2H recommendations, a patient must be on Glucommander SubQ, Basal/Bolus+Correction for 48 hours, and have an A1C resulted in the past 60 days.



**Questions 13-16 are related to the** **case review below.**

**Case Review:** *My patient is admitted to the hospital with pneumonia. She is 67 years old and has a history of type 2 diabetes. Her recent A1C is 8.4%. The current weight is 85 kg. Renal function is normal. Initial blood glucoses (BG) are* *251 mg/dL and 289 mg/dL.*

*At home she takes glargine 20 units nightly, sitagliptin 100 mg daily, and metformin 1000 mg twice daily. She* *is started on IV antibiotics, oxygen, respiratory treatments. The diet ordered is 60 grams consistent carbohydrate diet.*

*I ordered Glucommander SubQ with a target range of 140-**180 mg/dL and using the weight-based multiplier of 0.5 units/kg/day. I chose this multiplier because the patient has type 2 diabetes on insulin plus oral agents at home with an elevated A1C, and the patient tells me she is not consistently taking her diabetes medications as prescribed. I also anticipate the infection will increase her insulin needs during this hospitalization.*

*Based on the* *weight-based TDD multiplier of 0.5 units/kg/day, her initial Total Daily Dose is 43 units, initial basal insulin dose is 22 units nightly, and initial meal bolus insulin doses are 7 units for each meal (based on 60 grams of carbs).*

1. **My patient received 4 units of mealtime insulin for lunch instead of 7 units. What happened?**

7 units is the projected meal dose based on the patient eating 60 grams of carbohydrates. Glucommander will adjust this dose based on the amount of carbohydrates the patient eats. In this case, the nurse documented the patient ate 30 grams of carbohydrates. Glucommander adjusted the dose accordingly, using the following calculation:

**Carbs consumed (30 grams) X Projected meal dose (7 units) = 3.5 units (rounds to 4 units)**

 **60 grams**

1. **The nurse called me and stated that the patient’s glucose is 200 mg/dL, but Glucommander is recommending 0 units for correction insulin. Why is Glucommander recommending 0 units?**

There are 2 potential reasons that Glucommander is recommending 0 units of correction insulin for a blood glucose above the target range:

* 1. The **correction insulin stacking rule** has been triggered. If a correction insulin dose has been administered within the past 3 hours, Glucommander will not recommend another correction insulin dose until at least 3 hours have passed (to avoid insulin stacking and potential hypoglycemia). The nurse may check the BG again once 3 hours have elapsed and Glucommander will recommend a correction dose if the glucose is still above target range.
	2. Glucommander has calculated a 0 unit correction dose based on the blood glucose and the patient’s correction factor.
		1. The correction factor is calculated each day using the “Rule of 1700”. **1700/TDD = CF**.
		2. The correction insulin dose is calculated by: **(BG - midpoint of the target range)/CF**

For a patient who is very sensitive to insulin, requiring a low TDD, a correction dose of 0 may be calculated. For example: a TDD of 18 units with target range of 140-180 mg/dL would give a CF = 94. So, for a BG of 200, the correction dose would be: 200-160 = 40/94 = 0.4 (rounds to 0).

1. **I am starting the patient on** **dexamethasone this morning. What should I do about Glucommander?**
	1. Based on the patient’s current blood glucose (BG) trends, you may decide to increase the basal and bolus insulin doses proactively or continue to monitor the BGs as Glucommander adjusts the insulin doses based on the next BG values.
	2. Glucommander will adjust insulin doses (up to 30%) each day based on the BG response.
	3. You may proactively order an edit to the next basal and bolus insulin doses if desired. Glucommander will continue to adjust doses the following day after the dose is edited based on your order.
2. **I want to adjust the basal insulin this morning, but the nurse is saying I can’t. Why not?**
	1. You may order a dose edit at any time. The nurse must manually edit the dose in Glucommander per your order.
	2. If the nurse is saying you cannot edit the basal dose, it is likely because Glucommander has not yet made a basal dose recommendation for the day. The nurse can make the edit in Glucommander once Glucommander has calculated a dose *to* edit.
	3. Glucommander will calculate a basal dose adjustment once the morning BG has been entered into Glucommander. So, once the nurse enters the morning glucose into Glucommander, they will be able to edit the basal dose to match your order.

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