

Form Title **Basal Bolus Insulin Therapy (BBIT)**

Form Number **20889**

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Affix patient label within this box

Basal Bolus Insulin Therapy (BBIT)
Adult Inpatient Subcutaneous Insulin Order Set

- 1. Discontinue all previous insulin and blood glucose monitoring orders.
2. All adult subcutaneous BBIT insulin orders (except STAT orders) must be documented using this order set.
3. Orders marked with [checked] are active by default, unless crossed out and initialed by prescriber.

Blood Glucose (BG) Monitoring

- [checked] 4 times per day (15 - 30 minutes before scheduled meals and at bedtime), as well as PRN for suspected hypoglycemia
and: [] 0200h x ___ days [] 2 hours after meal time [] Other (specify)
[checked] If BG less than 4.0 mmol/L initiate Hypoglycemia Procedure. Do Not Hold Insulin without prescriber order
[checked] If BG greater than 18.0 mmol/L initiate Hyperglycemia Procedure and call prescriber

Total Daily Dose (TDD) See calculation instructions on reverse for Prescriber Guidance only

Calculated TDD for this order (Physician to use as guide for Basal, Bolus & Correction Calculations) ->

Basal Insulin

Home dose or 1/2 TDD (given initially as equal, twice daily doses at breakfast and bedtime; glargine may be given once daily)

Choose One Basal Insulin

- [] glargine (Lantus®)
[] glargine (Basaglar®)
[] detemir (Levemir®)
[] HumuLIN® N

Units _____
[] With Breakfast or [] At Bedtime or
[] Time (hh:mm) _____ [] Time (hh:mm) _____

Bolus and Correction Insulin Use the same insulin (rapid or short-acting) for bolus and correction.

Choose One Bolus/Correction Insulin

- [] lispro (HumaLOG®) sc with meal
[] aspart (Novorapid®) sc with meal
[] HumuLIN® R sc 30 min before meal

Bolus Insulin Home dose (consider reduction of 25-50% for hospital diet) or 1/2 TDD divided initially into 3 equal doses

- [checked] Hold if no caloric intake, NPO or bolus feeds stopped. Continue basal and correction insulin.
[] Patient may determine and administer own dose and report dose to nurse (Order insulin type and acceptable dose range)

Units _____ [] With Breakfast or feed at time (hh:mm) _____
Units _____ [] With Lunch or feed at time (hh:mm) _____
Units _____ [] With Dinner or feed at time (hh:mm) _____
Units _____ [] With Other _____ at time (hh:mm) _____

Correction for hyperglycemia: Choose one based on current Total Daily Dose (TDD)

- [checked] Correction dose to be determined and administered with/before meal/feed OR at scheduled mealtime if NPO. Bedtime dose not routinely recommended. Correction and bolus doses can be combined and administered as a single subcutaneous injection.

Table with 5 columns: TDD 15-30 units, TDD 31-50 units, TDD 51-80 units, TDD 81 units or more, Custom. Rows show BG ranges and corresponding Units (+0 to +10).

Prescriber Name (print) Signature Date (yyyy-Mon-dd) Time (hh:mm)

Guidelines for the completion of the BBIT Adult Inpatient Order Set

This guide does not replace clinical judgment. Refer to www.BBIT.ca for further information and educational resources.

- Use home dosing of oral/injectable antihyperglycemic agents and/or insulin if safe and blood glucose targets are being met.
- Basal Bolus Insulin Therapy (BBIT) should be used if the patient is poorly controlled at home, requires oral/injectable antihyperglycemic agents to be held, or is not achieving glycemic targets in hospital. BBIT is recommended even if therapy is expected to be temporary, peri-procedural, or for patients not previously requiring insulin. Diabetic therapy will be optimized to suit patient needs prior to discharge.
- Review glucose record **daily**. If targets of 5.0-10.0mmol/L are not achieved, consider the causes and adjust insulin doses where appropriate.

Total Daily Dose (TDD): Total number of all units of basal + bolus + correction insulin used in 24 hour period

How to calculate TDD:

- If currently on BBIT in hospital and requires titration (see titration table below): **TDD = all insulin doses within past 24 hour period.**
- If on Basal and Bolus insulin at home with good control: **TDD = all insulin doses in a usual 24 hour period.**
- **If patient has poor control or requires insulin** (even transiently) **in hospital** to achieve targets of 5.0 -10.0 mmol/L:

Use LOWER TDD IF	Type 1 DM, slim Type 2 DM, history of hypoglycemia unawareness, reduced renal function (eGFR less than 30mL/min), liver failure, age greater than 70 with moderate/severe frailty	TDD=Weight (kg) x 0.3 to 0.5 Units/kg/day
Use HIGHER TDD IF	Insulin resistance, overweight Type 2 DM, steroid treatment, infection	TDD=Weight (kg) x 0.5 to 1 Units/kg/day

Basal Insulin: Intermediate/long-acting insulin required to cover rising blood glucose between meals and overnight

How to calculate Basal Insulin

- If patient is well controlled on insulin at home, use pre-admission basal insulin doses and timing.
- If insulin required in hospital or patient requires titration of BBIT: **Total Basal = TDD x 0.5**
glargine (*Lantus®/Basaglar®*) dosed once daily OR detemir (*Levemir®*) or HumuLIN® N dosed twice daily breakfast and bedtime.

Clinical Pearls

- At optimal doses, basal insulin should never cause hypoglycemia, even if the patient is not eating.
- **All patients with Type 1 Diabetes require basal insulin, even when not eating, in order to prevent rapid development of diabetic ketoacidosis (DKA).**
- No basal required if patient well controlled without basal at home **and** meeting hospital targets **OR** if receiving continuous enteral feeds and achieving targets on QID timed bolus plus correction insulin alone.

Bolus Insulin: Rapid/short acting insulin, required to cover rising blood glucose after meals caused by carbohydrate intake

How to calculate Bolus Insulin

- If patient is well controlled on insulin at home, use pre-admission bolus insulin doses. Consider reducing bolus doses by 25-50% if hospital diet less than home diet.
- If insulin required in hospital or patient requires titration of BBIT: **Total Bolus = TDD x 0.5 divided by 3** (three equal doses with meals)
lispro (*HumaLOG®*), aspart (*Novorapid®*), or HumuLIN® R.
- Blood glucose testing and bolus insulin administration are to be coordinated with meal/feed.

Correction Insulin: Additional rapid/short acting insulin administered to correct blood glucose if above target

- Selection based on TDD.
- May be combined with the scheduled bolus insulin dose and administered as a single subcutaneous injection.
- If NPO, correction dose to be administered at scheduled meal/feed time, in coordination with blood glucose testing.
- **Use of bedtime Correction dose is not routinely recommended.** Prescriber may use discretion for STAT bedtime insulin dose if blood glucose over 18.0mmol/L.

Titration: For most patients, the recommended target is a blood glucose range of **5.0-10.0mmol/L**

If Breakfast BG is:		If Lunch BG is:		If Supper BG is:		If Bedtime BG is:		If Overnight BG is:
LOW (below 5.0mmol/L)	HIGH (above 10.0mmol/L)	LOW (below 5.0mmol/L)	HIGH (above 10.0mmol/L)	LOW (below 5.0mmol/L)	HIGH (above 10.0mmol/L)	LOW (below 5.0mmol/L)	HIGH (above 10.0mmol/L)	LOW (below 5.0mmol/L)
Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease
Bedtime BASAL		Breakfast BOLUS		Lunch BOLUS or Breakfast BASAL		Supper BOLUS		Bedtime BASAL

If ALL BG are HIGH (greater than 10.0mmol/L), Calculate TDD from last 24 hours, Increase TDD by 10-20% and Recalculate all Basal, Bolus and Correction Doses

- If **HYPERGLYCEMIA OR HYPOGLYCEMIA:** Discuss with patient to determine if change in activity or oral intake was the cause. If yes, monitor carefully. If otherwise unexplained, increase or decrease doses by 10-20% as per Titration Table above.

Enteral Tube Feeds / Parenteral Nutrition: Insulin requirements will vary depending on rate and carbohydrate content

For more details: see How to BBIT document on www.BBIT.ca website.