

INSULIN PUMP INITIATION PLAN

(HEALTH CARE PROVIDER FORM)

START DATE: _____

1-2 DAYS BEFORE STARTING THE PUMP

Contact the patient and his/her parent/guardian to:

- Arrange for A1C testing, if not completed within the last 3 months.
 - For early morning pump starts, instruct re: need for fasting (nothing to eat or drink for 8 hours) on the day of the pump start.
 - Provide insulin instructions for the day/evening prior to the pump start appointment (note here):
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- Review “what to bring” to the appointment (pump, batteries, operating manual, supplies, rapid-acting insulin [vial or cartridge depending on chosen pump], syringe, calculator, and BG meter).
 - Depending on the time of the pump start, remind the family that insulin **may or may not** be taken at home on the pump start day and will be given once the pump is started.
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ON THE DAY OF THE PUMP START

- A1C ordered, if not completed within the last 3 months.
 - If necessary, verify that the child/ adolescent has arrived fasting.
 - If necessary, verify that **no insulin** has been given or adjustment of insulin is reviewed.
 - Ensure all supplies and materials needed arrive with the child/adolescent.
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PUMP START DAY PLAN

- Set up initial basal rate based on calculations determined by the diabetes team (see back of this form).
- Have the parent/guardian or adolescent check blood glucose before starting the insulin pump.
- Supervise the parent/guardian or adolescent inserting the insulin pump.
- Determine insulin dose based on breakfast carbohydrate and required blood glucose correction. Depending on the child’s/adolescent’s anxiety, it may be necessary to give half correction the morning of the pump start.
- Have parent/guardian or adolescent give the appropriate amount of insulin.
- Have the parent/guardian or adolescent test blood glucose every 2 hours throughout the pump start day. Basal/Bolus corrections may need to be made based on these readings.
 - Monitor ketones if the blood glucose is >15 mmol/L. If no ketones, correction through the pump may be done once. If ketones are present, the family must give insulin by syringe or insulin pen and do a site change until ketones resolved.
- For early morning pump starts, have parent/guardian or adolescent determine insulin dose for lunch based on blood glucose and carbohydrate amount.
- Remind parent/guardian or adolescent that blood glucose testing will be required before all meals, 2 hours after meals, and overnight at 11:00 p.m. and 3:00 a.m. for a period-of-time. Blood glucose corrections will need to be re-assessed with blood glucose testing 2 hours after the insulin is given until blood glucose is within normal range.

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- Set up “insulin on board,” and personalize the “insulin on board” duration. Refer to the pump’s user guide for further instruction.
- Provide the family with written guidelines (use the Pump Start Guidelines) before leaving the Diabetes Centre along with contact numbers for overnight assistance.
- Provide the family with the Insulin Pump Worksheet and have them fax/e-mail to the Diabetes Centre within 5 days.

DETERMINE THE DAILY INSULIN REQUIREMENTS

STEP 1: CALCULATE THE PRE-PUMP TOTAL DAILY DOSE (TDD)

- Add **all** the insulin that is taken daily: Pre-pump TDD = _____ units.
It will be helpful to have reviewed Insulin-to-Carbohydrate (CHO) Worksheet prior to the pump start date to determine TDD.
- Calculate the **pump TDD** and reduce TDD by 25% (absorption at pump infusion site allows for increased efficiency of insulin).

$$\text{TDD} = \text{_____ units} \times 0.75 = \text{_____ units as pump TDD}$$

STEP 2: DETERMINE BASAL/BOLUS AMOUNTS

Allocate 50% of the pump TDD dose for basal and 50% for meal boluses over 24 hours.

- **Initial basal rate** (use 50% pump TDD as basal insulin)
Pump TDD _____ \div 2 = _____ units/day as Basal insulin
_____ units/day as basal \div 24 hours = _____ units/hour
- **Starting Bolus:**
Insulin-to-CHO Ratio (1 unit of insulin: _____ grams of CHO)
Using the “500 rule”:
500 \div _____ pump TDD = _____ CHO ratio

Overnight basal rates and insulin to CHO ratios may be revised by the blood glucose readings throughout the day.

INSULIN SENSITIVITY FACTOR (ISF)

Calculate the insulin sensitivity factor (the number of mmol/L that 1 unit of insulin will lower blood glucose).

$$100 \div \text{_____ pump TDD} = \text{_____ mmol/L}$$

Compare to previously used correction plan and Insulin-to-Carbohydrate Worksheet, and consider adjusting if difference is significant.

THE ABOVE CALCULATIONS TO BE DETERMINED WITH YOUR DIABETES HEALTHCARE TEAM PHYSICIAN.

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EXAMPLES OF INSULIN-TO-CHO RATIO AND INSULIN SENSITIVITY FACTOR CALCULATIONS

The following examples could be reviewed with family members:

Example 1: Insulin-to-CHO Ratio

Using an Insulin-to-CHO ratio of 1:25:

- If blood glucose was **low** 2 hours after eating, try increasing ratio to give less insulin (1:30).
- If blood glucose was **high** 2 hours after eating, try lowering ratio to give more insulin (1:20). You want a ratio that allows blood glucose to increase by 3 mmol/L from pre-meal blood glucose level (2 hours later). Try a ratio 2 to 3 times before deciding it is a good ratio.

Example 2: Insulin Sensitivity Factor

Using a TDD of 21:

- $100/21$ (new total daily dose) = 4.8 (5). Correction factor would be 1 drop 5 mmol/L.
- If blood glucose was 19 and looking for a target blood glucose of 7:
 $19-7=12/5 = 2.4$ (bolus 2.4 units to correct for BS).
- If correction worked, blood glucose should be between 8-12 in children under 12 years and 5-10 in children 13 years or older 2 hours after eating/correction.

NOTE: Formula of 100 is helpful but Insulin-to-Carbohydrate Worksheet will more closely determine true insulin sensitivity pre-pump.

The 100 formula can be used as a “double check” based on new pump TDD (total daily dose).