

# Insulin Pump Therapy – Basic Information

## Glossary of Terms

**Basal Rate** – Background insulin that is delivered continuously throughout the day and night to maintain control of blood glucose levels between meals. The pump may be programmed to deliver different basal rates at different times of the day according to the child's needs and the healthcare provider's orders. The first basal rate is always started at 12:00 AM (midnight) and ends when the next basal rate starts. This is the only fixed time.

**Bolus Delivery** – This is the amount of insulin that is programmed before eating according to the child's specific insulin-to-carbohydrate needs for that specific meal. Carbohydrate ratios may vary at different meal times. Typically the ratio may be 1 unit of insulin for each 10, 15, 20 etc grams of carbohydrates.

**Correction Bolus** – This is the amount of insulin that is delivered as a bolus to correct elevated blood sugar levels and bring blood glucose levels back into the target range for the specific child. This bolus is a dose of insulin that is based on a formula that takes into account the pre-meal glucose level, the target glucose level and the child's sensitivity as determined by the health care provider. The calculated amount may be either a plus (to be added to pre-meal dose) or a minus (to be subtracted from pre-meal dose) number. Correction bolus may also be given when blood sugar is above target range. See examples below.

### Recommendations/Tips:

- **With insulin pump therapy it is recommended to test blood glucose levels 4 – 6 times a day, and always before programming a bolus delivery.**
- **Repeated hyperglycemia requires action to prevent ketoacidosis. In these cases insulin may need to be delivered by injection.**
- **The insulin delivered by the insulin pump is one type only and generally is the rapid acting insulin Humalog or Novolog.**

Insulin pumps carry a 1-800 number on the back of the pump for assistance with the functions of the pump. The school nurse may contact the individual pump companies to get assistance with specific pumps.

### Example 1

Mary receives 1 unit of insulin for each 15 grams of carbohydrate eaten at breakfast. Her fasting glucose is 205. She plans to eat 60 grams of carbohydrates at breakfast.

1 unit/15 grams of carbs = 4 units (60 divided by 15) = Pre-meal Bolus amount of insulin

$\frac{205 \text{ (blood glucose)} - 120 \text{ (target level)}}{50 \text{ (Sensitivity factor)}} = \text{plus } 1.7 \text{ units} = \text{Correction Bolus}$

4 units (pre-meal bolus) plus 1.7units = 5.7 units to be given pre meal

If given with insulin pump, exactly 1.7 units may be added to the pre-meal bolus of 4 units for a total of 5.7 units

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## Example 2

Mary receives 1 unit of insulin for each 15 grams of carbohydrate eaten at breakfast. Her fasting glucose is 60. She plans to eat 60 grams of carbohydrate at breakfast.

1 unit /15 grams of carbs = 4 units (60 divided by 15) = Bolus amount of insulin

$\frac{60 \text{ (blood glucose)} - 120 \text{ (target)}}{50 \text{ (sensitivity factor)}} = \text{minus } 1.2 \text{ units} = \text{Correction Bolus}$

4 units (pre-meal bolus) minus 1.2 units = 2.8 units to be given pre meal

If given with insulin pump, exactly 1.2 units may be subtracted from the pre-meal bolus of 4 units for a total of 2.8 units to be given pre-meal