

Practical Pump Pointers

Overview

- Also known as CSII (continuous subcutaneous insulin infusion)
- Insulin is delivered through a catheter attached to a computerized pump the size of a pager. Worn clipped to belt or in a pocket, etc.
- Pumps use rapid-acting insulin only – Novolog, Humalog, Aprida
- Catheter can be placed at various sites (most commonly the abdomen, hip or buttock area, upper arm) and must be changed at least every 3 days.
- Most pumps have visual alerts on the pump screens and alarms that sound or vibrate when there is an insulin delivery problem.
- Student's Diabetes Medical Treatment Plan with Pump Supplement, and Individual Health Plan should specify details of all necessary care at school.

Common Terms

- Basal insulin – microscopic amounts of insulin pre-programmed into the pump which infuses into the body 24 hours a day – generally requires no intervention at school.
- Bolus insulin – an insulin dose taken to cover the total amount of carbohydrates eaten and/or given to correct high blood glucose.
- Correction Factor – the amount that the blood glucose is lowered by 1.0 unit of rapid-acting insulin (also called the sensitivity factor)
- Insulin-to-carbohydrate ratio – amount of carbohydrate grams “covered” by one unit of insulin.
- Correction Bolus – insulin dose taken to reduce high blood glucose. Based on the student's insulin correction factor and the blood glucose target.
- TDD (Total Daily Dose) – the amount of total daily insulin needed, including basal insulin and all usual bolus amounts.
- Infusion set – the tubing and needle catheter that is inserted subcutaneously.

Hyperglycemia/Ketone Management

- Check ketones
- Troubleshoot pump, tubing, and site for problems.
- Administer an insulin bolus if ordered.
- Recheck blood sugar in one hour to make sure the blood sugar has gone down.
- If not, give an insulin dose by syringe and the pump site should be changed.
- Diabetes ketoacidosis can occur in as little as 3 hours without insulin.
- “When in doubt, change it out!”

Hypoglycemia

- Do not delay treatment
- May need to suspend the pump during treatment for severe hypoglycemia if ordered.
- Do not over-treat. No need for an extra snack if next meal or snack is more than one hour away.

Carb Counting

- Students will need to know the grams of carbohydrate amounts in all food eaten, and enter the total amount into the pump.

- Insulin then will be given per bolus to cover the carbs eaten.

Exercise

- Pump modifications may be needed for exercise or sports (i.e. removal for contact sports, setting a temporary basal rate, suspending the pump for exercise, etc)
- If pumps are suspended or removed for more than one hour, insulin adjustments must be made.
- Pumps can be removed (with exception of OmniPod) for contact sports, swimming, etc.
- If disconnected, pump should be placed in a safe, secure and cool location.

Site Changes

- Site needs to be changed if:
 - It becomes red and/or painful
 - It leaks
 - Blood appears in the tubing
 - The blood glucose is not responding to an insulin bolus
 - Ketones are present
- Many students can change their own pump sites either independently or with supervision.
- School nurses generally are not expected to change pump sites. If the student is unable to do it, the parent should be called.
- Check blood sugars at least 1 hour after insertion of a new infusion set to ensure that pump is functioning properly.

Supplies Needed at School

- New infusion set and reservoir
- Inserter if used
- Skin prep solution/alcohol pads/ tape
- Insulin and syringes or insulin pen in case of pump failure
- New pump batteries
- Ketone strips

School Nurse's Role:

- Educate teachers/staff when students have pumps.
- Follow student's DMMP and IHP
- Have information readily available and be able to:
 - Administer a bolus
 - Suspend the pump
 - Check the status of the pump
 - Verify the last bolus given
 - Verify that the pump is not in a "no delivery" mode.
 - Recognize and troubleshoot alarms – take the necessary action to prevent problems later

Assistance

- 24 hour help line printed on back of pump
- Pump web sites
- Ask physicians/pump reps if you can observe during students' pump training
- Know how to call for technical help