Introduction to Insulin Pump Therapy

Lancaster Diabetes Education Center

History of the Insulin Pump

- First pump developed in 1963-size of a large backpack which delivered insulin and glucagon
- As technology progressed, the size of the insulin pump had shrunk to about the size of a brick by the 1970's
- In 1983 MiniMed introduced the first miniature insulin pump (size of a large pager)
- MiniMed, Disetronic, and Animas are companies that continued to revise the insulin pump over the years

What is the insulin pump?

- Made of pump reservoir (like regular insulin syringe but larger) filled with insulin, a small battery-operated pump, and a computer chip that allows the user to control how much insulin the pump delivers.
- Pump reservoir delivers insulin to the body by a thin plastic tube-infusion set.
- The needle or cannula is inserted under the skin, usually on the abdomen.
- The pump is delivers insulin 24-hours a day according to a programmed plan unique to each pump wearer.

Is the pump automatic?

- The pump is not automatic, however a small amount of insulin is given continuously (basal rate)
- The user has to decide how much insulin will be given based on a predetermine insulin to carbohydrate rate.
- The user must monitor blood glucose levels at least 4 times a day

Is the cost of the insulin pumped covered by my insurance?

- Medicare, Medicaid, and most insurance companies will cover the cost of the insulin pump in type 1 diabetics and type 2 diabetics who require insulin therapy

- Although Disetronic and Animas both make insulin pumps, the primary focus of the curriculum will be aimed towards the Medtronic Minimed insulin pump. The Lancaster Diabetes Education Center has decided to adopt this pump because of the excellent training and technical support that Medtronic MiniMed provides to its customer.

Does the pump require any special care or maintenance?

- The pump is designed to be durable and maintenance free.
- Medtronic MiniMed pumps require three 1.5V silver oxide batteries that are available in drug stores worldwide.
- The pump can be cleaned by washing with a damp cloth and mild soap.

How do I wear the pump?

- Because the pump is small it can be concealed easily.
- You decide where you want to wear it: in a pocket, tucked into a bra or garter belt, or placed in a case that can be worn on a belt.
- Many people like to have their pumps out where it’s easier to get to for programming which can be done with an available belt clip, similar to that used on beepers.

Setting Up the Pump

Sof-Set and Reservoir Change

- Wash your Hands
- Gather new reservoir, Sof-serter, alcohol swab, and insulin vial.
- Discard old set and reservoir: pull of set at site first, then remove reservoir
- Cycle the new reservoir. Fill the reservoir with 2-3 days worth of insulin plus 25 extra priming units
- Remove filling needle from reservoir after purging air bubbles.
- Open Sof-set package and attach reservoir to infusion set. Make sure connection is tight!
- Manually prime infusion set by pressing slowly on reservoir plunger until you see a drop of insulin come out of the Sof-set introducer needle.
- Continue to manually prime the infusion set until all the air is cleared from the tubing.
- Open pump door, pull driver arm up towards you and slide driver block to the far end.
- Place reservoir in pump with numbers facing upwards.
- Lower driver arm so that one arm is on either side of the reservoir plunger.
- Close pump door
- Load Sof-set into Sof-serter with tubing between the prongs.
- Push the Sof-set down until it clicks into place in the Sof-serter. Set the Sof-serter in locked position.
- While holding down the Sof-set wings, remove the white tab and needle guard. Program the pump to deliver 5.0 unit prime to ‘take up the slack.’
- Watch to see at least 5 drops of insulin exit the introducer needle. If you don’t see 5 drops, program another prime until you see 5 drops.
- Clean sit with alcohol or IV prep.
- Unlock the Sof-serter, place it on the site and press the activation button.
- While holding down the wings, gently turn the Sof-serter and slide it of the blue hub.
- Place Sof-set tape over the Sof-set, with the needle hub in the round hole in the tape.
- While holding down the wings give the blue hub 1/4 turn and pull straight out. Discard using proper needle disposal technique.

Sof-set and Reservoir Change

- Program pump to deliver a prime to fill the cannula. (Standard:0.5/Micro: 0.3)
- Check blood glucose 3 hours later.
- When reconnecting, check for a drop of insulin at the end of the tubing. If no drop, program 0.5 unit prime. Continue to prime until at least one drop appears