Insulin Pumps

Melissa Ashdown RN, BSN, CDCES, CPT

Mary Heatherly RN, BSN, CPN, CDCES, CPT

Children's of Alabama®

Insulin Pumps

Melissa Ashdown RN, BSN, CDCES, CPT
Mary Heatherly RN, BSN, CPN, CDCES, CPT

06/17/2022

Children's of Alabama

Insulin Pumps Available

Omnipod 400

Tandem t:slim X2

Medtronic 770G

Omnipod 5

Omnipod DASH

Children's of Alabama

Medtronic 770G

- Insulin pump can communicate with the Medtronic Guardian sensor
- Sensor is not currently FDA approved for dosing
- Requires minimum of two blood glucose checks per day to calibrate and keep the sensor accurate
- **Auto Mode:** can also increase, decrease, and suspend basal insulin to help with hyperglycemia and hypoglycemia
- If worn with the sensor but not in Auto Mode, then the pump can adjust the basal insulin to suspend before low
- Must enter in carbohydrates and still perform finger sticks

Children's of Alabama

Omnipod 400 and DASH

- Omnipod has three different insulin pumps on the market at this time
- Omnipod DASH is currently not covered by every insurance plan
- Neither communicate with any Continuous Glucose Monitor (CGM)
- If using a CGM for the glucose reading, then you would enter this in under blood glucose to complete the bolus calculation
- Must enter in carbohydrates and/or glucose reading for calculations to be completed
- No tubing

Children's of Alabama

Omnipod 5

- Omnipod 5 is in a limited market release and is not covered by most insurance plans at this time
- The insulin pump can communicate with the Dexcom G6 CGM (FDA approved for dosing)
- The Dexcom G6 app will have to be on the patient phone (Cannot use the Dexcom receiver)
- Patient will either use a cell phone app to dose with or the controller that is sent from Omnipod (Cannot use both or trade back and forth)
- **Automated mode:** Suspends insulin when glucose is predicted to be at low level, slows down basal insulin, increases basal insulin, adjustable target from 110 to 150 (Must have Dexcom G6 connected to pump for Automated mode)
- User must enter in all carbohydrates eaten
- **SmartBolus:** The pump will adjust the bolus amount to deliver based on the CGM glucose trends
- Enter blood glucose/CGM reading if a correction is needed
- No tubing

Children's of Alabama

Tandem t:slim X2

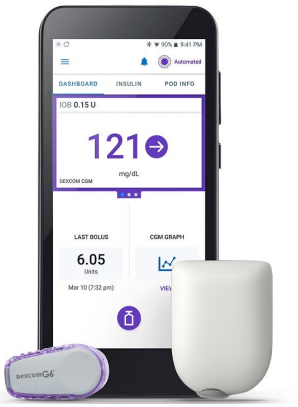
- Insulin pump can communicate with the Dexcom G6 CGM (FDA approved for dosing)
- Different software: Basal IQ or Control IQ
- **Basal IQ** - Suspends basal insulin when low
- **Control IQ** - Suspends insulin when glucose predicted to be at low level, slows down basal insulin, increases basal insulin, and can give an auto correction up to once every hour if needed, changes target to 110
- Please be aware: School orders may say target (150) however, when Control IQ is “on” the target is automatically changed to (110)
- If the insulin pump fails then use the target listed on the prescriber authorization form (for the correction formula)
- User must enter in all carbohydrates eaten
- Blood glucose/CGM reading if a correction is needed
- Remote bolus from phone app currently in limited market release

Children's of Alabama

Automated Options

Insulin pump that have the automated insulin delivery option:

- Medtronic 670G and 770G in Auto Mode (Guardian Connect sensor)
- Tandem t:slim X2 with Control IQ Technology (Dexcom G6)
- Omnipod 5 in Automated Mode (Dexcom G6)



Children's of Alabama

Automated Insulin Pump Requirements

Automated insulin delivery (AID) or Hybrid closed loop insulin pumps

- Not all automated insulin pump algorithms work the same way
- Must have a CGM that can communicate with the insulin pump
- If you do not have a sensor/CGM, then the patient can still use the insulin pump but it would not have the automated delivery option
- AID have the ability to use CGM readings in order to adjust the basal insulin
- Most systems use predicted CGM glucose values 30 to 60 minutes in the future; they will speed up, slow down, or suspend basal insulin accordingly

Children's of Alabama

Automated Insulin Pump Requirements

Automated insulin delivery (AID) or Hybrid closed loop insulin pump

- Important to enter in any carbohydrates eaten
- Bolus before eating
- Best practice is to enter a glucose reading(CGM or finger stick) into the pump for bolus calculations at least 4 times per day. (Breakfast, lunch, dinner, and bedtime)
- Enter in a glucose reading even if it is below or in target range. This will ensure correct calculations are completed
- The patient still has the ability to correct the glucose every 2 hours if needed (when a glucose reading is manually entered)
- Insulin on Board/Active insulin is still used in calculations for automated insulin pumps

Children's of Alabama

Simulator Apps

Automated insulin pumps have simulator apps in order to practice. These do not control the insulin pump.

Medtronic 770G: MiniMed Virtual

Omnipod 5: Omnipod 5 simulator

Tandem t:slim: T:Simulator

Children's of Alabama

Remaining Active Insulin or IOB

It takes 3 to 4 hours for the body to use an entire bolus of rapid acting insulin.

Your pump will remember how much insulin is still working in your body and will subtract this from the bolus dose.

This will prevent "insulin stacking," which could lead to a low blood glucose.

Example:

Carbohydrate bolus:	3 units
Correction bolus:	+2 units
Active insulin / IOB:	-1 unit
Total bolus recommended:	4 units

Children's of Alabama

Remaining Active Insulin or IOB

- If there is Insulin on Board (IOB) you can still give another bolus
- Some of the automated insulin pumps will continuously have IOB as they also keep up with the increased basal delivery
- IOB is the reason you can give a correction dose every two hours when wearing an insulin pump(Automated or Manual pumps)
- It will prevent you from giving too much insulin too soon
- This is why your calculations may differ from what the insulin pump calculates to give

Children's of Alabama

Practice bolus dosing

Demonstration on how to bolus dose with each insulin pump

Settings programmed into the insulin pump:

Carbohydrate ratio = 1:10 (for all meals and snacks)

Correction formula = (BG-120)/60

The patient plans to eat 60 grams of carbohydrates and their glucose was 200

Children's of Alabama

Conclusion

Questions:

- Call Children's of Alabama Diabetes Team
- 205-638-9107 (Diabetes office)
- Can ask for a "sick day page" if needed
- 205-638-9100 (On-Call MD after hours)
- If interested in further education please contact Mary Cochran to set up class dates and times

Children's of Alabama

Questions

Children's
of Alabama