

Insulin Pumps for Beginners: Getting All Systems Go!

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WE NEED TO
MAKE THIS...



...FIT INTO A
HOLE MADE
FOR THIS...

...USING ONLY THIS!

Who Am I?

Pediatric Endocrinologist at University of Florida

- Clinical, Translational, & Psychosocial Researcher
- Diabetes camp doctor (<http://floridadiabetescamp.org/>)
- Training med students, residents, and fellows
- T1D consortia (TrialNet, TEDDY, nPOD, HIRN, T1DX-QI)



“It's like trying to drive a toaster through a car wash”

Apollo 13, 1995

Talk Outline:

What is life like on injections

What is life like on a pump

What exactly is an insulin pump and how does it work

Different models (plus CGM)

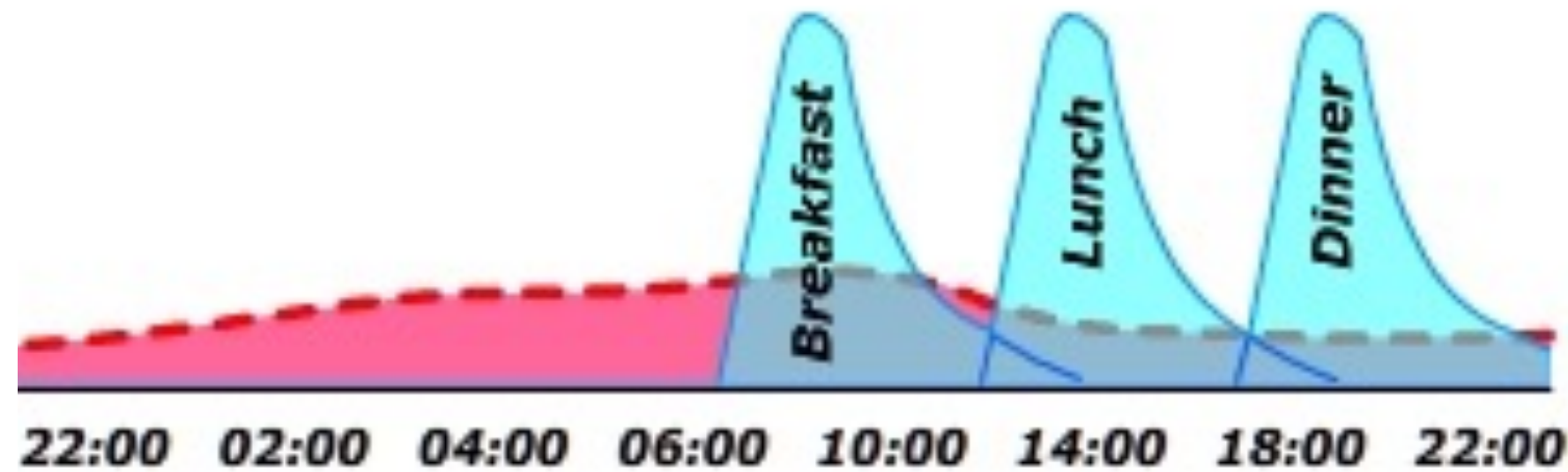
Pros and cons of a pump

How do I get started?

How to troubleshoot

Life on insulin injections

Basal/Bolus



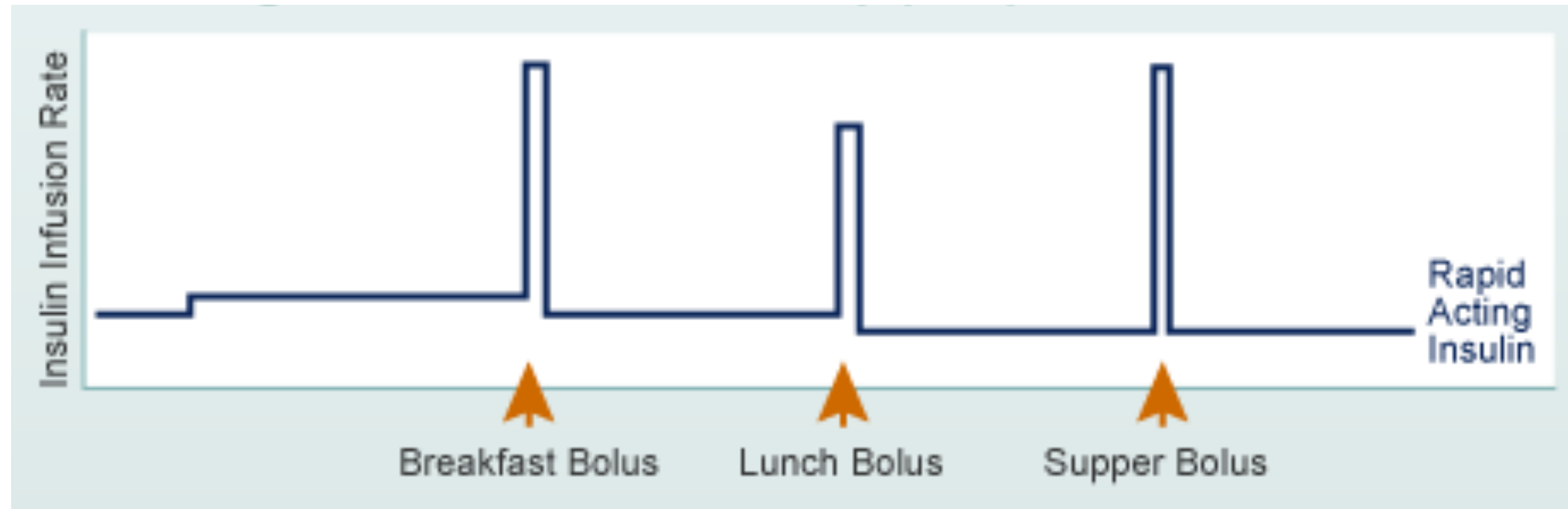
Understanding the amount of insulin that's needed to handle normal bodily functions



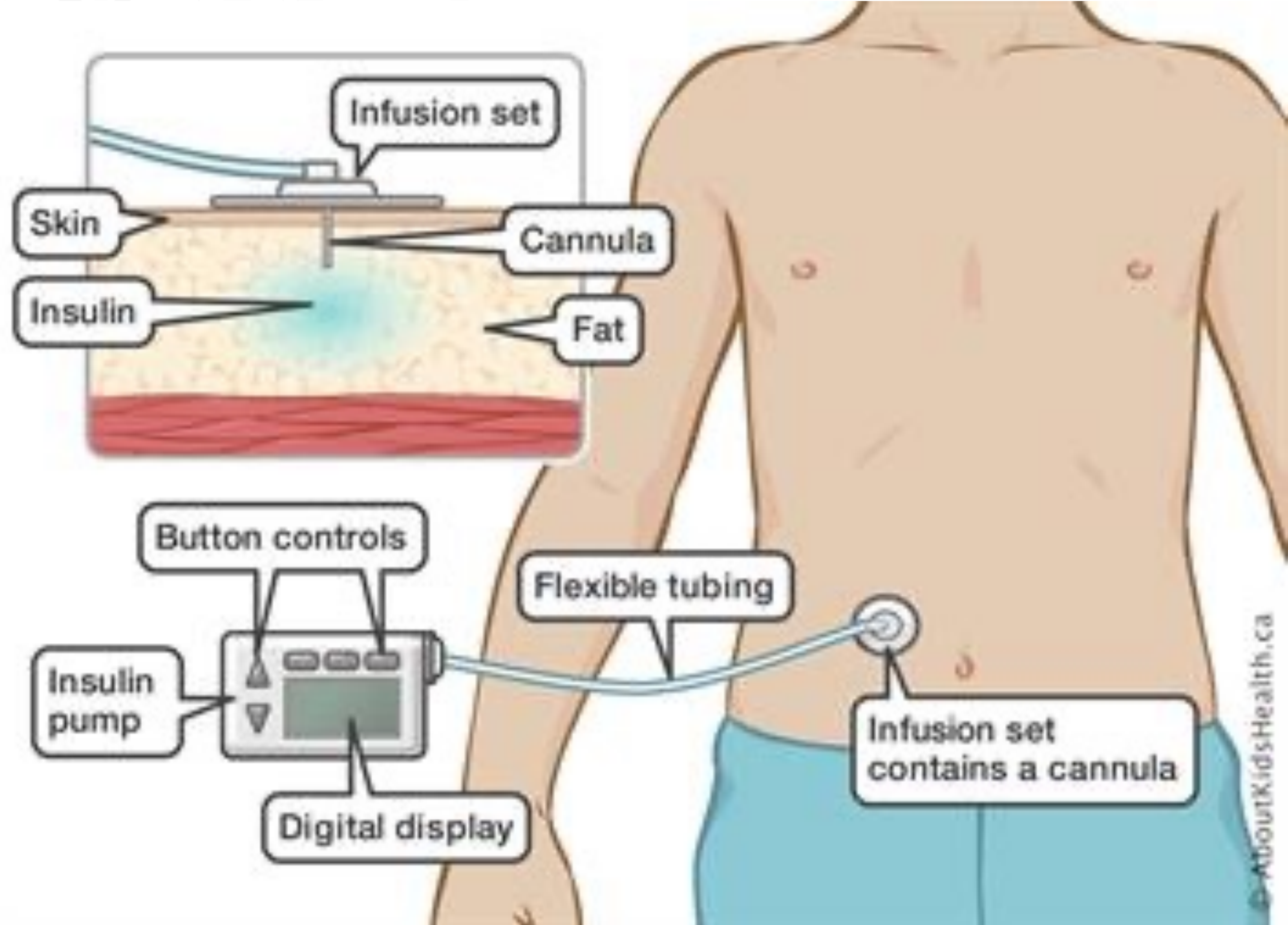
BASAL

Giving enough insulin to match these bodily functions

Life on a pump



How does an insulin pump work?



U.S. Insulin Pumps

Company

Brand

Tube



Medtronic

Minimed

Yes



Tandem

t:slim X2

Yes



Insulet

Omnipod

No



Beta Bionics

iLet

Yes



Dexcom G6 or Dexcom G7

**Continuous
Glucose
Monitors
(CGM)**



Libre 2 or Libre 3



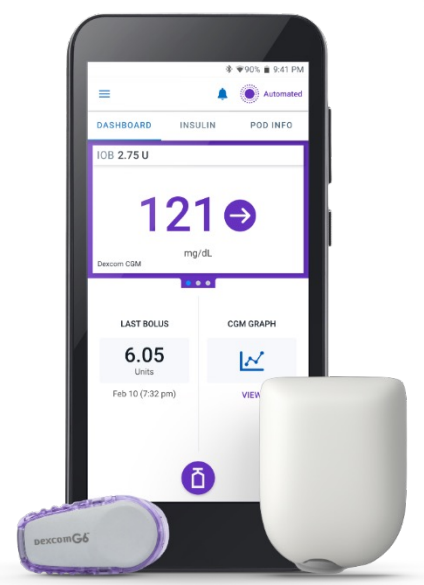
Eversence E3 (implantable)



Medtronic Guardian 3 or Guardian 4



t:slim + Dexcom G6:
Control IQ



OmniPod+ Dexcom G6:
OmniPod 5







iLet + Dexcom G6:
Bionic Pancreas



Medtronic pump +
Guardian 4:
780G



	Company	Brand	Tube	Details
	Medtronic	Minimed	Yes	Minimed 670G Minimed 770G Minimed 780G Medtronic CGM 7-day infusion set
	Tandem	t:slim X2	Yes	t:slim X2 Basal IQ t:slim X2 Control IQ (Future: t:sport mini)
	Insulet	Omnipod	No	Omnipod Eros Omnipod DASH Omnipod 5 Bolusing essential
	Beta Bionics	iLet	Yes	iLet Bionic Pancreas Insulin-only (for now) Announce meals Minimal interaction

If you are going to use a pump...

You should use it with a CGM

The extra benefit of some
automated insulin delivery
from a connected CGM helps
the MOST!

Pros and Cons

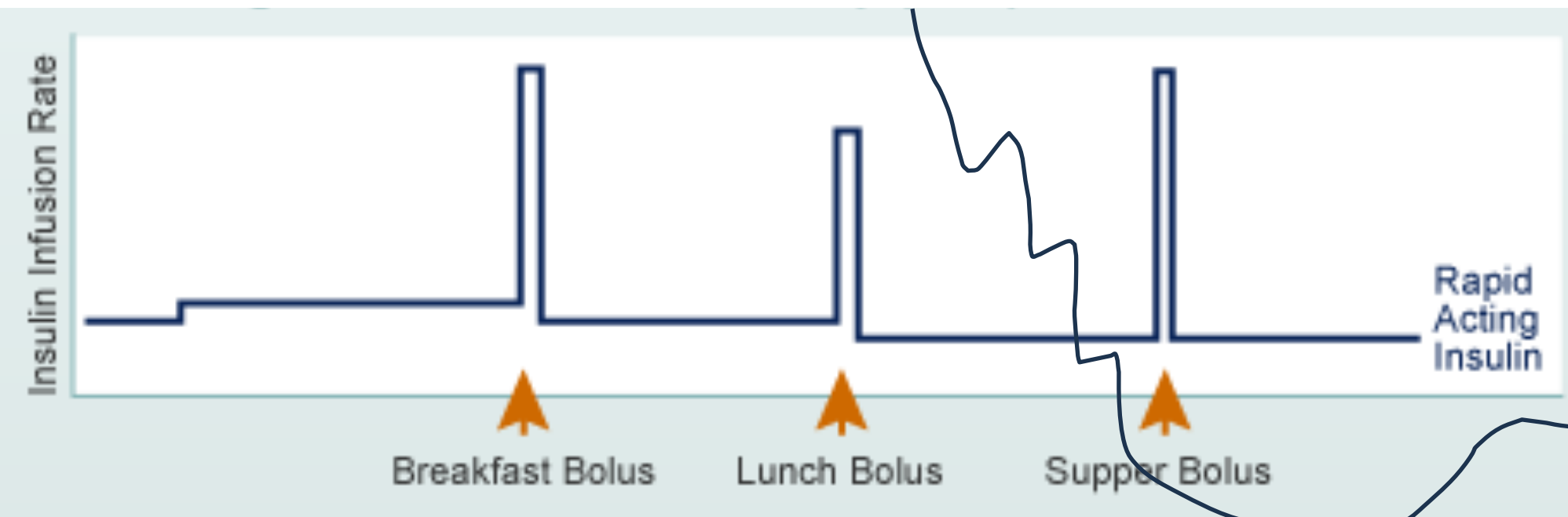
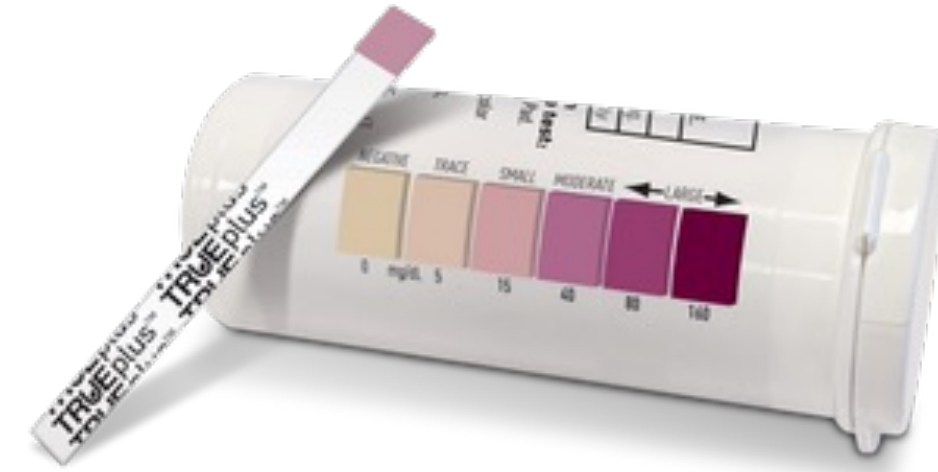
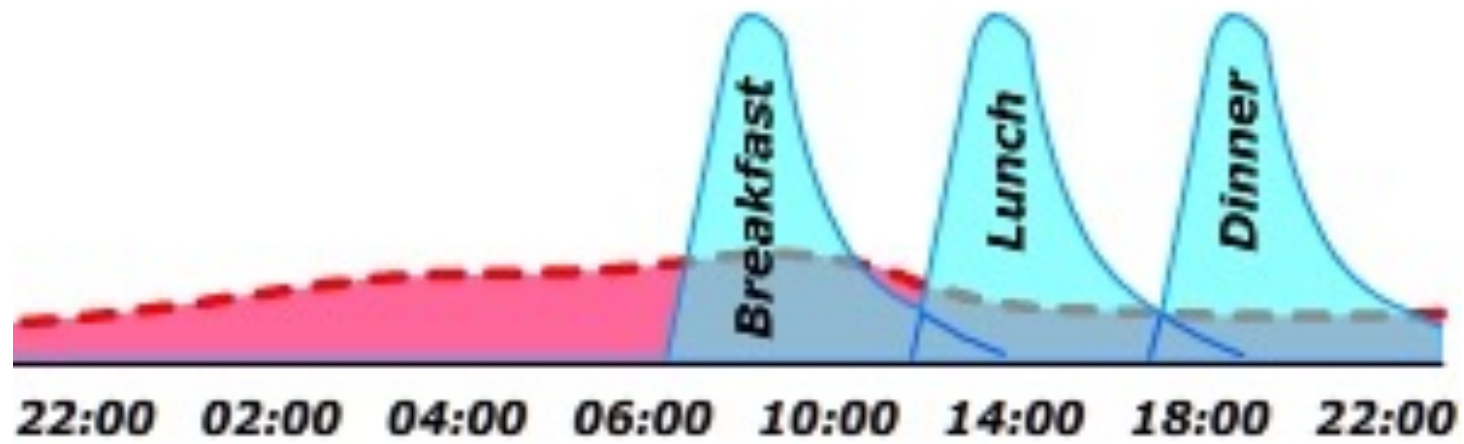
- Flexibility
- Adjust insulin rates (time of day, exercise, sleep, insulin resistance)
- Temporary basal rates
- Injections (mostly) gone
- Able to give very small doses
- Dose calculator
- Stores doses for review



- Cost/insurance coverage
- Pump sites can come off, kink, or become occluded
- If it comes off – risk of DKA
- May have skin irritation or infection
- May feel tethered
- May experience “device/alarm fatigue”

Ketones.....

Basal/Bolus



Pump FAQs

- What type of insulin is in the pump
- Change pump site every 3 days
- Sooner if needed



How to get started

Timing re: deductible

Process takes time

Talk with your loved ones about your interest in a pump

Talk with your diabetes care team

Your clinic may have a pump informational session

Let your diabetes care team know readiness for a pump – Rx sent by provider

Pump supplies arrive, time to get trained! And trained a couple more times!

Set up online portals for the pump and to connect to clinic

Insulin vials prescribed to local pharmacy



← Setup: Basal

Weekday Graph: U/hr

Total Basal: 24 U/day

Time Segments	Total: 4
Segment 1: 12:00 am - 5:00 am Basal Rate: 0.75 U/hr	
Segment 2: 5:00 am - 11:00 am Basal Rate: 1 U/hr	
Segment 3: 11:00 am - 5:00 pm Basal Rate: 1.5 U/hr	
Segment 4: 5:00 pm - 12:00 am Basal Rate: 0.75 U/hr	

CANCEL SAVE

← Setup: Bolus

Review the Target Glucose and Correct Above values entered for each time segment.

Time segments	Total: 4
Segment 1: 12:00 am - 5:00 am Target Glucose: 110 mg/dL Correct Above: 150 mg/dL	
Segment 2: 5:00 am - 9:00 am Target Glucose: 110 mg/dL Correct Above: 130 mg/dL	
Segment 3: 9:00 am - 12:00 pm Target Glucose: 120 mg/dL Correct Above: 140 mg/dL	
Segment 4: 12:00 pm - 12:00 am Target Glucose: 130 mg/dL Correct Above: 150 mg/dL	

CANCEL SAVE

← Setup: Bolus

Review the Correction Factor values entered for each time segment.

Time segments	Total: 4
Segment 1: 12:00 am - 5:00 am 1 U of insulin lowers glucose by: 55 mg/dL	
Segment 2: 5:00 am - 9:00 am 1 U of insulin lowers glucose by: 40 mg/dL	
Segment 3: 9:00 am - 12:00 pm 1 U of insulin lowers glucose by: 47 mg/dL	
Segment 4: 12:00 pm - 12:00 am 1 U of insulin lowers glucose by: 55 mg/dL	

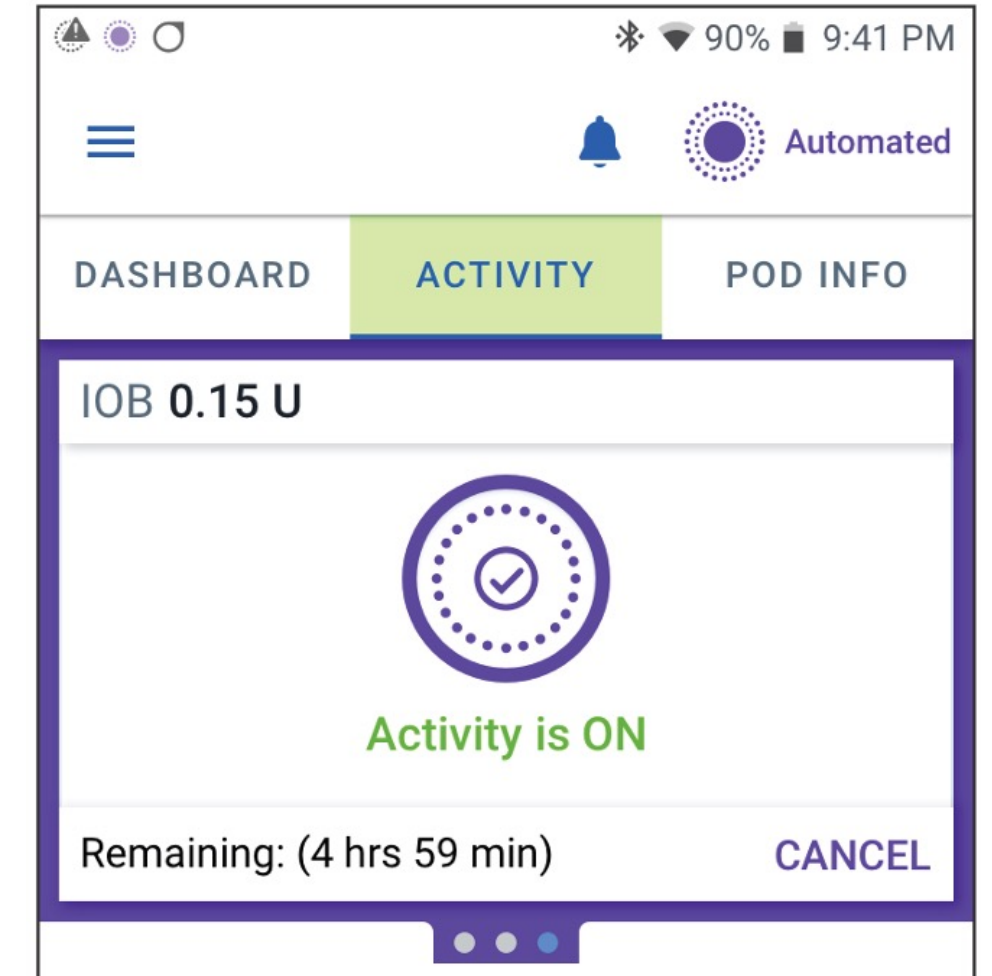
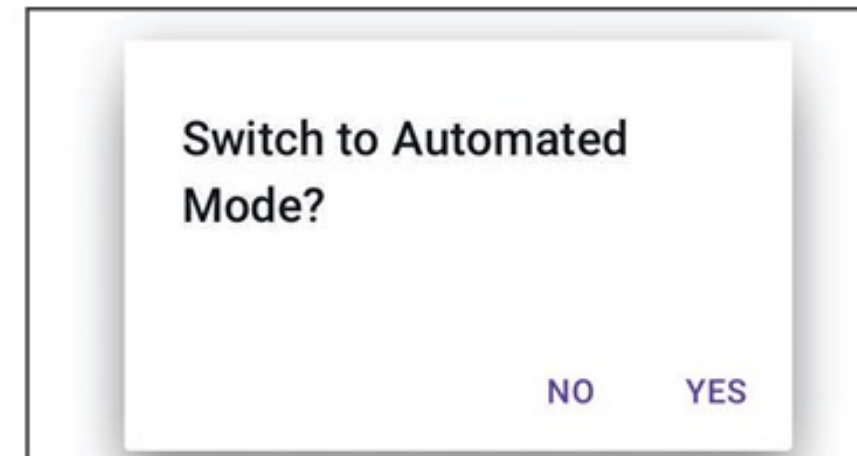
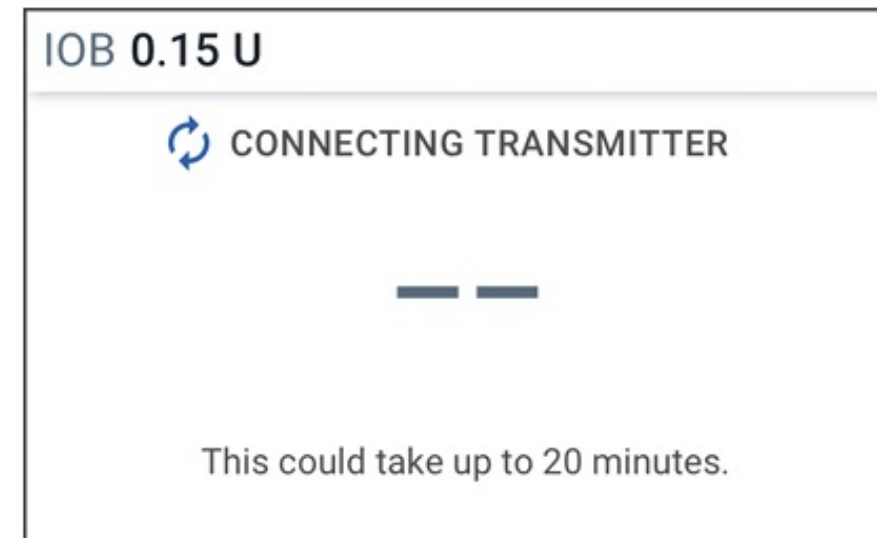
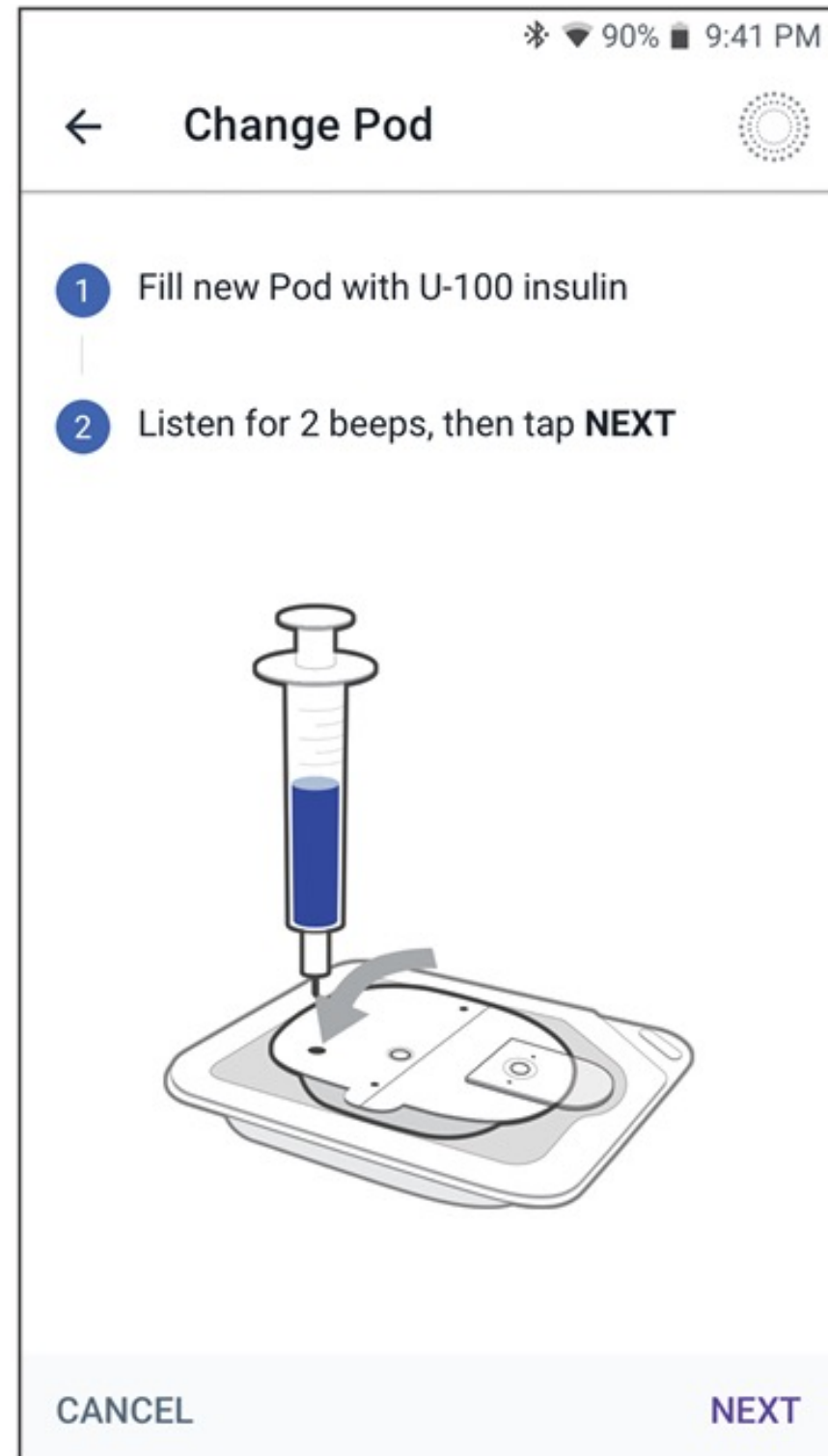
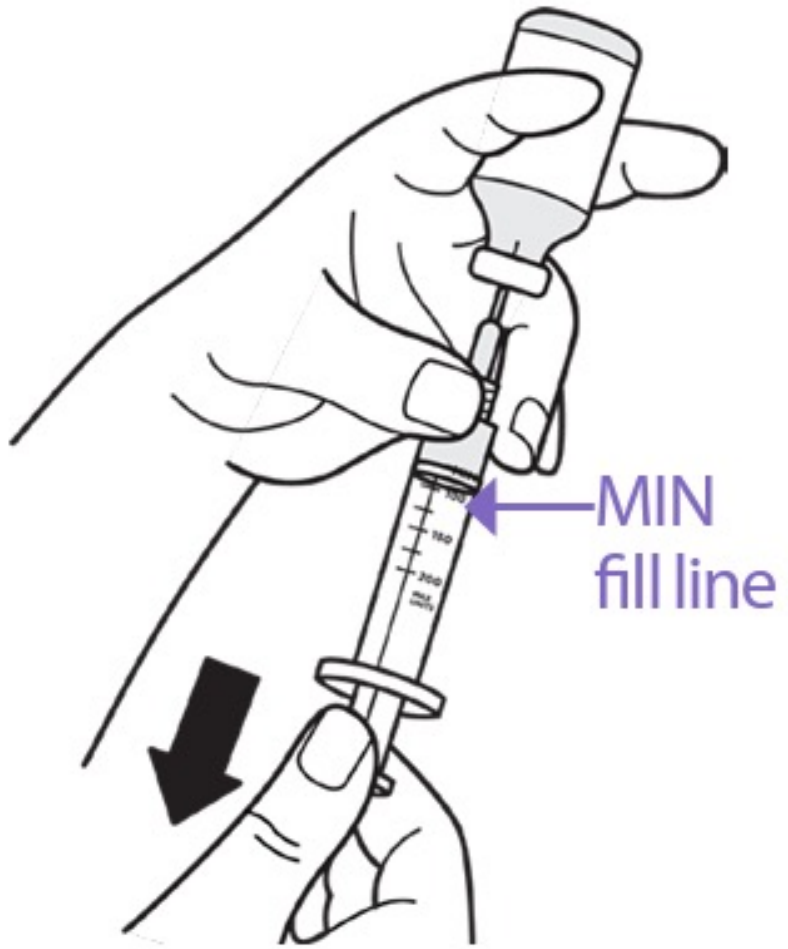
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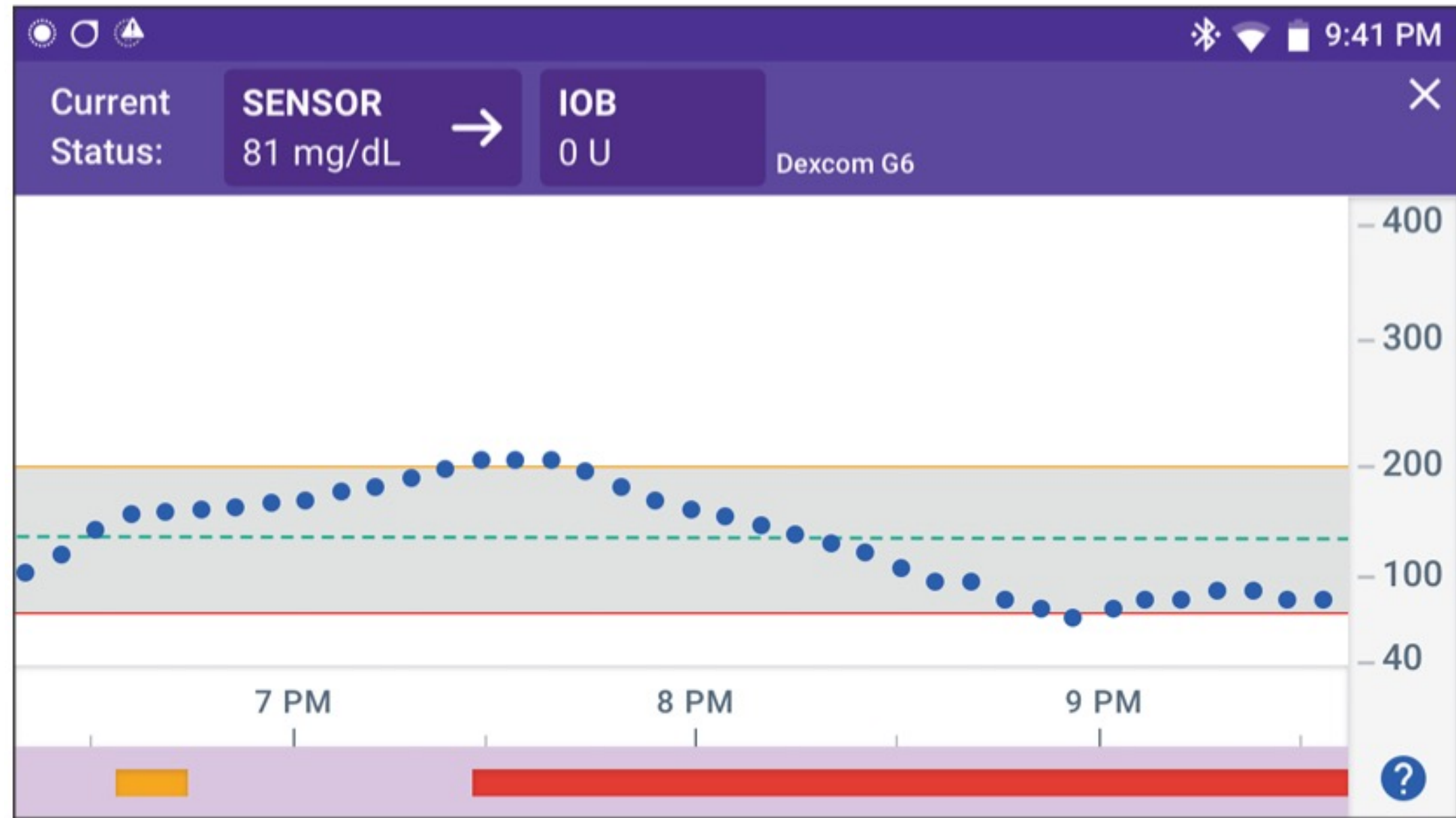
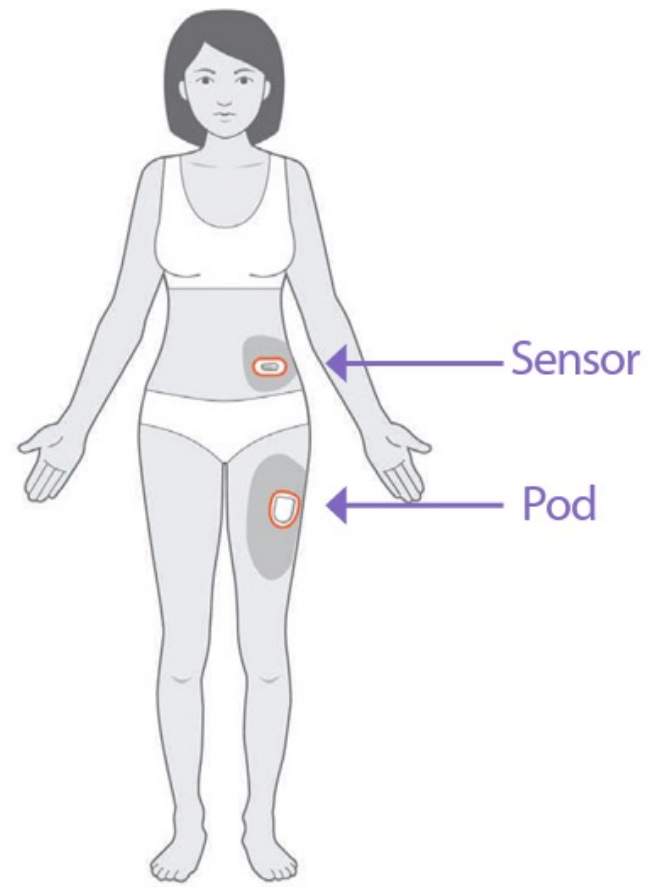
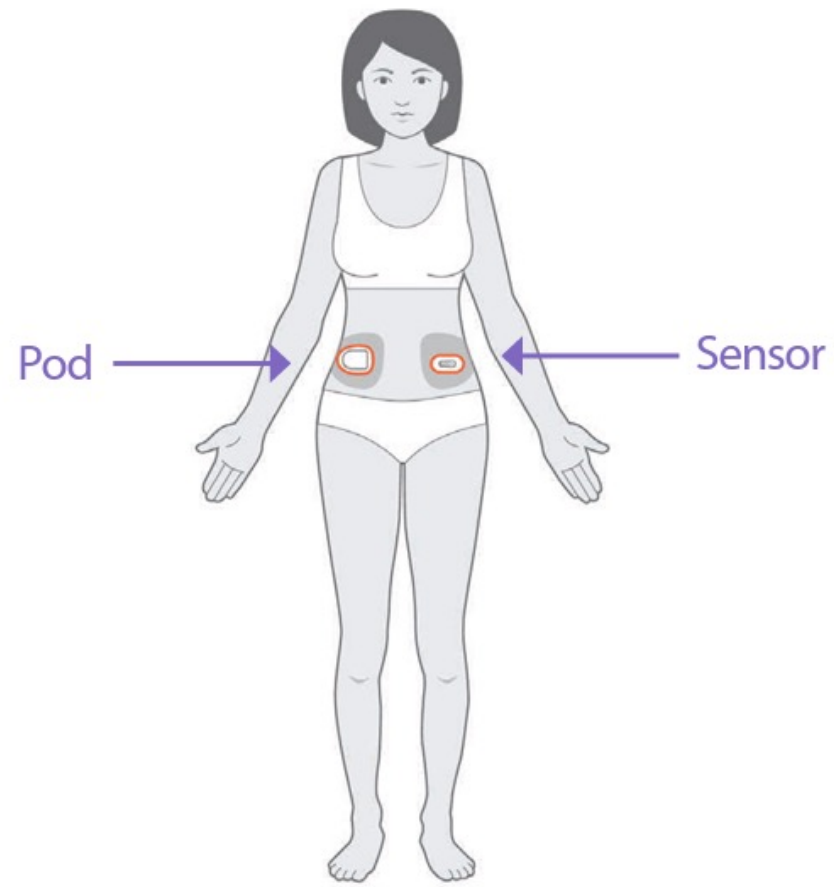
← Setup: Bolus

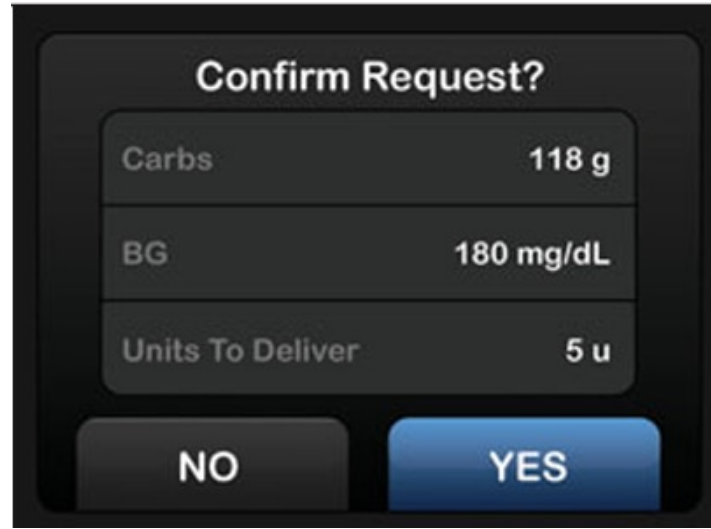
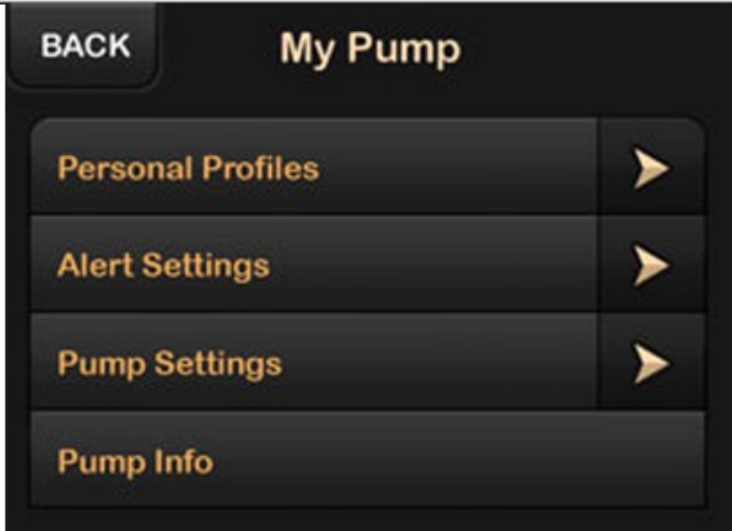
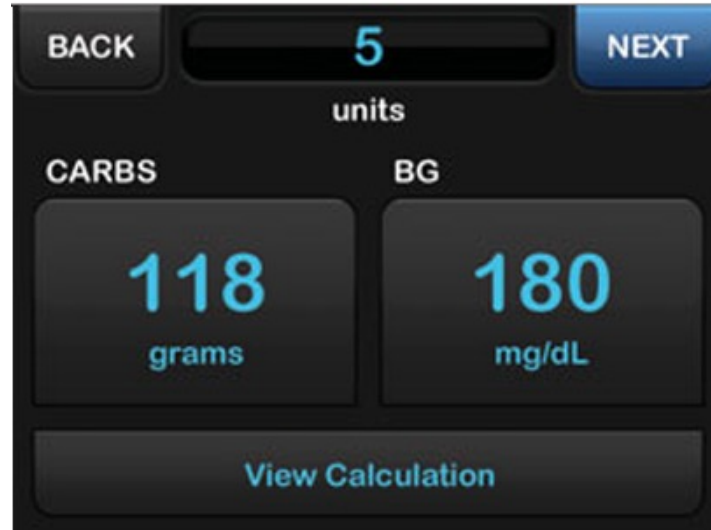
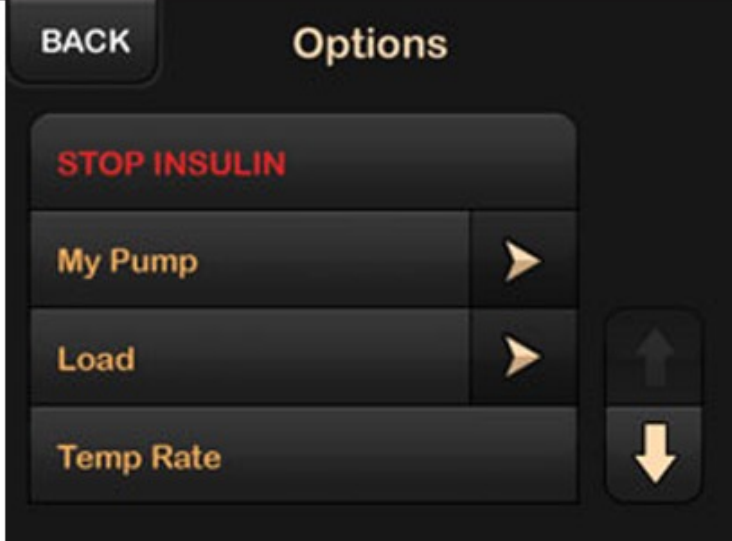
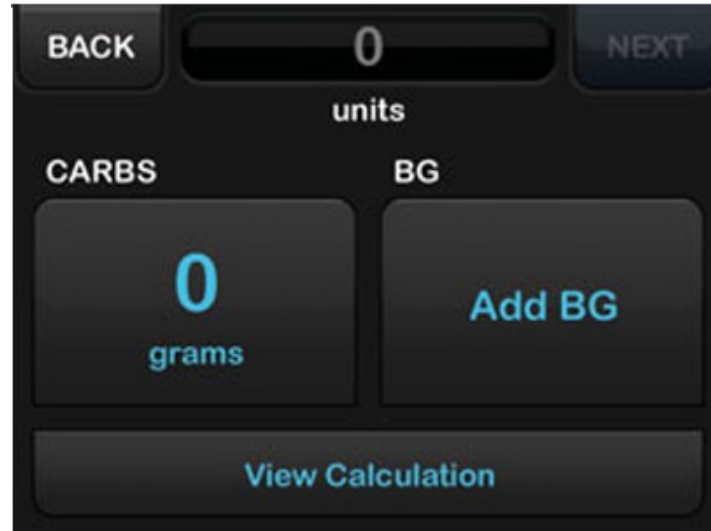
Review the Insulin to Carb (IC) Ratio values entered for each time segment.

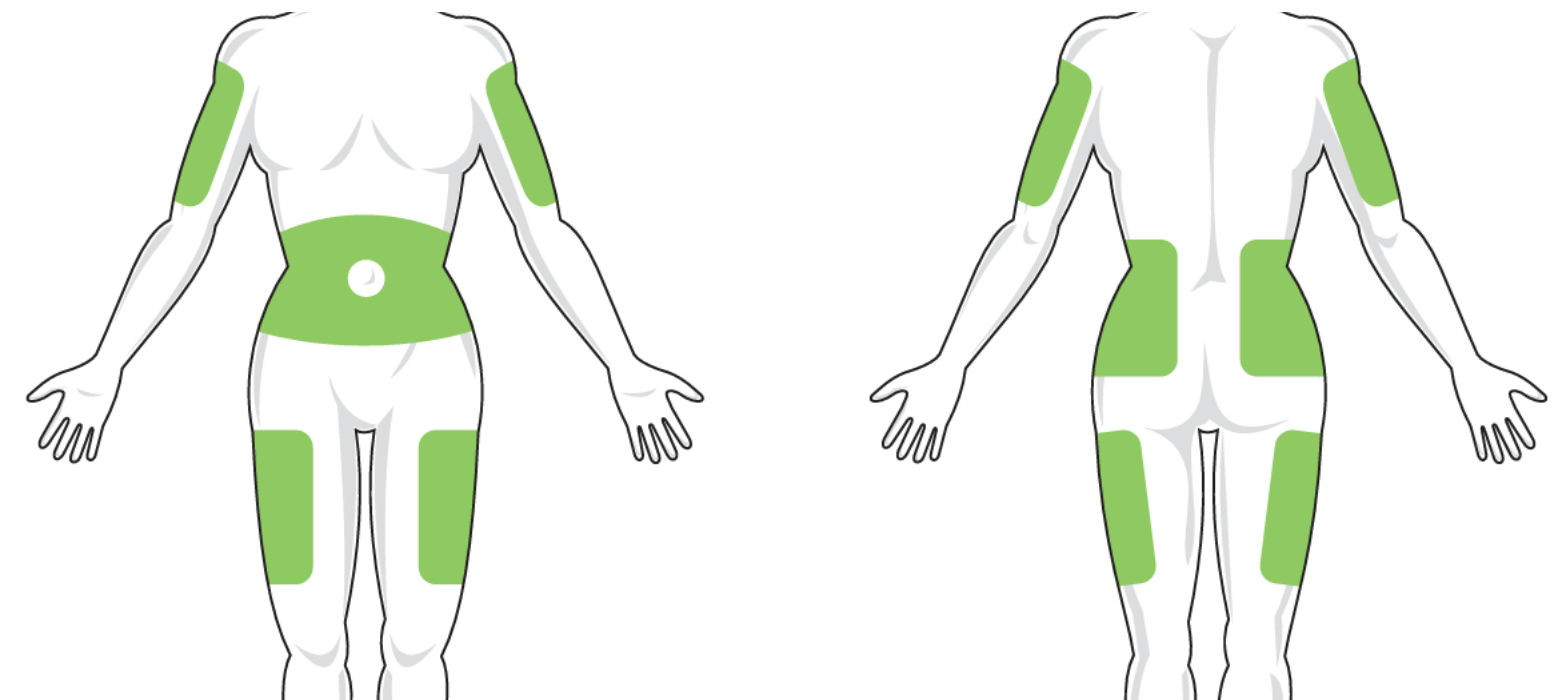
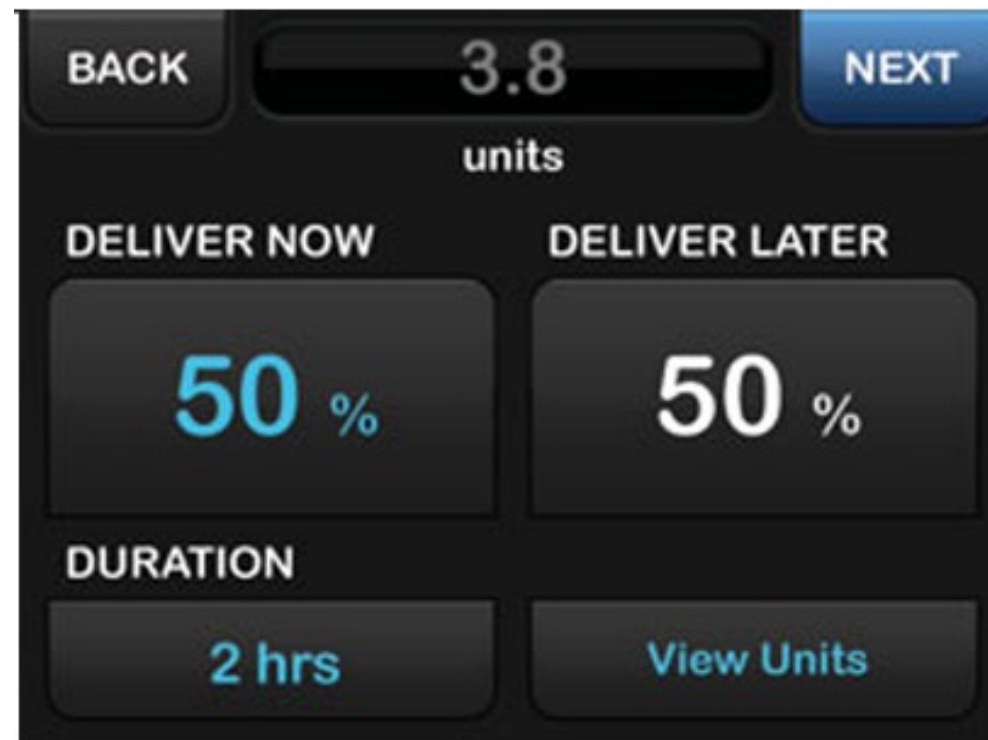
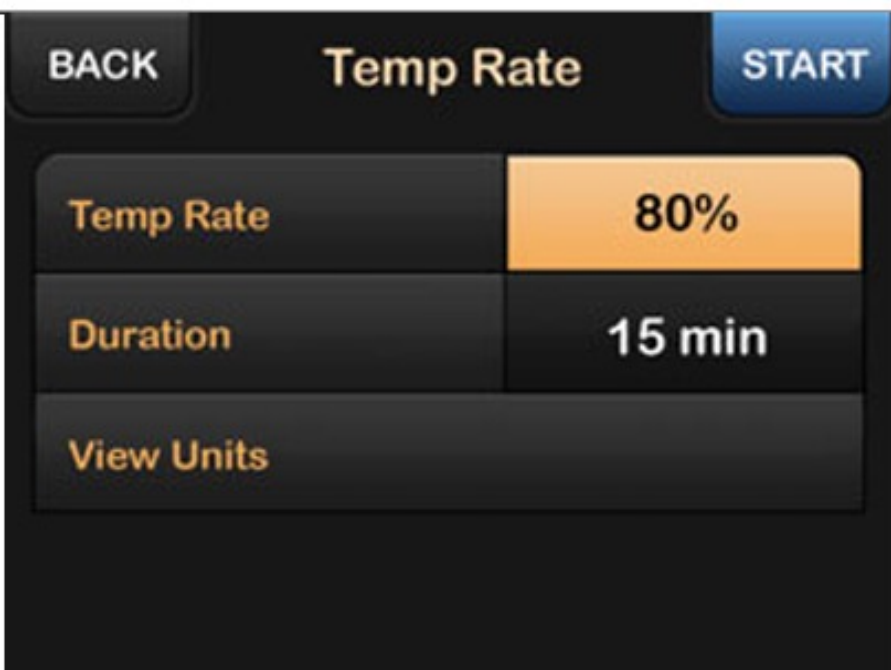
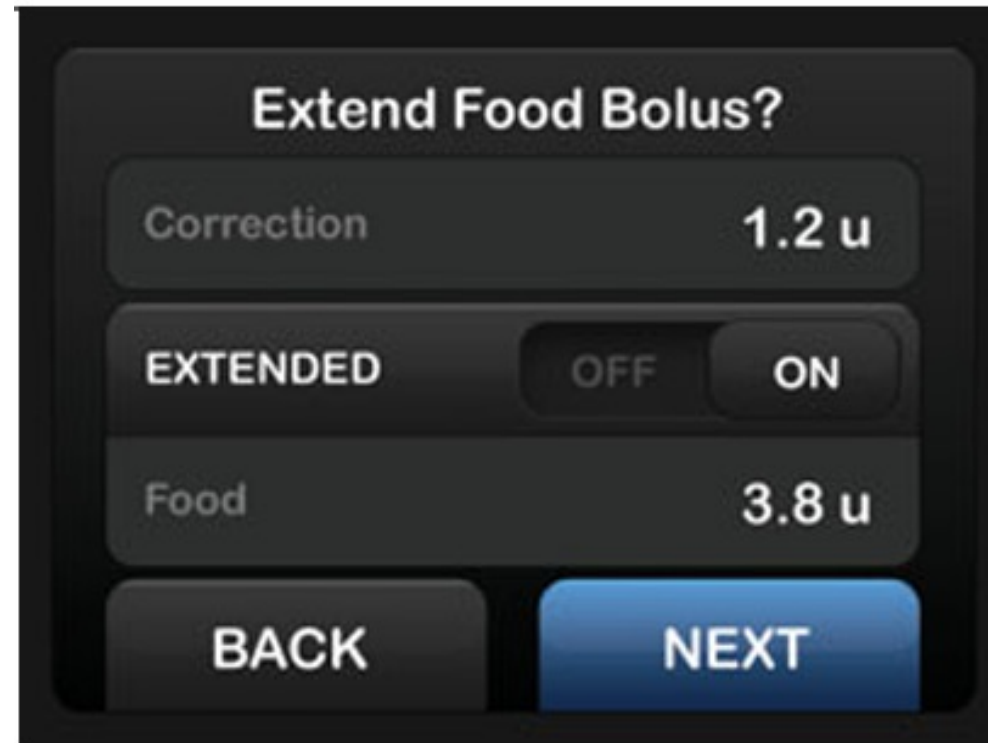
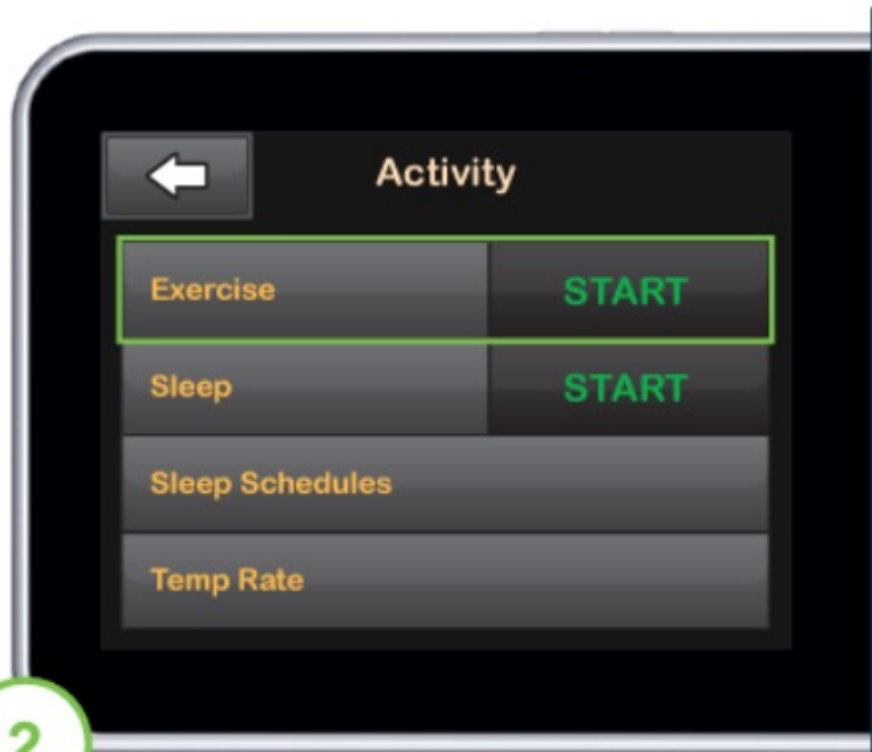
Time segments	Total: 4
Segment 1: 12:00 am - 5:00 am 1 U of insulin covers: 15 g of carbs	
Segment 2: 5:00 am - 9:00 am 1 U of insulin covers: 10 g of carbs	
Segment 3: 9:00 am - 12:00 pm 1 U of insulin covers: 13 g of carbs	
Segment 4: 12:00 pm - 12:00 am 1 U of insulin covers: 15 g of carbs	

CANCEL SAVE



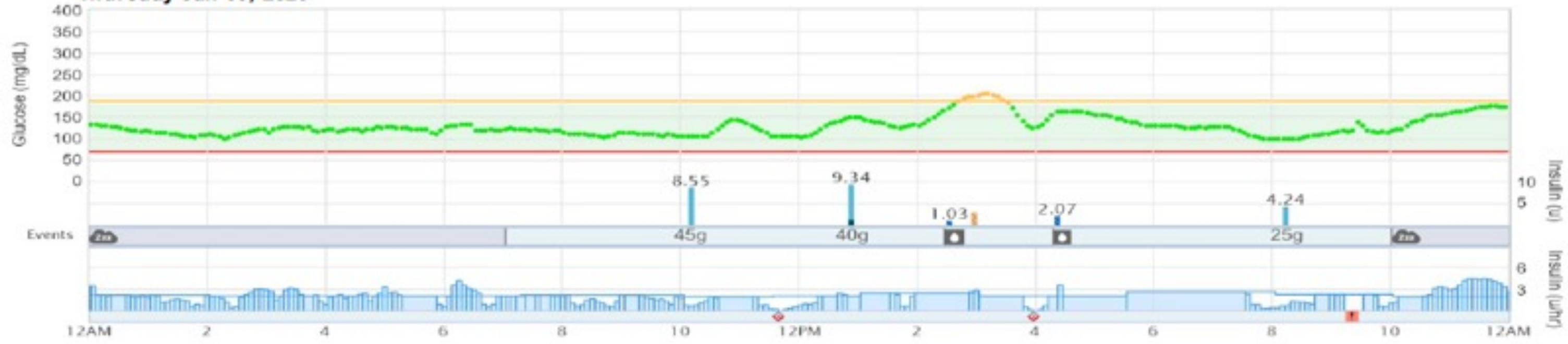




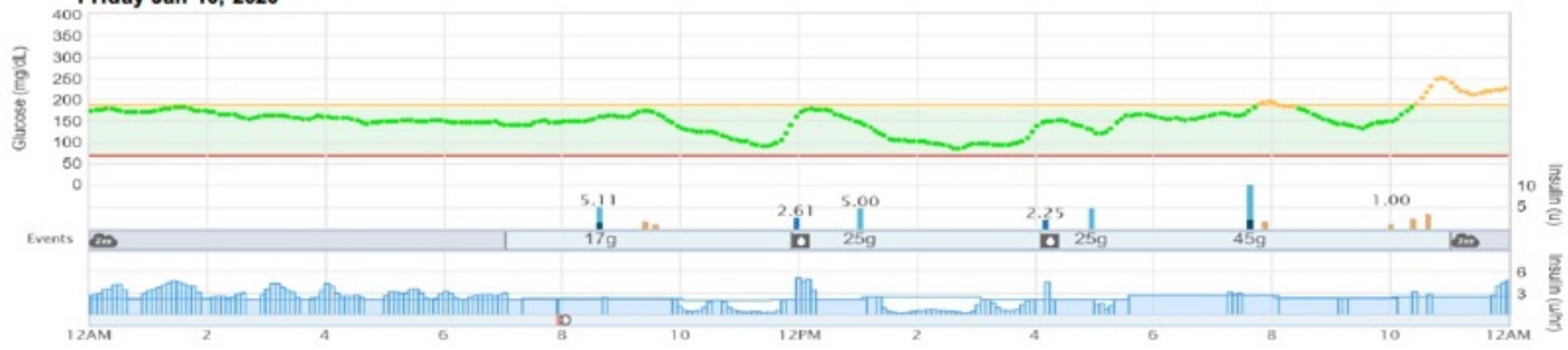




Thursday Jan 09, 2020



Friday Jan 10, 2020



Troubleshoot

I can't remember how to put on my pump.

Occlusion alarm? What's that?

My pump site came off and I'm not home.

My pump site came off and I'm out of town without supplies.

I need to take steroids for the next 5 days.

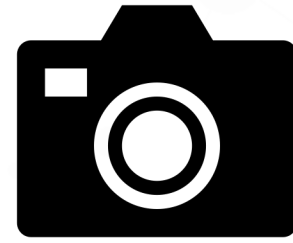
I have the flu and I am vomiting.

My blood sugar has been above 240 for over 3 hours.

My pump fell into the ocean.

I ran out of CGM sensors early!

Take Home Points



- Is a pump for me?
- Up to YOU, caregivers, and diabetes team
- Components:
 - Pump, infusion set (site and tubing), +/- CGM, +/- your phone
 - A pump is most beneficial when used with a connected CGM
 - Do I need to act immediately when the pump site comes out? YES
 - Are there pros and cons to a pump? YES & YES
 - Will a pump make my life with T1D easier?
 - Yes, if its what YOU want and how YOU want to manage your T1D

Tslim (Control IQ) + Dexcom

Omnipod 5 + Dexcom

iLet + Dexcom

Medtronic 780G + Guardian 4

Questions?

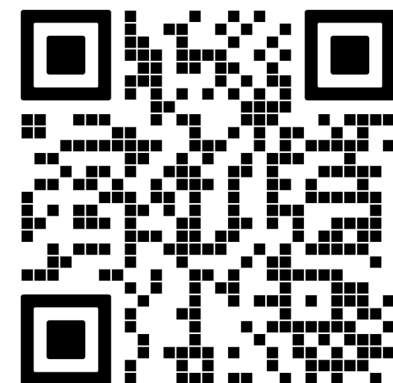
Resources:

Hands-on simulator apps

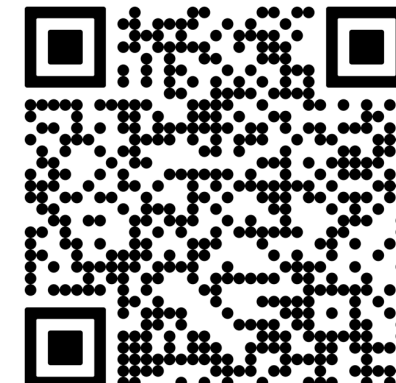
T1D toolkit



DiabetesWise



JDRF



ADCES

