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Looping with Omnipod using U200

The potential benefits of using U200 lispro instead of U100 rapid insulins are

- 1) making your patch pod last the full full 3 days if your total daily dose (TDD) of rapid is > 66 units (the Omnipod reservoir holds only 2 ml = 200 U of U100)
- 2) the smaller insulin volume may be somewhat less prone to bolus leakage
- 3) there may be a reduction in pain at the infusion site.

The downside of U200 rapid insulin in Omnipods includes

- 4) U200 is not a BC Pharmacare benefit (we are working on changing this...)
- 5) U200 is not approved for use in Omnipod pumps by both Health Canada and the US.
- 6) conversion of AID basal, carb ratio and ISF settings are required to safely reflect the double-strength insulin concentration.

Read on for BCDiabetes' guide to safely making these changes for both Loop & iAPS users (AAPS changes are analogous to iAPS). Please note, the switch from U100 to U200 should only be made under the supervision of a diabetes specialist. Credit for this how-to is due Dr. Kate Hawke, BCDiabetes's visiting technology Fellow, 2023-2024.

U200 switch on Loop

All settings need to be made "half strength" when switching to U200 insulin, i.e.

- Basals must be halved
- ICR & ISF numbers must be "doubled" (makes them half as strong)
- Delivery limits must be halved

Example settings switch:

	U100 settings	U200 settings
Glucose safety limit	3.9	3.9
Correction range	5.5 – 5.5	5.5 – 5.5
Pre-meal range	4.5 – 4.5	4.5 – 4.5
Carb ratios	00:00 : 5 05:00 : 3 11:00 : 3.5 22:00 : 5	00:00 : 10 05:00 : 6 11:00 : 7 22:00 : 10
Basal rates	00:00 : 1.3 07:00 : 1.3 15:00 : 1.2	00:00 : 0.65 07:00 : 0.65 15:00 : 0.6
Delivery limits – max basal rate	4.8	2.4

Delivery limits – max bolus	18	9
Insulin sensitivities	00:00 : 1.8	00:00 : 3.6
	07:00 : 1.4	07:00 : 2.8

Steps for making the switch when you are ready:

1. Re timing of change to U200 - ideally make the pod change at a time when your Loop "insulin-on-board" is quite low (e.g. when you are in the fasted state or it is 3-4 hours since your last meal / correction). Loop will cope a little better with the sudden change in settings if there's not much insulin-on-board "hanging over" from the previous U100 settings.
2. While still wearing a pod with U100 insulin, change your Therapy Settings over to those listed in the U200 column above.
3. Follow a normal pod change process, but fill the new pod with Humalog U200 insulin. This insulin only comes in a Kwikpen so it needs to be drawn out of the pen into a syringe, then fill the new pod in the usual way from the syringe. Select Humalog on Loop's list of insulin choices.
4. If you completely fill the pod, you will have 400 units of insulin in that pod. It's up to you if you completely fill it, depending on your usual preference for completely filling vs filling with the amount you expect to need over 3 days.
5. Once you activate the new pod, you are up and running on U200 insulin.
6. Just at the time of the switch, Loop *may* think that the existing insulin-on-board seems like a lot. That's because it is now working with an ISF that's half as strong. So 10 units of IOB might be quite usual for you, but now Loop thinks 10 units is a lot for you. If in doubt about how Loop is interpreting the IOB (e.g. you're getting a basal suspend and you don't think you need it) - you can switch off Closed Loop at the top of your Loop settings for about 3 hours. This way you'll just receive your regular programmed basal insulin. After 3 hours Loop should have "settled in" with the new settings, and the IOB will now make more sense relative to the new basal rate and ISF. You can then switch Closed Loop back on.

Education points when starting on U200:

1. Take extra care with bolusing after a new change to U200 - think about each bolus size and double-check that the bolus size is *half* of what you would expect to give when on U100
2. Remember if giving any *manual* correction doses where you have selected the dose yourself, you must **halve** the amount of units, compared to what you would normally give.
 - For boluses that are recommended by the system (e.g. the "Insulin recommended" amount from the carb bolus calculator, or the system's own correction bolus recommendation), you can give the full amount, as these recommendations are based on the new carb ratio and ISF, which are appropriate for the new U200 insulin.
3. If using custom presets or temporary percentage profiles, in theory these should be used as you normally did for U100, as they operate on a percentage change basis. Nevertheless, take care when starting on U200.
4. If you are used to approaching your management a certain way under circumstances when you see a "low IOB" (e.g. your approach to hypo treatment), remember the IOB is actually twice as much as it says.
5. Keep written copies of your settings for both U100 insulin and U200 insulin (similar to the table above on page 1). If you have to switch back to U100 for any reason, start a new pod with U100 insulin in it, while still running your U200 Loop settings. Once that pod is applied and running with U100 insulin, switch your settings over to those from the U100

column. Doing the steps in this order will prevent you from receiving excessively strong insulin delivery while the U200 insulin is still in your active pod.

U200 switch on iAPS

Broad principles are the same as the above regarding Loop. There are additional considerations relating to the “adaptive” settings (Autotune and Dynamic ISF).

Some users opt to leave these adaptive settings on when making a U200 switch. Others switch them off for a period of time (e.g. 1 week) so that the system can “re-learn” the user’s total daily dose on the U200.

Example settings switch:

Settings that will change with the U200 switch:

Setting	U100 (Novorapid)	U200 (Humalog U200)
Pump settings		
Max basal	2 units/h	1 unit/h
Max bolus	10 units	5 units
DIA	7 hours	6 hours

Basal profile		
Rate	Total daily 21.25 units via Autotune	0.45 units/h starts at 12:00am (total will be 10.8 units daily)
Insulin sensitivities		
Rate	2 mmol/L/U	4mmol/L/U
Carb ratios		
Ratio	6 g/U	12 g/U
OpenAPS		
Max IOB	10 units	5 units
Autotune		
Use Autotune	Tab on	Tab off (initially)
Only Autotune basal insulin	Tab on	Tab won't be there (initially)
Dynamic ISF		
Active Dynamic Sensitivity (ISF)	Tab on	Tab off (initially)
Activate Dynamic Carb Ratio (CR)	Tab on	Tab won't be there (initially)

The following settings do not usually need to change when switching to U200 insulin:

Setting	Value
Target glucose	5.2mmol/L
OpenAPS	
Autosens Max	1.3
Autosens Min	0.7
OpenAPS SMB settings	
Max SMB basal minutes	60 (no change as this is relative to the basal rate)
Max UAM SMB basal minutes	90 (no change as this is relative to the basal rate)
Insulin peak time	75
Dynamic ISF	
Adjustment Factor	1 (no pre-emptive change as this setting acts in relation to TDD and ISF; setting won't be visible while Dynamic ISF is off)

Education points are the same as above for Loop.

Switch back on adaptive settings (Autotune and Dynamic ISF) after 1 week.

- To do this:
 - Go to Autotune --> Tab On "Autotune" --> You'll then see a display that allows you to Tab on "Only Autotune Basal Insulin"
 - Go to Dynamic ISF --> Tab on "Enable Dynamic Sensitivity" --> You'll then see a display that shows all your existing Dynamic ISF settings. These can remain as they were before (Use Sigmoid is Off, Adjustment factor is x). These settings will cause Dynamic ISF to perform similarly to how it did on the previous Novorapid U100.

Review overall settings again regularly including Dynamic settings.

Short URL = https://bit.ly/Loop_U200