

LOOP app configuration

Updated 2022-Jun-26

Note - USE ONLY RAPID INSULIN IN PUMPS

Closed Loop or Open Loop:

Check mark “**Closed Loop**” for Loop to automatically enact recommended temp basals on the configured insulin pump. This is known as “**Closed Loop**”.

DEFAULT = Check “Closed Loop”

When the “**Closed Loop**” box is unchecked an “**Open Loop**” state exists & Loop WILL NOT enact recommended temp basals automatically. Instead, Loop will display recommended temp basals on the main status display, just above the blood glucose graph. Using “**Open Loop**” is a good way to understand how Loop will function, and what type of recommendations it would make. If you click on the recommended temp basal line while in open loop mode, Loop will implement the temp basal.

Correction Range:

The “**Correction Range**” is your blood glucose range that you would like Loop to correct to. Use a single number and a single time (12 AM) instead of a range because if you use a range, Loop will correct to the upper limit of that range.

DEFAULT = Use a single number i.e. 5.5-5.5
(if using American units suggest 100-100 = 5.5-5.5)

Overrides:

Pre-meal- While active, the “**Pre-meal**” targets will replace the usual correction range for Loop's temp basal recommendations. If a “**Pre-meal**” range is not entered in this section, the icon will remain grey and unusable on the main screen's toolbar.

The “**Pre-meal**” override target can be used as an easy way to get a small amount of insulin delivered before a meal in order to help control post-meal blood glucose spikes.

If your normal target is 5.5 mmol/L and “**Pre-meal**” target is 4.5 mmol/L, for example, Loop will give you an extra push to get you to the lower target number before the meal. This early insulin brings you into the meal with a mini-pre-bolus. The pre-meal target, when activated by pressing on the icon, will stay active for one hour, until carbs are entered, or until it is manually canceled...whichever comes first.

DEFAULT = use value 1.0 below correction range value (see above)
If your correction range = 5.5-5.5 set pre-meal override to 5.5-1.0 = 4.5

Workout- Use this feature to customize (reduce in percentage) insulin requirements for a stipulated period of exercise. For example, for an hour of brisk walk, you would reduce your insulin requirements by 10-20%.

DEFAULT = Leave field blank (Disabled)

Suspend Threshold: When current or forecasted glucose is below the suspend threshold, Loop will not recommend a bolus, and will always recommend a temporary bolus of 0 units per hour. This value affects both bolus and basal recommendations by Loop. BCDiabetes does not have any hard and fast recommendation for Suspend Threshold. We ask our clients “at what sugar level do you reliably feel low” and then set a value higher than the “feel low” value. The commonest “feel low” value that our clients report is 3.5.

Bolus- If you are trying to bolus a meal while any part of the predicted CGM curve is below the suspend threshold value, Loop will not recommend a bolus. Instead, you will need to wait until your prediction curve is above the suspend threshold value in order to bolus.

Basal- If your current or any point on your predicted CGM curve is below the suspend threshold, Loop will always recommend a temporary basal rate of 0 U/hr.

DEFAULT Suspend threshold = 1.0 mmol > “feel low” value

If “feel low” value = 3.5 set Suspend threshold at $3.5 + 1.0 = 4.5$

If “feel low” value = 4.0 set Suspend threshold at $4.0 + 1.0 = 5.0$

Basal Rate:

Basal rates cannot be set before pairing a pod. To set the basal rate review the patient’s prior pump settings or if using injections, calculate total daily units of basal insulin. See the [BCDiabetes guide to determination of basal rate](#).

DEFAULT

1) If moving from another pump system: use the lowest basal rate from previous pump

2) If moving from MDI use a rate calculated as 80% of the total daily basal insulin.

If on 40 U/day insulin glargine, starting basal rate $= 40/24 * 0.8 = 1.33$ U/hr = 1.3 U/hr (rounded)

If on 64 U/day insulin glargine, starting basal rate $= 64/24 * 0.8 = 2.13$ U/hr = 2.1 U/hr (rounded)

Delivery Limits:

Maximum Basal Rate “Maximum Basal Rate” will limit the hourly maximum temporary basal rate that Loop is allowed to give to meet your correction range. Typically, Loop users start with a maximum basal rate three times their highest scheduled basal rate. When you are first beginning to use Loop, it is wise to start conservatively in setting your maximum basal rate. If your settings are incorrect in other areas (basal rates, insulin sensitivity, carb ratio, etc), you may need time to identify where settings need to be adjusted. This process is easier if Loop is given less latitude to set high basal rates. Gradually increase your maximum basal rate as your comfort and confidence in Loop increases.

DEFAULT = basal rate x 3 (for Loop)

If basal rate = 1.0 U/hr, set maximal basal rate = $1.0 \times 3 = 3.0$

If basal rate = 1.3 U/hr, set maximal basal rate = $1.3 \times 3 = 3.9$

DEFAULT (if Autobolus activated) = basal rate x 1.5

If basal rate = 1.0 U/hr, set maximal basal rate = $1.0 \times 1.5 = 1.5$

If basal rate = 1.3 U/hr, set maximal basal rate = $1.3 \times 1.5 = 1.95 = 1.9$ (rounding down)

Maximum Bolus

Enter your desired single bolus maximum here. For safety, don't set a maximum bolus limit any higher than 20% above your typical large meal bolus. By default BCDiabetes recommends this be set to a value 5 units higher than the biggest bolus given in the past 2 weeks.

Insulin Model (reflecting duration of action of insulin): There are four insulin models to choose from; **Walsh (legacy)**, **Rapid-Acting- Adults**, **Rapid-Acting- Children**, and **Fiasp**. We highly recommend selecting one of the exponential insulin models (in other words, not the Walsh model).

The differences between the three exponential models (two Rapid-Acting and Fiasp) models has to do with the timing of the peak insulin activity timing. Currently all the exponential models are defaulted to an insulin duration of 6 hours, but the peak activity of the curves differs:

- Rapid-acting adult curve peaks at 75 minutes
- Rapid-acting child curve peaks at 65 minutes
- Fiasp peaks curve peaks at 55 minutes

DEFAULT = rapid-acting Adult or Fiasp

Choose Rapid-acting adult for users of glulisine, lispro & aspart

Choose Fiasp for users of aspart Fiasp

Dosing strategy: (Autobolus)

DEFAULT = check Automatic bolus (Temp basal unchecked)

Note choosing Automatic bolus activates a feature which gives a correction of 40% of that calculated from the temp basal algorithm over the course of 30 minutes. The correction is given every 5 minutes such that it gives approximately $\frac{1}{6}$ of the correction every 5 minutes ($6 \times 5 = 30$).

Carb Ratio:

BCDiabetes recommends calculating carb ratios using test meals as described in [this handout](#).

DEFAULTS

- 1) If moving from another pump system: use same carb ratios
- 2) If moving from MDI use Carb Ratio = 450/TDD

Insulin Sensitivity Factor (ISF):

BCDiabetes recommends calculating Insulin Sensitivity Factor as described in [this handout](#).

Traditional formula= $100/\text{Total Daily Dose (TDD) of insulin}$

ISF represents the drop in blood glucose levels expected from one unit of insulin. Smaller values mean more insulin will be given when above target. Values that are too small can cause dangerously low blood

glucose. Account only for basal insulin when entering TDD. This is to prevent dangerous lows from a low ISF value that might be calculated by accounting for boluses as well.

DEFAULTS

- 1) If moving from another pump system: use same ISF as old pump
- 2) If moving from MDI, use ISF =100/TDD

USEFUL TIPS

Maximum Basal Rate

When you are first beginning to close-loop, it is important to be conservative (low) in setting your maximum basal rate. If your settings are incorrect in other areas (basal rates, carb absorption time, carb ratio, etc), Loop may enact incorrectly aggressive high temp basals. Gradually increase your maximum basal rate as your comfort and confidence in Loop increase. Experienced closed loop users typically set their max basal rate to no more than 3-4 times their average basal rate.

CGM targets

If your basals, ISF, or carb ratios aren't set correctly, Loop may overshoot and leave you lower than expected (or with more IOB than you are comfortable with). Setting your low CGM target slightly higher can help prevent unexpected lows or high IOB as you adjust your settings.

Watch the IOB

Watch whether Loop accumulates positive or negative IOB while holding your CGM steady when no food is present. If you find that you are "carrying" positive or negative IOB consistently, you should review your settings to see if perhaps your basal or ISF needs adjusting.

Meals

Meals will likely be the hardest part of transitioning to close-loop. Starting with foods that you have a high comfort level with is a great idea. If you have favorite meals that you know well (how high BGs usually go, how much to bolus, how to pre-bolus, etc), these would be a good starting point. Watching when the Loop high temps or suspends basals (early vs late in the meal) will really help you adjust to find your typical carb absorption times. As a general idea, **assuming other settings are accurate**:

- Early high temps in a meal that leave you low after, you may need to shorten carb absorption time
- Early suspensions in a meal that leave you high after, you may need to lengthen carb absorption time

This is definitely an area where "YDMV" (your diabetes may vary), so don't expect or accept that what works for others will work for you. Test, observe, and adjust as needed.

If frequent Loop crashes occur consider using a dedicated iPhone for Loop & use another phone for everything else.

Short URL = <https://bit.ly/36yUEV7>