

Managing Pregnancy

The AiDAPT study was a large randomised control trial that was published in 2023 in the New England Journal of Medicine. 124 participants with an HbA1c ranging from 48 to 86 mmol/mol (6.5 to 10%) were included in this study which compared using closed-loop to insulin therapy with real-time CGM.

CamAPS FX was found to significantly improve maternal glucose levels during pregnancy. These improvements were applicable for all women living with type 1 diabetes no matter their starting HbA1c or the previous use of technology.

As a result of this research, CamAPS FX is the only hybrid closed-loop system with proven efficacy in pregnancy.

Read the research publication: [HERE](#)

Pregnancy planning

- Planning pregnancy is essential for the best outcomes.
 - Ideally, women with type 1 diabetes should be started on the CamAPS FX closed-loop system before they stop taking contraception and actively start trying to have a baby.
 - In Professor Helen Murphy's clinic (AiDAPT's research lead), if women are not on CamAPS FX prior to pregnancy, they try to start it as soon as practically possible - around 8 weeks.
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All pregnancy advice and targets should be personalised and guided by the diabetes specialist team.

Glucose targets

- Ideally, achieving an HbA1c around 48 mmol/mol (6.5%) and spending 70% or more time in range (TIR) is recommended before becoming pregnant.
 - When pregnant, the glucose targets are tightened.
 - ✓ The HbA1c target is 42 mmol/mol (6.0%).
 - ✓ Time in Range (TIR) target is adapted to spend more than 70% of time between 3.5 to 7.8 mmol/L or 63 to 170 mg/dL.
 - ✓ Please change the CamAPS FX app's TIR (main menu > settings > statistics).
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There are a few settings that your diabetes team can support you optimize on CamAPS FX as the pregnancy progresses.

Personal glucose target (PGT)

- In the first trimester, when the risk of hypos is higher, we recommend that the personal glucose target is set to 5.5 mmol/L or 99 mg/dL, if appropriate.
 - As soon as possible in the 2nd trimester, the personal glucose target can be lowered to 5 mmol/L or 90 mg/dL. Consider adjusting the target from bedtime to waking to 4.5 mmol/L or 81 mg/dL.
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Meal management

- The insulin-to-carbohydrate ratio (ICR) needs to be reviewed frequently as the pregnancy progresses and insulin resistance increases.
 - Choosing low glycaemic index carbohydrates and keeping the portion sizes small but spreading them throughout the day will help achieve optimal nutrition but also in target glucose readings.
 - Ideally, insulin needs to be given at least 10 to 15 minutes before eating. This timing may need to be increased later in pregnancy.
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Body weight

- Body weight contributes towards helping CamAPS FX manage post-meal glucose levels.
 - We recommend that body weight is updated from time to time in the CamAPS FX app (main menu > settings > change weight). However, body weight is only one of many factors that influence the automated insulin delivery and so, if the body weight is slightly out, it will not affect the overall accuracy of CamAPS FX.
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“Boost”

- “Boost” is a feature that makes CamAPS FX more responsive to help bring glucose levels back into range more quickly.
 - During pregnancy, we encourage women to use “Boost” more proactively. For example, if post meal glucose levels are high, using “Boost” for 2 to 4 hours can really help.
 - If “Boost” needs to be used frequently, the insulin-to-carbohydrate ratio needs to be reviewed.
 - Women should still be vigilant and check for ketones, if their glucose is running high.
 - Please consider changing the infusion tubing and cannula as well as insulin reservoir, if a set failure is suspected.
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Planning for the birth

- Towards the end of the pregnancy, it is good to plan the setting changes that need to be made immediately after the birth.
 - The personal glucose target needs to be increased to 6.0 mmol/L or 108 mg/dL across the 24 hours of the day just before or after the birth.
 - Agree the postnatal insulin-to-carbohydrate ratios that should be programmed into the system after the birth.
 - Programme a reduced pump basal pattern B on the pump.
 - Pattern A should have been optimised throughout the pregnancy for times of open-loop, such as when the sensor is warming up.
 - Only swap to pattern B on the pump during or after the birth.
 - All these changes need to be documented in the medical notes.
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Labour

- During the birth, CamAPS FX can continue to manage insulin delivery, if agreed by the medical / obstetric team.
 - "Ease-off" or "Boost" can be used, as necessary.
 - If a C-section is needed and diathermy is used, please check the accuracy of the sensor.
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After the birth

- After the birth, very little insulin may be needed in the first 24 hours.
- The real priority is to avoid low glucose levels (hypoglycaemia).
- Remember to set a higher personal glucose target and new insulin-to-carbohydrate ratios in the app.
- Consider using "Ease-off" to make the algorithm more relaxed and reducing the pre-meal insulin bolus, especially if breastfeeding.
- There is no need to try to restart the algorithm. It will quickly adjust to the post-pregnancy requirements.
- Please change the time in range (TIR) setting back to 3.9 - 10 mmol/L or 70 - 180 mg/dL in the app (main menu > settings > statistics).

The AiDAPT results showed that those women using CamAPS FX at 6 months after the birth were achieving 70% time in range, even while caring for a newborn.
