Ypso CamAPS in Pregnancy

CamAPS FX is currently the only Health Canada approved automated insulin delivery (AID) system for use in pregnancy. The following guidelines will be updated as necessary, as we gain practical experience with YpsoPump in DIP clinics in Calgary.

Reservoir capacity = 160 units

Preconception

- Ensure that body weight and TDD are reviewed and updated.
- Ensure that 'Min BG for Calculation' is set low enough that the system doesn't block meal boluses. Consider **Min BG for Calculation = 2.8 mmol/L**.
- Set **Glucose target** = 5.5 mmol/L
- Encourage patients to set up a **mylife Cloud account** at ypsomed-software.net [Patients may choose to share their cloud data either by providing their username and password or by granting access to specific healthcare providers]

First trimester

- Ensure that 'Min BG for Calculation' is set low enough that the system doesn't block meal boluses. Consider **Min BG for Calculation = 2.8 mmol/L**.
- **Update body weight** every 4 weeks.
- Update basal and bolus settings to reflect what's being delivered in automation.
- Personalize **Glucose target.** Recommended setting = 5.5 mmol/L.
- **Carb Ratio**: 400/weekly average TDD
- **Pre-bolus** 10 to 15 minutes throughout pregnancy
- Confirm **mylife Cloud account** at ypsomed-software.net [Patients may choose to share their cloud data either by providing their username and password or by granting access to specific healthcare providers]
- Set mylife Cloud reporting targets to reflect pregnancy-specific targets (3.5 to 7.8 mmol/L). On the webpage [ypsomed-software.net] go to Settings > Blood glucose target range.

Second trimester

- Weekly titration from 16 weeks, as insulin resistance increases.
- **Lower glucose target** as safely tolerated. Suggested: **After 16 weeks gestation**: 5.0 mmol/L during the day. **After 20 weeks gestation** lower overnight target to 4.5 mmol/L.
- **Update body weight** every 4 weeks.
- **Carb Ratio**: 400/weekly average TDD
- **Pre-bolus** 10 to 15 minutes throughout pregnancy.
- **Adjust basal and bolus settings every 4 weeks** to reflect what is being delivered in automation.
- **Update weight every 4 weeks.**
- **Boost mode may be used more liberally** during pregnancy to pro-actively manage high glucose levels. **From 20 weeks gestation**, recommend setting boost for 2 to 4 hours after large meals. **If boost is used regularly to manage post meal glucose**, strengthen the Carb Ratio**.**

Third trimester

- Continue with **lower glucose target** as safely tolerated. Suggested: 4.5 mmol/L overnight and 5.0 mmol/L during the day.
- **Pre-bolus** 10 to 15 minutes throughout pregnancy.
- **Adjust basal and bolus settings every 4 weeks** to reflect what is being delivered in automation.
- **Update weight every 4 weeks.**
- **Boost mode may be used more liberally** during pregnancy to pro-actively manage high glucose levels. **From 20 weeks gestation**, consider setting boost for 2 to 4 hours after large meals. **If boost is used regularly to manage post meal glucose**, strengthen the Carb Ratio**.**

- Confirm delivery plan. **MD: Enter orders** in CC.
- **Enter post partum profile** (**Pattern B**) and provide counselling.
  - **Post partum settings**:
    - **Target glucose** = 6.0 mmol/L or higher
    - **Carb Ratio:**
      - Non-breastfeeding: 12
      - Breastfeeeding: 15
    - **Do not bolus for first postpartum meal.**
    - Use **Ease off** as required.

During Delivery

- Check sensor accuracy with POCT if diathermy is used.
- **Switch to postpartum profile (Pattern B)** at the start of pushing for vaginal delivery, or just prior to (within 1 h) caesarean sections (or immediately postpartum, if the previous options were not feasible). Leave pump in Automode.
- **Increase glucose target** to 5.5 to 6.0 mmol/L
- **Use Ease Off liberally**, as needed.

Post Partum

- **Ensure that Pattern B is activated.** Post partum settings:
  - **Target glucose** = 6.0 mmol/L or higher
  - **Carb Ratio:**
    - Non-breastfeeding: 12
    - Breastfeeeding: 15
- **Pre-bolus** 10 to 15 minutes
- Update **body weight**.
- **If experiencing hypoglycemia**, use Ease Off mode and raise glucose target. Consider weakening Carb Ratio.
- Update mylife Cloud reporting targets to non-pregnant targets (3.9 to 10.0 mmol/L). On the webpage [ypsomed-software.net] go to Settings > Blood glucose target range.

ACKNOWLEDGEMENTS AND REFERENCES

1. Lee TTM, Collett C, Man MS, Hammond M, Shepstone L, Hartnell S, Gurnell E, Byrne C, Scott EM, Lindsay RS, Morris D, Brackenridge A, Dover AR, Reynolds RM, Hunt KF, McCance DR, Barnard-Kelly K, Rankin D, Lawton J, Bocchino LE, Sibayan J, Kollman C, Wilinska ME, Hovorka R, Murphy HR; AiDAPT Collaborative Group. AiDAPT: automated insulin delivery amongst pregnant women with type 1 diabetes: a multicentre randomized controlled trial - study protocol. BMC Pregnancy Childbirth. 2022 Apr 5;22(1):282. doi: 10.1186/s12884-022-04543-z. PMID: 35382796; PMCID: PMC8982306.
2. Lee TTM, Collett C, Man MS, Hammond M, Shepstone L, Hartnell S, Gurnell E, Byrne C, Scott EM, Lindsay RS, Morris D, Brackenridge A, Dover AR, Reynolds RM, Hunt KF, McCance DR, Barnard-Kelly K, Rankin D, Lawton J, Bocchino LE, Sibayan J, Kollman C, Wilinska ME, Hovorka R, Murphy HR; AiDAPT Collaborative Group. AiDAPT:Automated Insulin Delivery in Women with Pregnancy Complicated by Type 1 Diabetes, N Engl J Med Oct, 2023;389:1566-1578 DOI: 10.1056/NEJMoa2303911