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FINESSE – Automated Insulin Delivery system (AID) Without Meal Announcement using Loop and iAPS in Non-bolusing Individuals with Sub-optimal Control (not yet recruiting as of 2026-Jan-22)

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Summary: FINESSE is a randomized crossover trial involving individuals aged 13–70 years with type 1 diabetes using Loop with infrequent carbohydrate entry. It compares standard Loop, Loop with Glucose-Based Partial Application (GBPA) and Integral Retrospective Correction (IRC), and iAPS with auto–insulin sensitivity factor (Auto-ISF) to improve glycemic control and quality of life in individuals with suboptimal diabetes control.

Study location: BCDiabetes: 400 - 210 West Broadway, Vancouver V5Y 3W2

Background & hypothesis: Open-source automated insulin delivery (OS-AID) systems, such as Loop and iAPS, are widely used. At BCDiabetes, over 2,400 people use Loop, the most popular OS-AID system. While Loop improves glycemia for most users, it is not designed to manage unannounced meals, resulting in less benefit for those who rarely enter carbohydrates. Loop has additional features to enhance automation. On the other hand, iAPS addresses this issue through Auto-ISF feature. We hypothesize that additional experimental features will improve glycemic control and quality of life compared to standard Loop.

Eligible Participants include:
- **Type 1 diabetes and currently using Loop (OS-AID) system**
- **Age between 13- 70 years**
- **Suboptimal glycemia as defined as:** GMI ≥ 8.5% and TIR < 30%
- **≤ 2 carbohydrate entries/day over the past 14 days**
- **Willing to switch to iAPS**

Treatment course and duration: This open-label, randomized, two-period crossover trial involves a 14-day baseline on standard Loop, followed by a run-in phase: 7 days for Loop + GBPA + IRC, or 14 days for iAPS Auto-ISF, then a 28-day study period as shown in Figure 1. Participants cross over to the other algorithm with its run-in and second 28-day study period as shown in Figure 2. All participants will complete both phases.
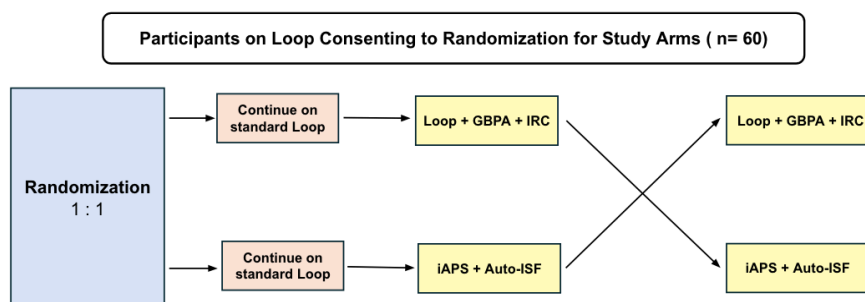

Figure 1. Allocation of participants to open source automated insulin delivery systems

GBPA = Glucose Based Partial Application, **IRC** = Integral Retrospective Correction,
Auto-ISF = Automatic Insulin Sensitivity Factor, **iAPS** = Iphone Artificial Pancreas System

Consent and Study Information short URL = https://bit.ly/4qxs3a3