Accessing the inaccessible: an individual living with blindness and type 1 diabetes using the DIY-Loop* automated insulin delivery (AID) algorithm

Evan Hagen[1], MD, Robin Lucciantonio[2], BSc. RD, CDE, CPT, Anna Rogers[1,2], MD, FRCPC
[1]Division of Endocrinology and Metabolism, University of Alberta, [2]Garneau Endocrinology, Edmonton, Alberta

Disclosure: *As Do-It-Yourself (DIY) AID systems, and cellular devices differ, naming the specific hardware and software is important for clarity, and the use of the product names does not constitute an endorsement of any product*

Introduction:

All commercially available AID systems in Canada rely on visual interfaces.

This creates a critical barrier for many living with DM to access to standard-of-care.

References:
Chambers A et. al. DIY Automated Insulin Delivery: A Health-care practitioner's user guide. (Jul 2023). doi: 10.1016/j.jcjd.2023.05.006
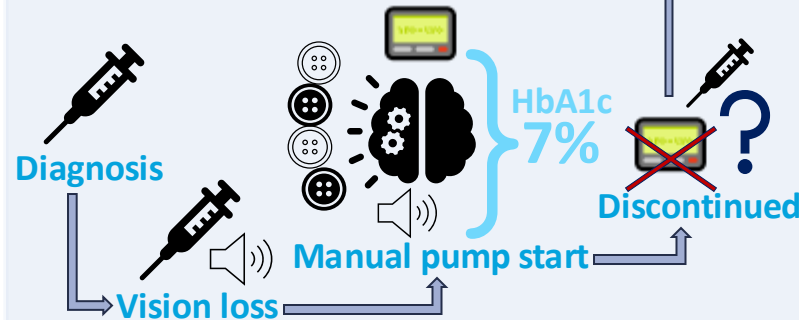
Alshatti A, Bishop K. Overcoming barriers to technology in special groups (Oct 2023). doi: 10.1002/pdi.2478

Nguyen C, et al. Accessibility of Diabetes Therapy Management for Patients with Visual Impairment. (Aug 2024). doi: 10.24926/iip.v15i3.6233.

Case: 59M with T1D

- T1D (diagnosed age 2)
- CAD (CABG & VSD repair)
- Post-operative occipital stroke
    - Loss of vision
- HTN, dyslipidemia
- Neuropathy

Treatment course:

Diagnosis → Vision loss → Manual pump start → HbA1c 7% → Discontinued

Transition to DIY-Loop*:

- CDE with companion app for real-time problem solving
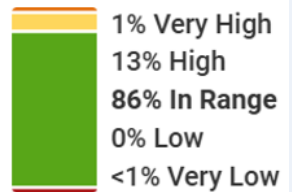- iPhone screen reader
- Custom Omnipod DASH fill tool

Steps:
a. Comfort with CGM
b. Training with app simulator
c. Saline infusion trial
d. Loop App installed October 2024 via BCDiabetes

Results:

- GMI 6.7%
- CV 25.3%
- ↑↑ QOL

Time in Range
- 1% Very High
- 13% High
- 86% In Range
- 0% Low
- <1% Very Low

Conclusions:

- Advocacy for inclusive design is essential to improve equitable access to life-changing standard-of-care diabetes technologies.
- This case illustrates an option for people who may be blind or low-vision to access AID.