**Background**

- Closed Loop (CL) technology (‘artificial pancreas’) has the potential to prevent hypoglycaemia and reduce glycaemic variability in type 1 diabetes (T1D).
- Maximum benefits of this technology will depend largely on participant characteristics, as shown in Table 1. All were used to assess: 1) ease of using CL, and 2) confidence in accuracy of CL (with higher scores indicating greater ease/confidence).
- All participants experienced the CL system as “easy to use” (score range 7-10), but all recognised that their previous experience with CSII/CGMS was very helpful in preparing them for the technology.
- Benefits of CL compared to current treatment: Although all participants reported technical issues during at least one CL night, they were positive that with future fine-tuning of the algorithms and the accuracy of the sensor, the CL has the potential to significantly improve their diabetes care and quality of life.

**Method**

- We conducted semi-structured interviews with 10 adults with T1D between April 2014 and March 2015 after they completed four nights of CL in the home setting.
- Impaired awareness of hypoglycaemia was an exclusion criterion.
- Interview topics included: overall experiences with CL, effect of CL on glucose levels, hypo/hyperglycaemia; understanding of algorithm; potential concerns about using CL; comparison between CL with current management.
- Two 10-point scales were used to assess: 1) ease of using CL, and 2) confidence in accuracy of CL (with higher scores indicating greater ease/confidence).

**Results**

- Themes emerging from the interviews are shown in the center table.
- Impact of CL on overnight glucose levels: Participants reported stable overnight glucose levels, though four did not perceive this to be any different from what they achieved with CSII/CGMS.
- Personal control and diabetes control: Participants experienced that CL controlled their glucose levels overnight without feeling they were losing personal control because they:
  - could observe and understand how the algorithm responded to their glucose levels
  - had or gained confidence in the technology over the four nights
  - could stop the CL and return to their routine treatment if needed
- Confidence in CL responsiveness: the few safety concerns raised related to feeling unsure whether the system would respond in time to falling glucose. However, confidence increased over the four nights as they observed how the CL stopped insulin delivery when their glucose was trending down, and how (when switching to CL at night) the CL dealt with high glucose levels.

**Conclusion**

- Participants gave a very positive evaluation of CL used overnight in the home setting.
- Most achieved more stable overnight glucose levels but maximum benefits of this technology will depend largely on participant characteristics, as shown in Table 1. All were used to assess: 1) ease of using CL, and 2) confidence in accuracy of CL (with higher scores indicating greater ease/confidence).
- All noted that improvements to the technology (sensors and algorithms) are needed to increase its accuracy and reliability.

**Reference**


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**“It is definitely a game changer”**

Closed loop technology in the home experienced by adults with type 1 diabetes

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