Changes in HbA1c and sensor glucometrics 6-months following HCL commencement in individuals with HbA1c≥86mmol/mol: Sub-analysis from the ABCD Closed-Loop audit of the NHS England Pilot

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The ABCD audit captured data from the 2021 NHS England Hybrid Closed-Loop (HCL) pilot scheme. People with type 1 diabetes were offered access to HCL therapy if they were using an insulin pump and FreeStyle Libre and had a HbA1c ≥69mmol/mol. Evidence from randomised control trials such as ADAPT have demonstrated significant HbA1c reduction with HCL compared to multiple-daily injection in people with elevated HbA1c levels at baseline (>64mmol/mol in ADAPT)[1]. Evidence on individuals with much high HbA1c levels is scarce, especially in a real-world setting.

The aim of this analysis is to assess the HbA1c and time-in-range changes in individuals with a HbA1c≥86mmol/mol at baseline.

Methods

Individuals with a baseline HbA1c≥86mmol/mol and with data available at both baseline and 3-9 months were included. Change in HbA1c and sensor glucometrics time-in-range [TIR, 3.9-10mmol/L], time-below-range [TBR, <3.9mmol/L], time-above-range [TAR1, 10.1-13.9mmol/L], time >13.9mmol/L [TAR2]) and coefficient of variation [CoV] were assessed using paired t-tests in Stata 16.

Comparisons were made with those with HbA1c<86mmol/mol at baseline.

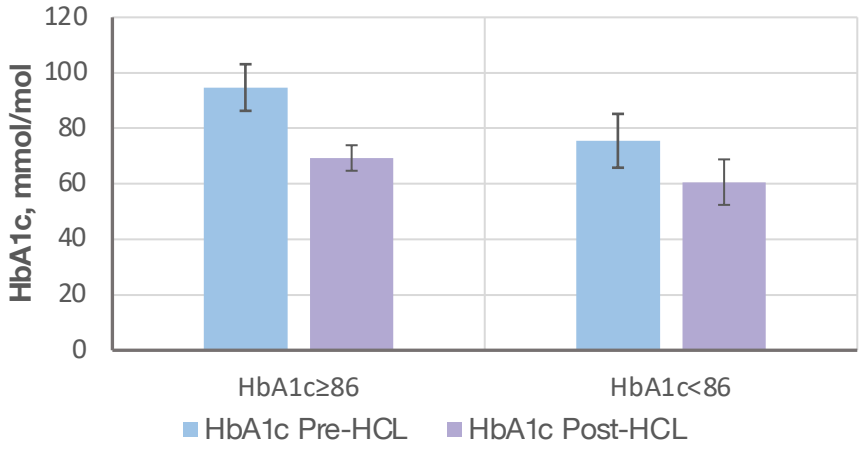
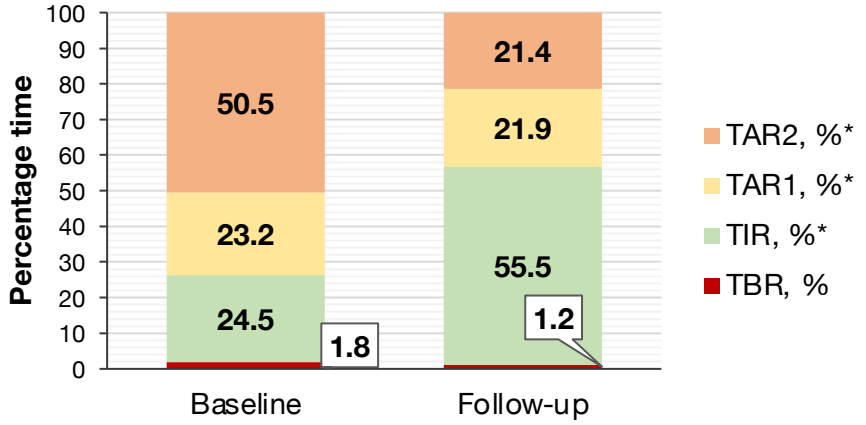


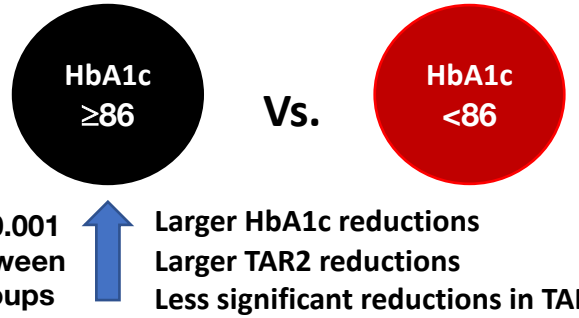
Figure 1. (above) HbA1c before and after HCL (error bars showing SD) (P<0.001) and **Figure 2.** (below) demonstrating change in sensor glucometics for HbA1c≥86mmol/mol (*P<0.01)



Results

Data were included for 77 individuals with HbA1c ≥86mmol/mol: age 33.9(±11.8)years, diabetes duration 19.3years (IQR 10.9-25.6) and pump therapy duration 6.3years (IQR 4.7-9.8). Majority were female (71.4%) and White (87.3%). Median follow-up was 4.9months (IQR 3.9-6.2).

HbA1c reductions are displayed in Figure 1. and change in sensor glucometrics is displayed in Figure 2. No change in CoV was noted.



Conclusion

In the NHS England pilot, HCL in individuals HbA1c ≥ 86mmol/mol is associated with large reductions in HbA1c and TAR2 and improved TIR. Change in TIR and TBR are similar to those with lower HbA1c levels, but HbA1c and TAR2 reductions are significantly greater.

References

1. Choudhary P et al, 2022 Lancet D&E