Continuous glucose monitors: Implementation in primary care for patients with type 2 diabetes

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T2DM, CGMs, and Primary Care

- Rates of type 2 diabetes (T2DM) continue to increase and many individuals with T2DM do not meet recommended glycemic targets.[1]
- For many patients with T2DM, their primary care provider (PCP) is the only physician treating their diabetes.[2]
- Continuous glucose monitors (CGMs) monitor blood glucose levels and communicate with patients in real time, potentially improving glycemic control.
- Use of CGMs has been increasing among patients with T2DM, but the effects of real-time CGM on glycemia in primary care patients with T2DM have not been studied in real-world settings.

Objective

Examine the association of real-time CGM use with glycemic control among individuals with T2DM receiving primary care

Methods

Design

- A prospective, embedded pragmatic clinical trial with retrospectively matched control patients.

Study Population

- Primary care patients at Piedmont HealthCare, a multispecialty medical group based in Statesville, NC.
- CGMs were initiated in 91 adult primary care patients with T2DM.
- Intervention patients retrospectively matched 1:1 to control patients (n=91) (no CGM use) and had a baseline HbA1c within 0.2 points and age within five years.

Inclusion/Exclusion Criteria

- *Inclusions*: two documented records of HbA1c >7.5, three to 12 months apart, and a compatible smart device (some were provided).
- *Exclusions*: gestational or chemically induced T2DM, end-stage renal disease, hospice or receiving palliative care, Rx for bolus insulin in the past year, pregnancy, alcohol or drug dependence, previous personal CGM use.

Time Frames and Control Data Source

- Intervention patients were enrolled between October 2021 and August 2022.
- Control patients received at least 3 months of care at Piedmont HealthCare, January 2019—March 2020 or January–September 2021.
- Control patients were sourced from Piedmont's clinical EHR data, which were extracted, mapped, and normalized by Optum®.

References

1. *National Diabetes Statistics Report*. Centers for Disease Control and Prevention.
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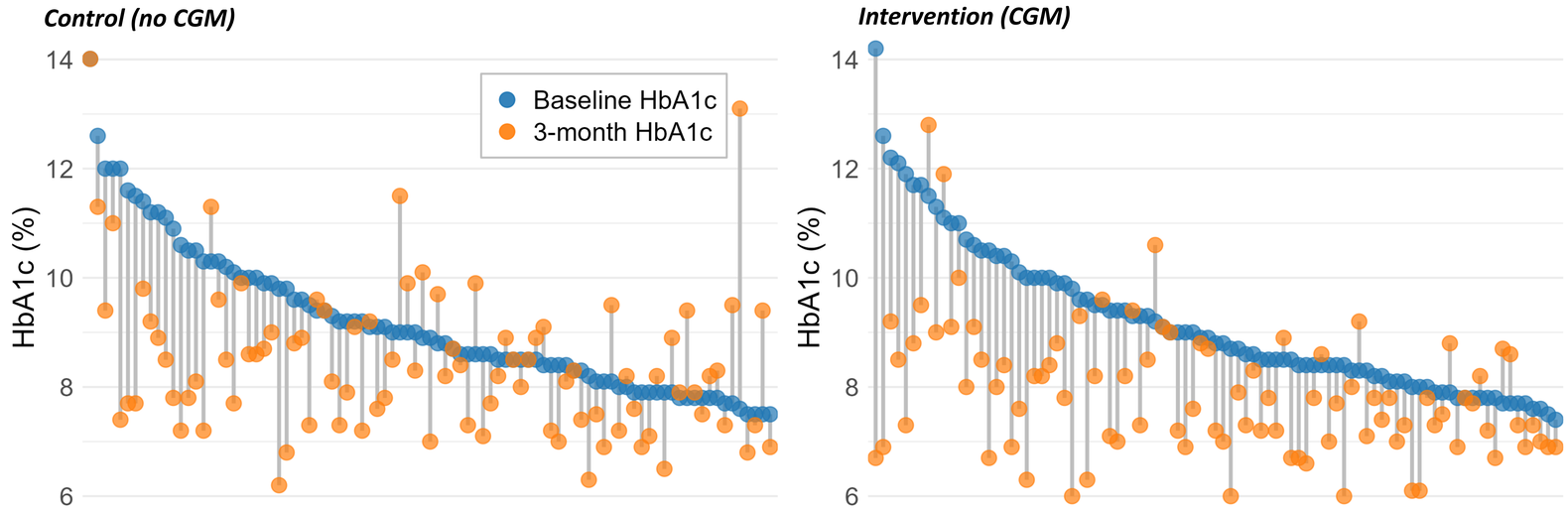
Intervention patients had greater A1c reductions on average compared to controls

	Total (n=182)	Control (n=91)	Intervention (n=91)	p value
Baseline A1c (mean (SD))	9.2 (1.4)	9.2 (1.3)	9.2 (1.4)	0.926
Change in A1c (mean (SD))	-1.0 (1.5)	-0.8 (1.5)	-1.3 (1.5)	**0.011**

- A linear regression analysis was performed to assess the relationship between the change in A1c levels and intervention status.
- Intervention patients demonstrated a decrease in their HbA1c by 0.64 more points on average as compared with the control patients when controlling for baseline prescription category and presence of chronic kidney disease or diabetic nephropathy at baseline ($p < 0.01$).

Change in HbA1c Over a 3-month Period in No CGM (Control) Patients Compared with CGM (Intervention) Patients

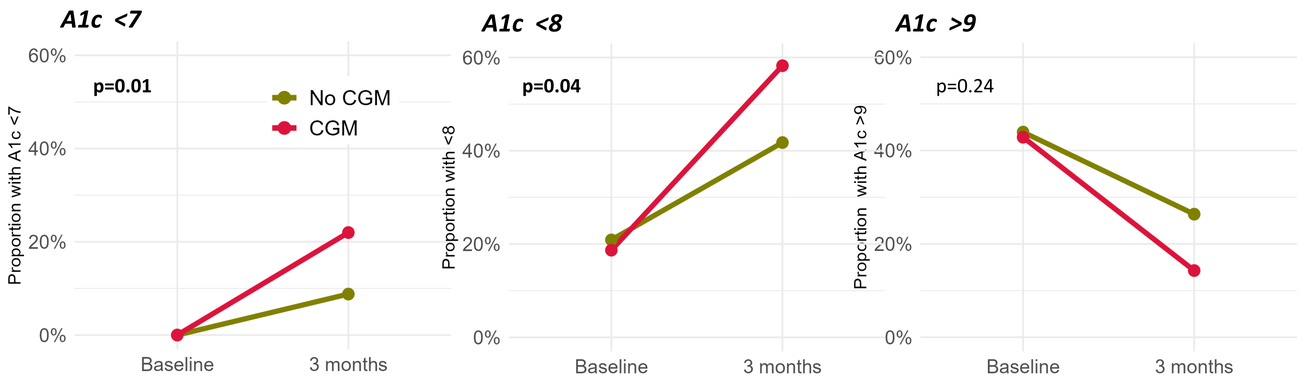


CGM use was associated with more patients meeting some guideline-recommended A1c thresholds

- Difference-in-difference analyses were conducted to determine if the change in the proportion of patients with A1c <7, A1c <8, and with A1c >9 from baseline to 3 months was significantly different between the control and intervention groups.
- In the intervention group, there were 13.2% more patients with A1c <7 (p=0.01) and 18.7% more patients with A1c <8 (p = 0.04) compared to the controls. There were also 11% fewer patients with A1c >9 in intervention group, but this difference was not statistically significant (p = 0.24).

% of patients at various A1c thresholds

Threshold	Control (n=91)	Intervention (n=91)	p value*
A1c <7			
Baseline	0%	0%	
3 months	9%	22%	
Difference	9%	22%	**0.01**
A1c <8			
Baseline	21%	19%	
3 months	42%	58%	
Difference	21%	40%	**0.04**
A1c >9			
Baseline	44%	43%	
3 months	26%	14%	
Difference	-18%	-29%	0.24



Conclusion

- Primary care patients with T2DM but not yet on intensive insulin who used CGMs for the 3-month study period demonstrated statistically significant reductions in HbA1c as compared with matched control patients receiving usual care (p <0.01).
- Results align with previous literature, but our study demonstrates the potential for integration into primary care settings, particularly for patients on less intensive or no insulin therapy.
- Cost remains a barrier for some patients in some regions of the U.S., but data from studies like this may encourage payers to increase coverage of CGMs, especially earlier in a patient's diabetes progression.

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