

INTRODUCTION

A CGM-based population health dashboard, created by researchers at Stanford University, was adapted and adopted by Children's Mercy. The dashboard flags patients with T1D meeting clinician-defined risk criteria: extreme lows >2%, no alerts, lows >4%, >15% drop in time-in-range (TIR), TIR <65%, extreme highs >10%, >15% drop in CGM wear time, insufficient data, extreme highs >3%. It enables clinicians to identify patients in high-risk categories for additional support between standard-of-care visits.

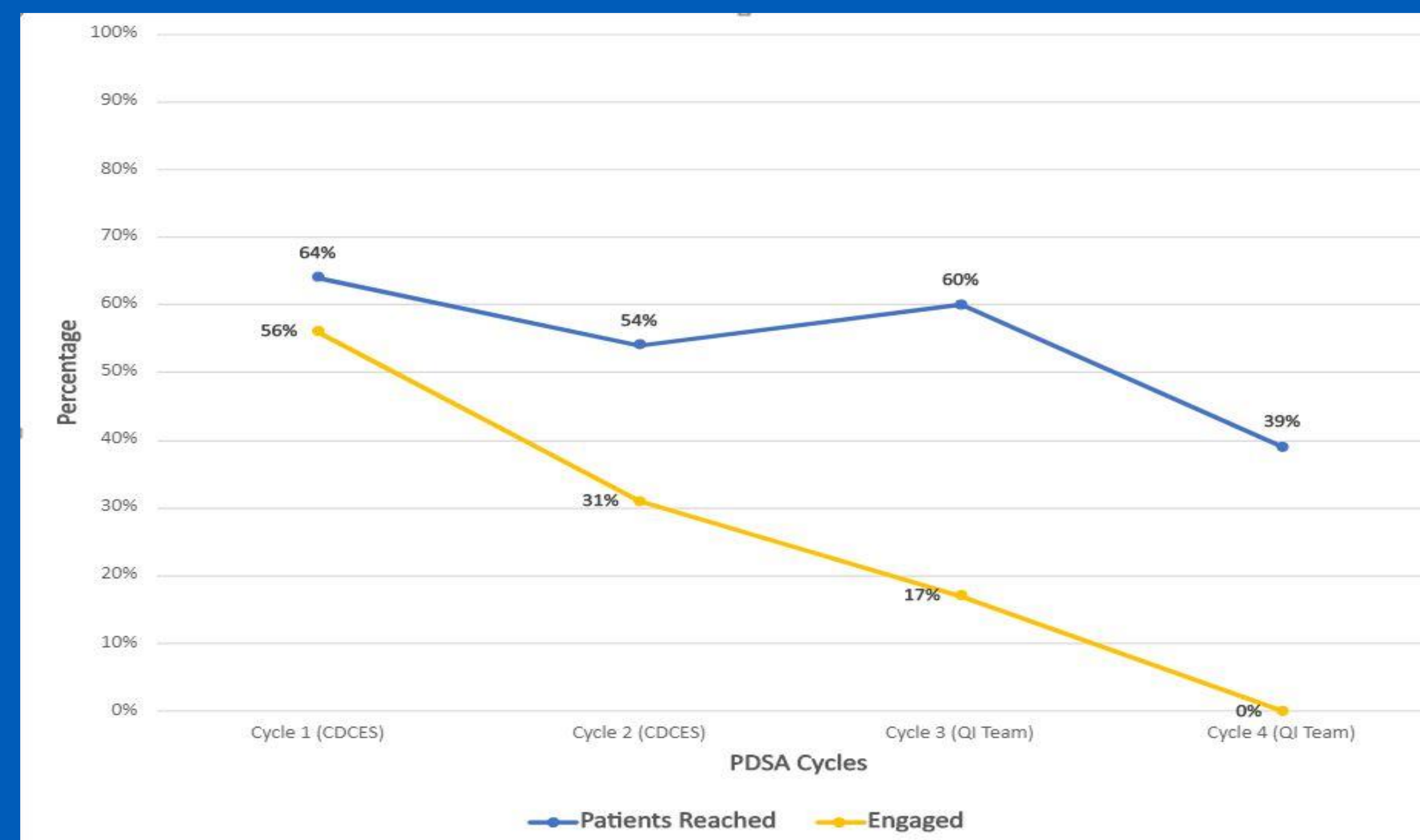
METHOD

We implemented the dashboard using Power BI and conducted 4 PDSA cycles targeting biomarker-based risk groups. Families received a one-time phone call or were scheduled for a series of problem-solving calls.

Utilization of a CGM-Based Dashboard to Identify At-Risk Patients with Type 1 Diabetes (T1D)

Continuous Glucose Monitor Risk Categories										
CGM Risk Category	Patient Count									
(1) Extreme Lows > 2%	25									
(10) No Alerts	2									
(2) Lows > 4%	61									
(3) >15% Drop in Time in Range	47									
(4) Time in Range Under 65%	347									
(5) Extreme Highs > 10%	21									
(6) >15% Drop in Wear Time	65									
Total	1467									

Date	CGM Risk Category	CBG Days	Wear %	Time in Range %	Measure % > 180	Measure % > 250	Measure % < 70	Measure % < 54	TIR Previous Week	Bolus Score	Most Recent
July 3, 2022	(7) Insufficient Data - Missing Days	1.00	12.85	0.00	100.00	100.00	0.00	0.00	16.15		Februar
June 12, 2022	(7) Insufficient Data - Missing Days	1.00	10.91	0.00	100.00	100.00	0.00	0.00	11.22		August
May 29, 2022	(7) Insufficient Data - Missing Days	1.00	1.04	0.00	100.00	80.95	0.00	0.00	0.00		Septem
July 31, 2022	(7) Insufficient Data - Wear Time Issue	4.00	40.77	0.00	100.00	85.28	0.00	0.00	38.17	0.00	August
September 11, 2022	(7) Insufficient Data - Missing Days	1.00	5.70	0.00	100.00	72.17	0.00	0.00	0.00		August
July 24, 2022	(7) Insufficient Data - Missing Days	2.00	7.14	0.00	100.00	84.03	0.00	0.00	37.98		July 6, 2
		4.03	48.83	51.10	46.96	24.49	1.93	0.49	50.42	0.14	



Katie Noland, MS, BSN, RN, CDCES, CPN; Britaney Spartz; Emily DeWit, MASL, Mark Clements, MD PhD; Rachel Dixon, MSN, RN, CNL, CDCES; Jaimie Contreras, BSN, RN, CDCES; Gayla Kutzli, BSN, RN; Andie Kaminsky, BSN, RN, CDCES, CPN; Katelyn Evans, LMSW, LCSW, OSW-C; Jude El Buri, BS, BA

Children's Mercy Kansas City

RESULTS

Figure 1 shows the results of telephone outreach across 4 PDSA cycles. 33% of patients were flagged based on out-of-date CGM data, had already transitioned to adult care, or had time in range >80% despite meeting other risk biomarkers. These issues affecting efficient workflow and patient acceptability were addressed after Cycle 2. Subsequently, 0% of patients who were reviewed in the dashboard were affected by these issues. Overall, families were more engaged in making insulin changes at the point of contact than when invited to schedule a series of future remote contacts.

DISCUSSION

A CGM-based risk dashboard may help clinicians identify patients who would benefit from proactive outreach between in-clinic visits, but families may be difficult to reach by phone, and some families may not perceive that they need help. Future work should seek to overcome these barriers.