T1D Exchange

T1DX-QI Collaborative Call with Pediatric Centers

July 23, 2024

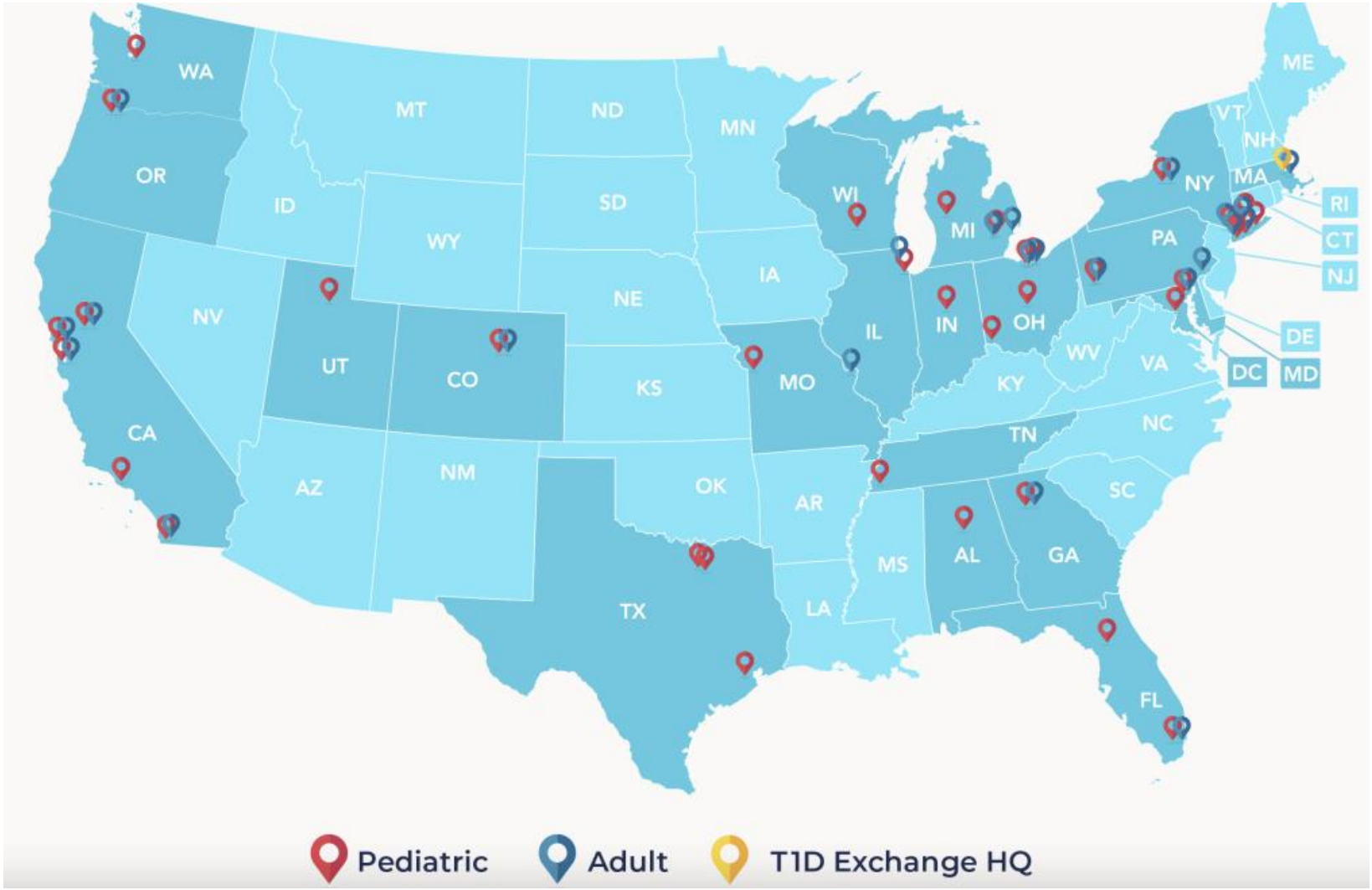
Agenda

- Welcome & Introductions, Nicole Rioles, MA and Osagie Ebekozien, MD,MPH

- Clinical center presentations
  - Children's Mercy Kansas City, Mark Clements, MD, PhD
  - Oregon Health and Sciences University, Ines Guttmann-Bauman, MD
  - University of Wisconsin, Elizabeth Mann, MD

- Collaborative Updates, Nicole Rioles, MA
  - November 2024 Learning Session Registration
  - November 2024 Abstract Submission
  - ADEPT Registration

T1DX-QI network of 62 centers, caring for 180,000+ people with type 1 and type 2 diabetes across 22 states and D.C.



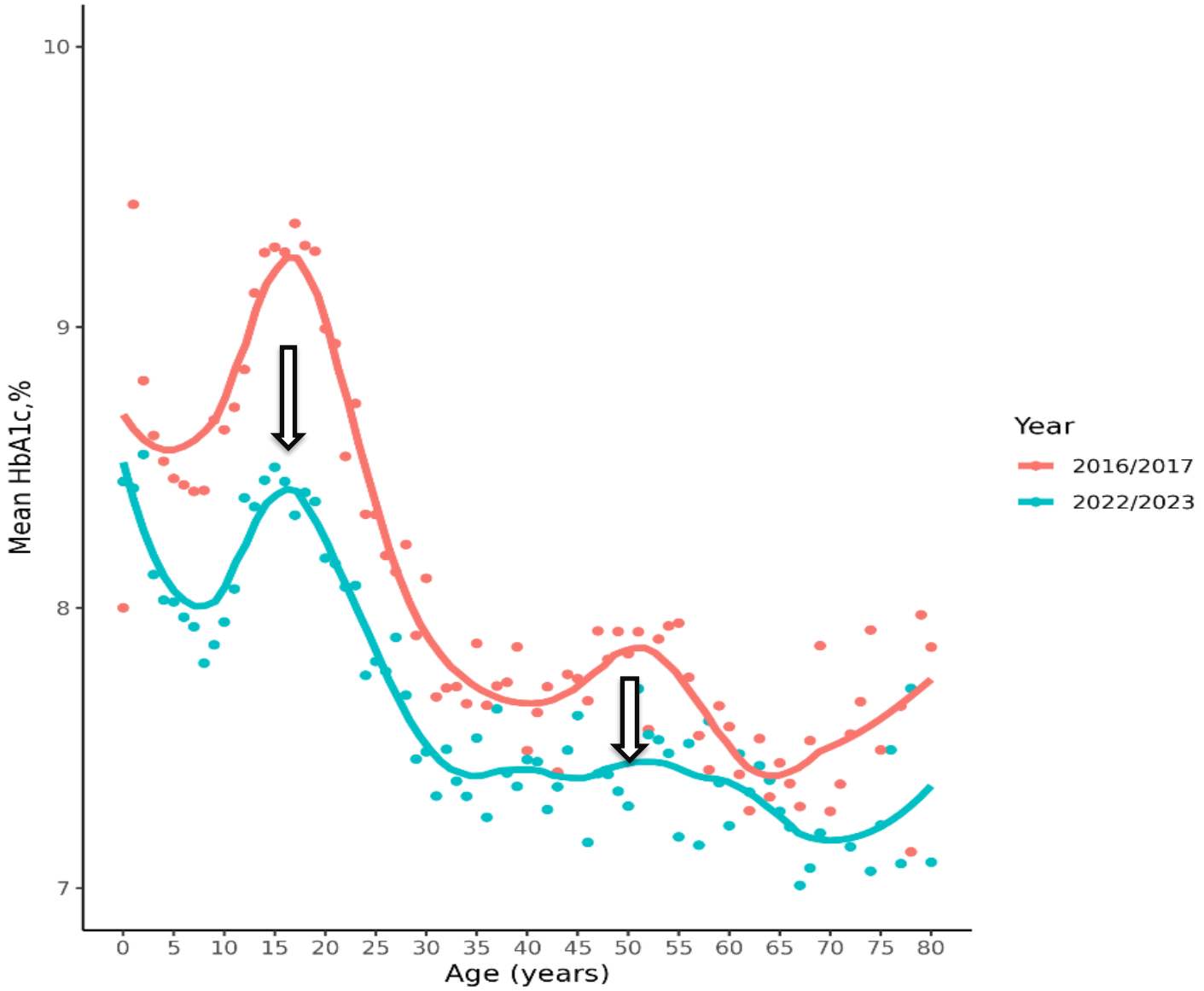
Priya Prahalad, Nicole Rioles et al. T1D Exchange Quality Improvement Collaborative: Accelerating Change through Benchmarking and Improvement Science for People with Type 1 Diabetes. Journal of Diabetes. November 2021

T1DX-QI EMR PwT1D Database Profile (N=97,494)

	Total	<6 years	6-13 years	13-18 years	18-26 years	26-50 years	50-65 years	>=65 years
N	97494	2940	17105	27620	29796	12047	4911	3075
Sex (Female)	47528 (49)	1392 (49)	1392 (47)	47 (8541)	8541 (50)	50 (13026)	13026 (47)	14126 (47)
Race/Ethnicity								
NH White	61894 (63)	1860 (63)	10550(62)	16972 (61)	20029 (67)	7278 (60)	3065 (62)	2140 (70)
NH Black	13417 (14)	360 (12)	2465 (14)	4184 (15)	3769 (13)	1563 (13)	724 (15)	352 (11)
Hispanic	12157 (12)	343 (12)	2053 (12)	3685 (13)	3407 (11)	1698 (14)	683 (14)	288 (9)
Other	10026 (10)	377 (13)	2037 (12)	2779 (10)	2591 (9)	1508 (13)	439 (9)	295 (10)
Insurance (Private)	47600 (49)	1357 (46)	7986 (47)	13263 (48)	15898 (53)	6412 (53)	2359 (48)	325 (11)

[a] Missing data; column totals may not add up to 100%; [b] Device information available on a subset of the population Unpublished data

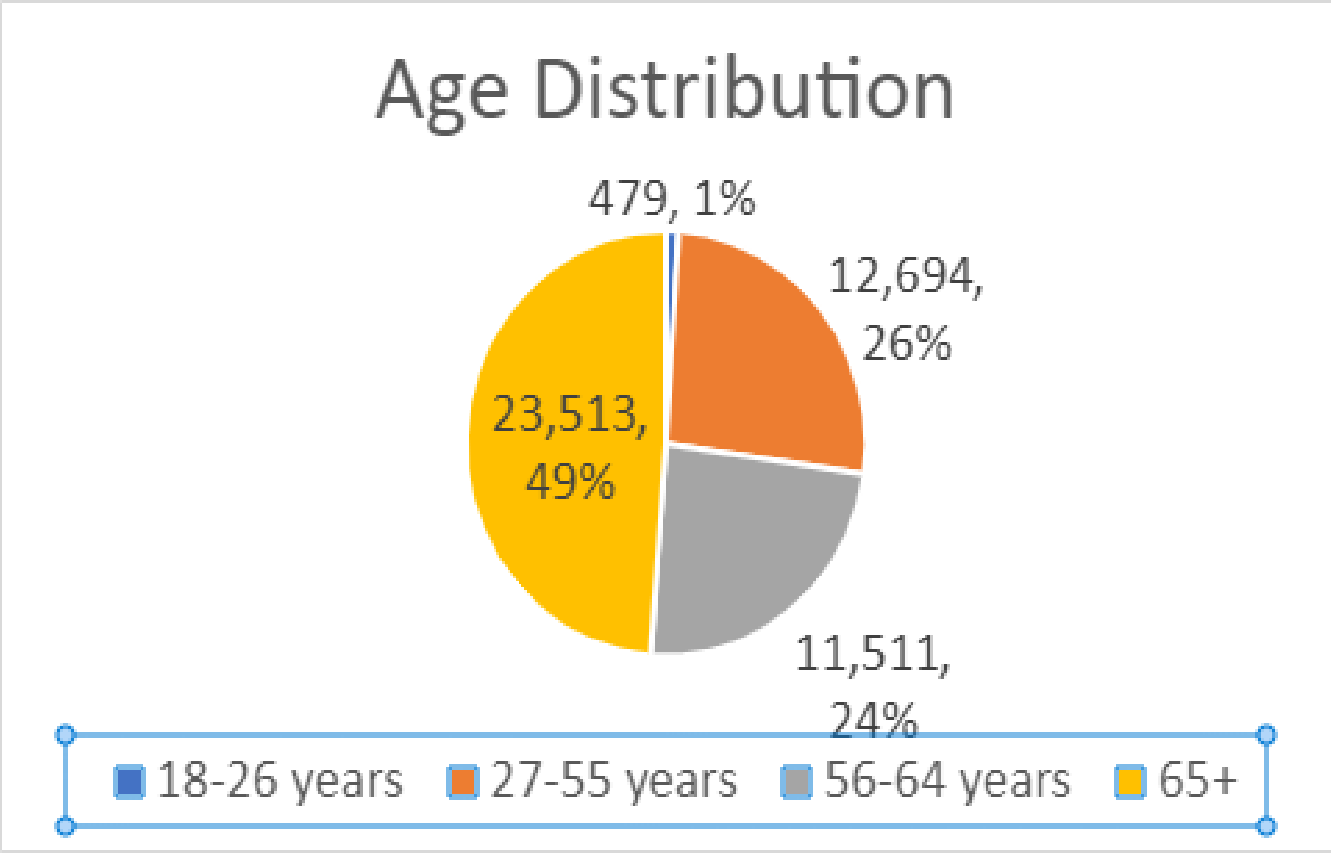
After collaboration: Significant HbA1c improvement 16/17 vs 22/23



Improving Outcomes for people with diabetes through collaboration. Endo Clinics 2023
Longitudinal Trends in Glycemic Outcomes and Technology Use for Over 48,000 People with Type 1 diabetes (2016-2022) from the T1D Exchange Quality Improvement Collaborative. Diabetes Technology and Therapeutics 2023

Demographic and Clinical Profile of PwT2D Cohort

Mean age of 63 years



	Total
N	48,197
Sex (male)	24,451 (51)
Race-Eth	
Non-Hispanic White	12,412 (26)
Non-Hispanic Black	16,677 (35)
Hispanic	5,743 (12)
Other	13,363 (28)
Insurance	
Public	26,126 (54)
Private	9,285 (19)
Self pay	5,120 (11)
Unknown/Other	7,666 (16)
CGM Use (Y)	9,540 (20)
Insulin Therapy (Y)	14,273 (30)

Welcome Susan Thapa PhD, MPH

T1DX-QI's Associate Director of Real World Data.

Collaborative Clinic Profile:
Pediatric Diabetes Center at Naomi Berrie Diabetes Center
Columbia University Irving Medical Center

the Naomi Berrie DIABETES CENTER
Columbia University Medical Center
the care until the cure

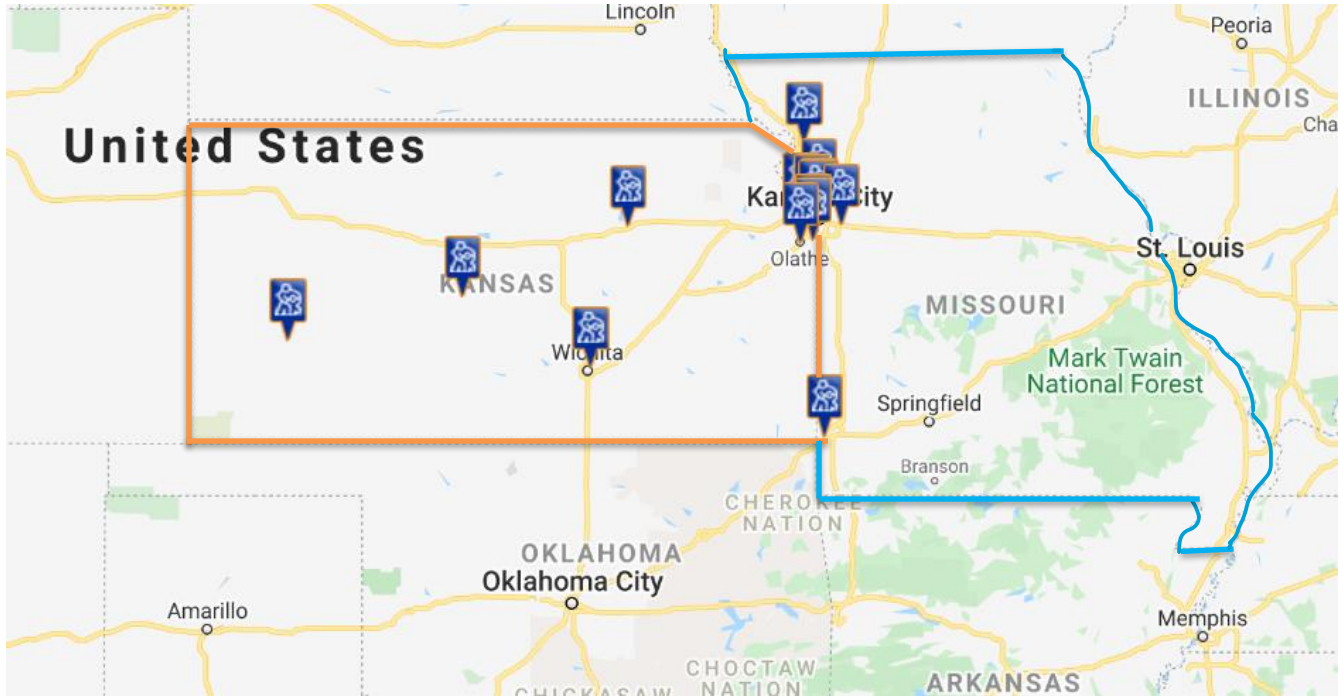
Center and Providers	Multidisciplinary Team Members	Volume and Demographics	Contact Names
Naomi Berrie Diabetes Center Columbia University Irving Medical Center New York, New York	**Pediatric Endo MD (diabetes specific):** 4 **APP:** 1 **Pediatric Endo Fellows:** 4 **CDCES**: 3 (2 RD, 1 RN) **Medical Assistants/Prior Auths:** 5 **Social Worker**: 1 **Licensed Creative Arts Therapist:** 1 **Research Team**: 2 coordinators	Approx 900 patients with T1D seen in the last 1 year **Newly diagnosed patients with T1D per year:** 60 **Insurance:** Medicaid 30% **Race:** white 55% Black 9% Asian 2% other/not reported 3% **Ethnicity**: Hispanic 24% Non-Hispanic 60% other/not reported 25%	**Site PI:** Kristen M Williams, MD kmw2160@cumc.columbia.edu **Site coordinator:** Mary Farkouh, C-RN mf3498@cumc.columbia.edu

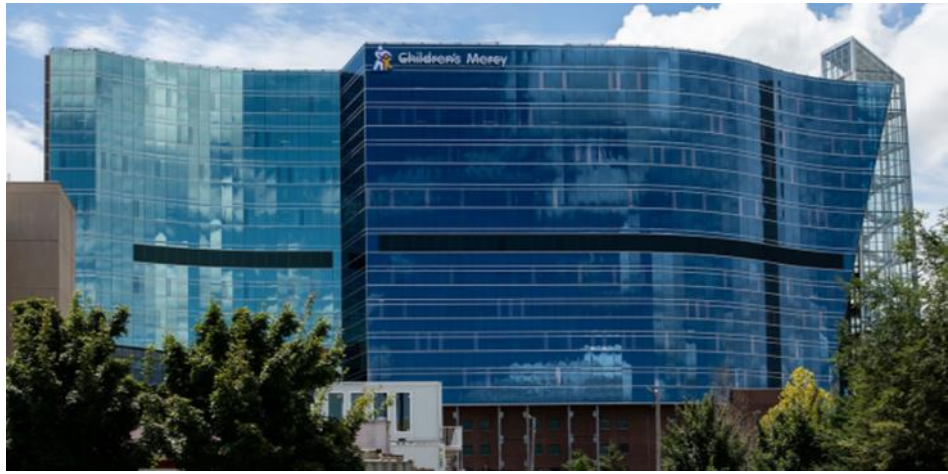
T1D Exchange

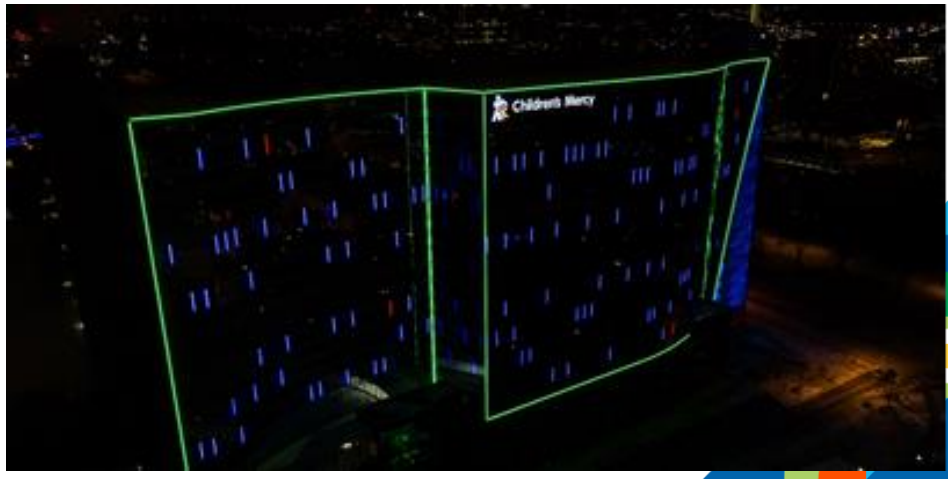
Children's Mercy Kansas City Rising T1DE Alliance Update

T1D Exchange QI Collaborative
7/23/24

Where is Children's Mercy Kansas City's Diabetes Center?







Children's Mercy Research Institute

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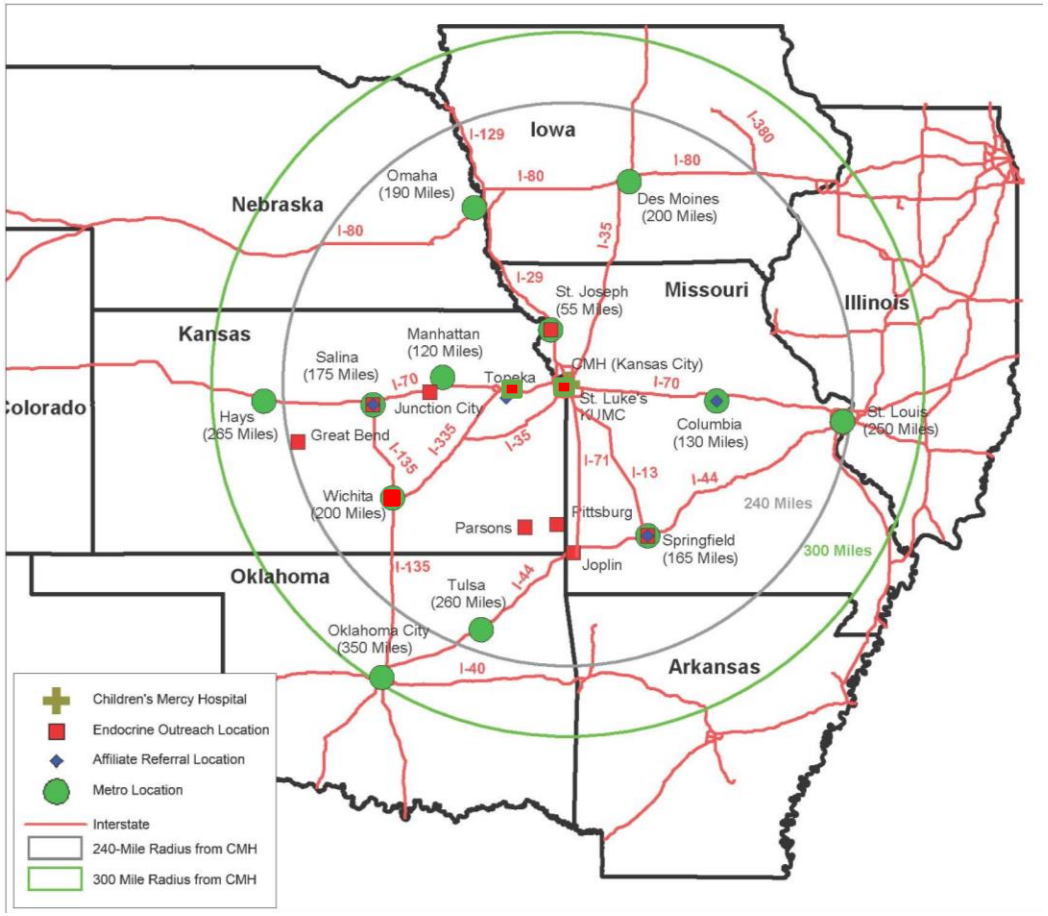
The Diabetes Center today



30 physician positions
4 APRN
11 clinics
>2400 T1D
>300 T2D

25% experience rise in A1c every 90 days
2.5% experience DKA admissions every 180 days

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Vision of the “Rapid Learning Lab”

To improve diabetes outcomes, the patient experience, and the value of diabetes care broadly across stakeholder groups via

prediction
innovation
implementation
rapid iteration
and broad dissemination

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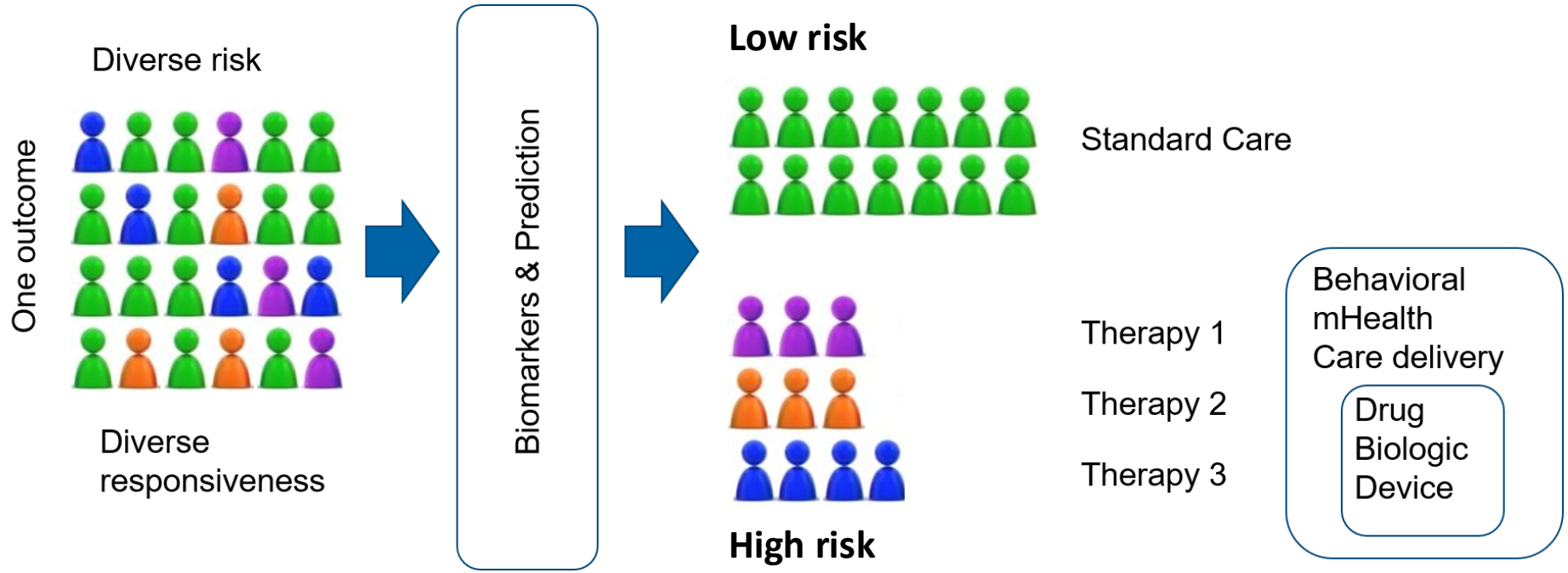
Background

Few diabetes centers track predicted health or use risk-based management protocols based on forecasted risk
No diabetes center uses all the available data effectively



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Forecasting outcomes

DKA Admissions

Diverse risk

Diverse responsiveness

Biomarkers & Prediction

Standard Care

Remote Patient Monitoring

Peer Mentors

RPM + Digital Therapeutics (DTx)

Behavioral
DTx
Care delivery

Drug
Biologic
Device

Try some stuff

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The solution: build model with features derived from T1D Exchange data standard

Model development and feature engineering

Set building

- Training (60% | 19,569)
- Testing (20% | 2443)
- Validation (20% | 2450)

- Sets are partitioned by individual (model validated against new people)
- Stratified by DKA incidence

Feature engineering

Demographics/SDOH
- Sex
- Race
- Ethnicity
- Primary language
- Age
- Insurance status

Diabetes mgmt.
- CGM Usage
- Insulin delivery route
- Average bolus amount

Lab results
- HbA1c %
- Age of HbA1c value
- Rate of HbA1c change (with prior measurement)

Diabetes history
- T1DDuration
- Time since last DKA
- Avg. time between prior DKAs
- Cumulative # of DKAs

Model selection

DKA events are **imbalanced** (IR = 34, DKA incidence = 2.9%)

Ensemble (soft voting) of gradient-boosted tree methods:

$$p_{DKA} = w_{XGB}\,p(\text{XGBoost}) + w_{LGBM}\,p(\text{LightGBM})$$

Hyperparameter optimization

Model hyperparameters found using Bayesian hyperparameter optimization.

150 optimization iterations for each child model.

Maximize average precision (area under precision-recall curve) of the **test set**.

Weights for soft voting are scanned in increments of 0.01.

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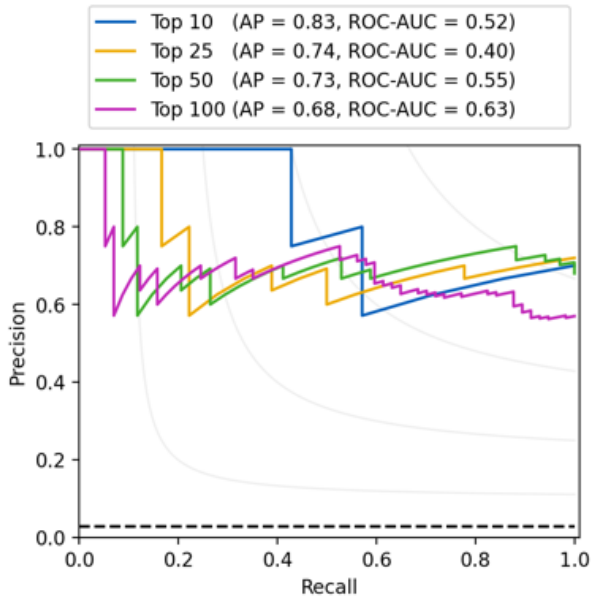
DKA risk prediction model performance

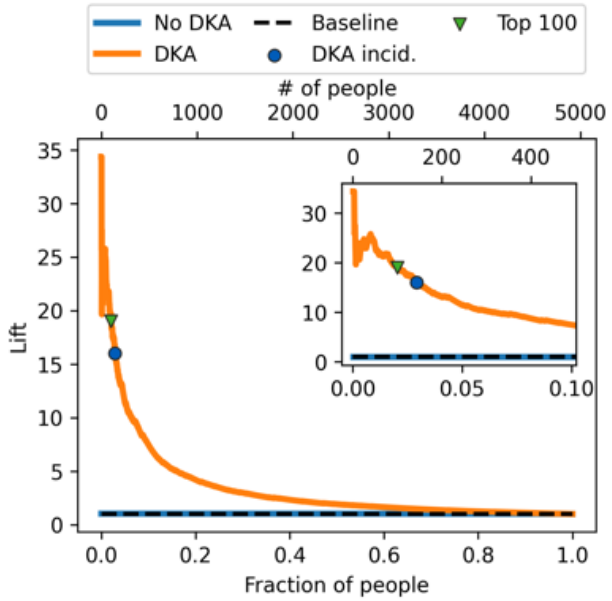
Results: model performance and feature importance

All results from the (out-of-sample) validation set

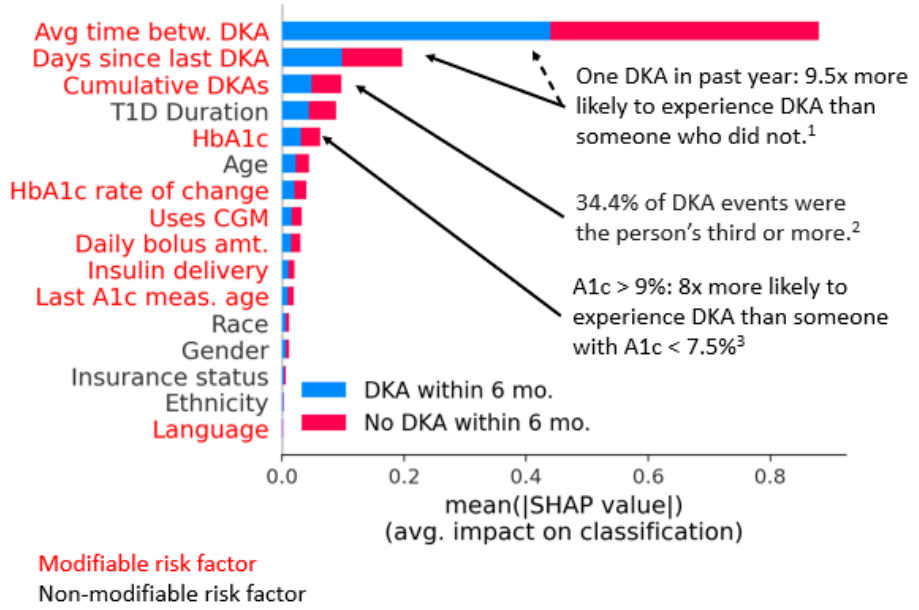
Top N risk precision-recall



Lift curve



SHAP values (feature importance) of top 100



Modifiable risk factor

Non-modifiable risk factor

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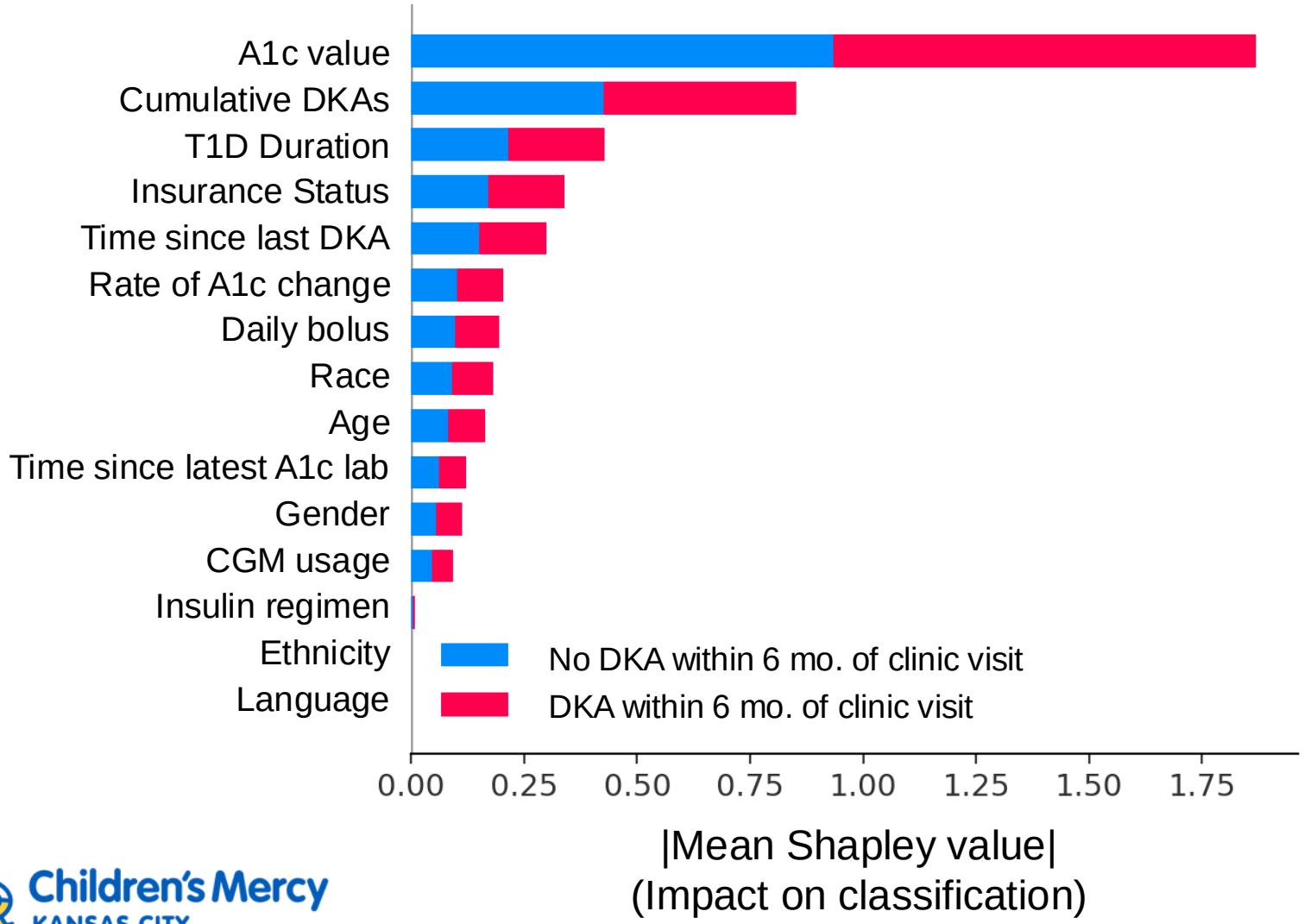
Importance of each feature in predicting DKA risk



Larger value = larger impact on prediction

Same bar length for each color: feature is equally important for predicting No DKA/DKA.

Able to detect correlated variables (e.g. race and ethnicity) and only assigns importance to one

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New, scalable model to classify ΔA1c > 0.3%

Can assess accuracy as a classification problem: "Can the model accurately classify people whose A1c rises over 0.3% (clinically significant threshold)?"

Classification metrics:

- **Sensitivity:** true positive rate
- **Specificity:** true negative rate
- **Positive predictive value (PPV)**: chance that predictions with ΔA1c > 0.3% are true
- **Negative predictive value (NPV):** chance that ΔA1c < 0.3% are true

ΔA1c > 0.3%	Original model	New model
Sensitivity	21.3%	26.4%
Specificity	86.1%	89.8%
PPV	55.5%	54.7%
NPV	57.3%	72.3%

ΔA1c > 0.4%	Original model	New model
Sensitivity	11.7%	16.6%
Specificity	93.5%	95.3%
PPV	54.1%	55.3%
NPV	62.0%	76.5%

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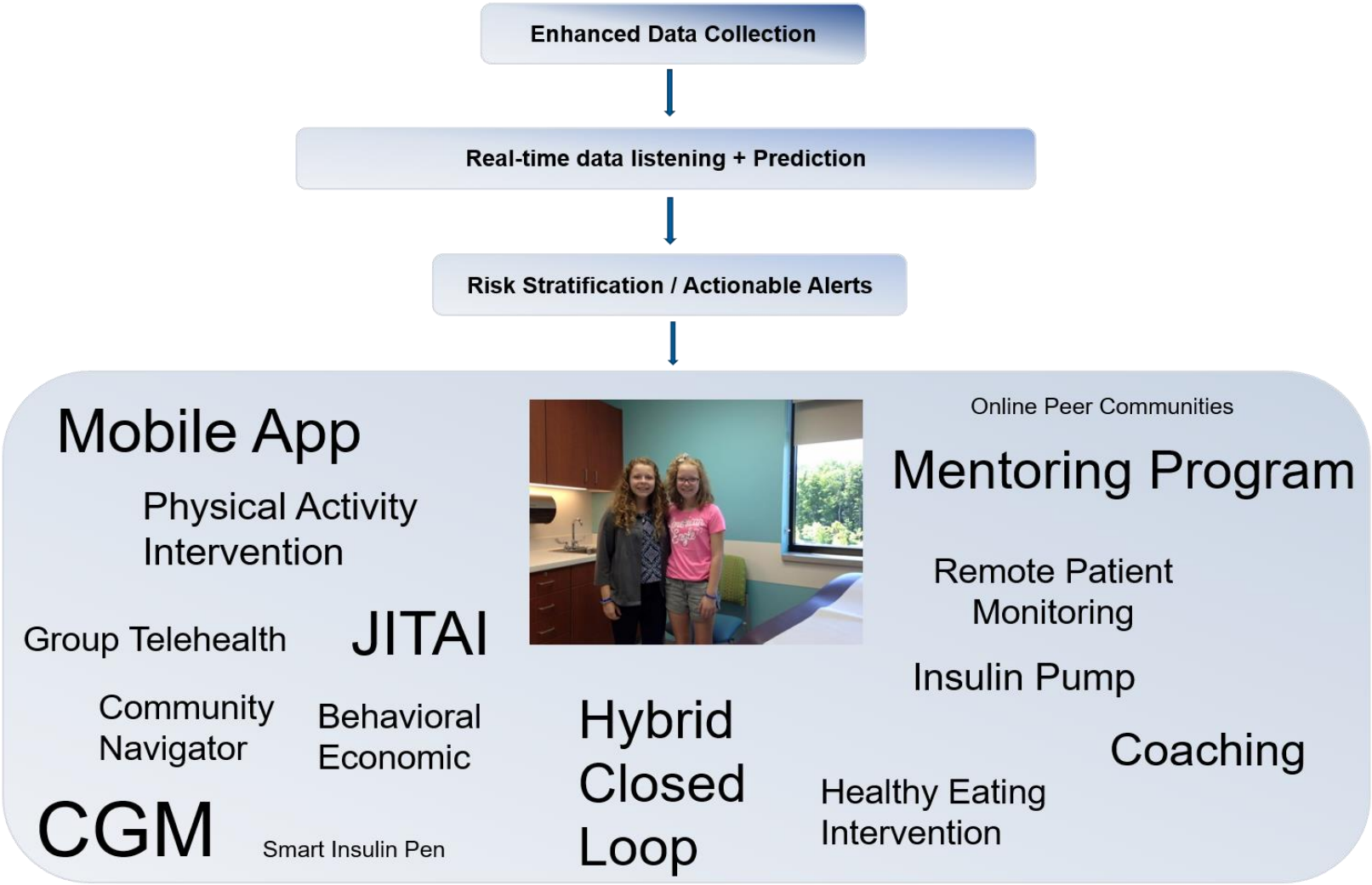
Building a library of care pathways/interventions



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Pillars of Self-Management

Glucose Monitoring

Insulin Dosing

Healthy Eating/Carb Count

Physical Activity

Healthy Coping

Problem solving

Reducing Risk

Intervention Strategies

Peer mentoring

Behavioral Economics

Mindfulness/Meditation

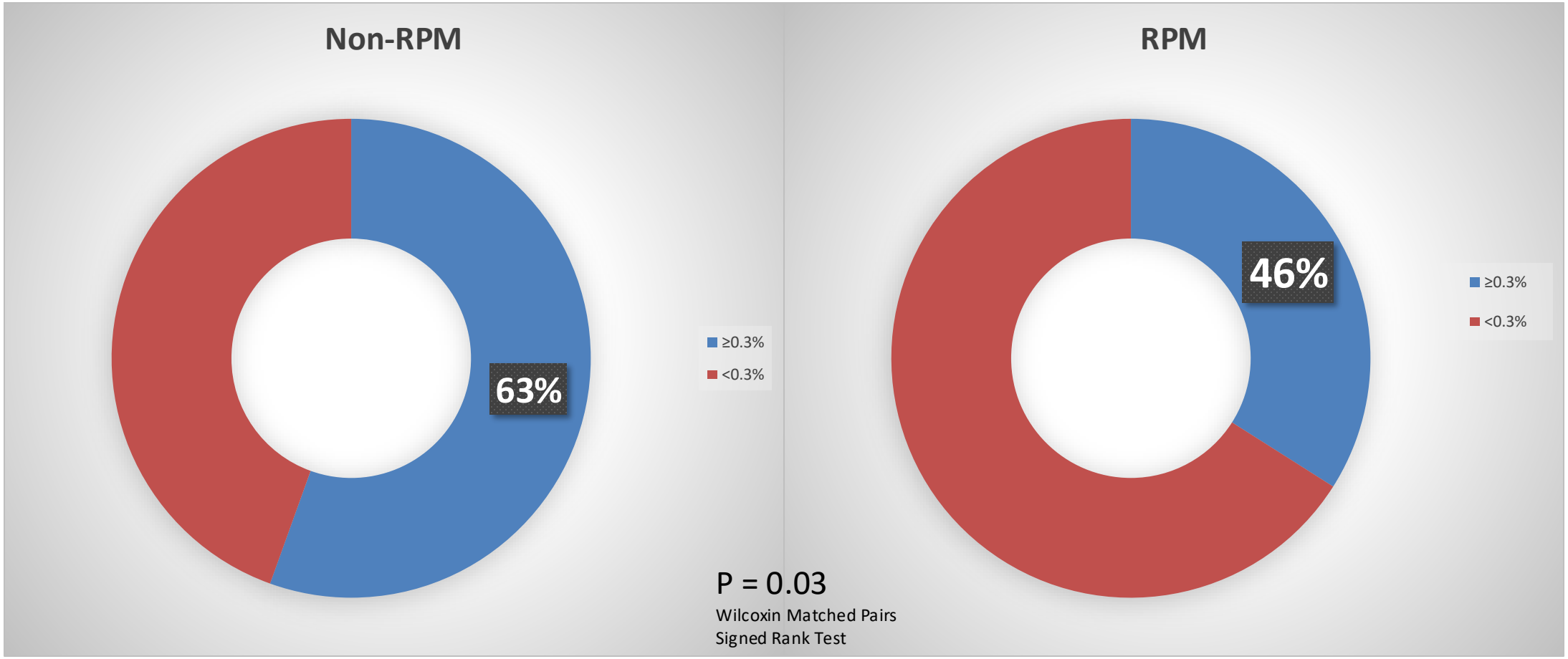
Relational agent

Cognitive Behavioral Therapy

Just-in-time Adaptive Intervention

And more…

Proportion with A1c Rise >0.3%
comparison to propensity score-matched cohort



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THE PROBLEM: HOW TO SCALE

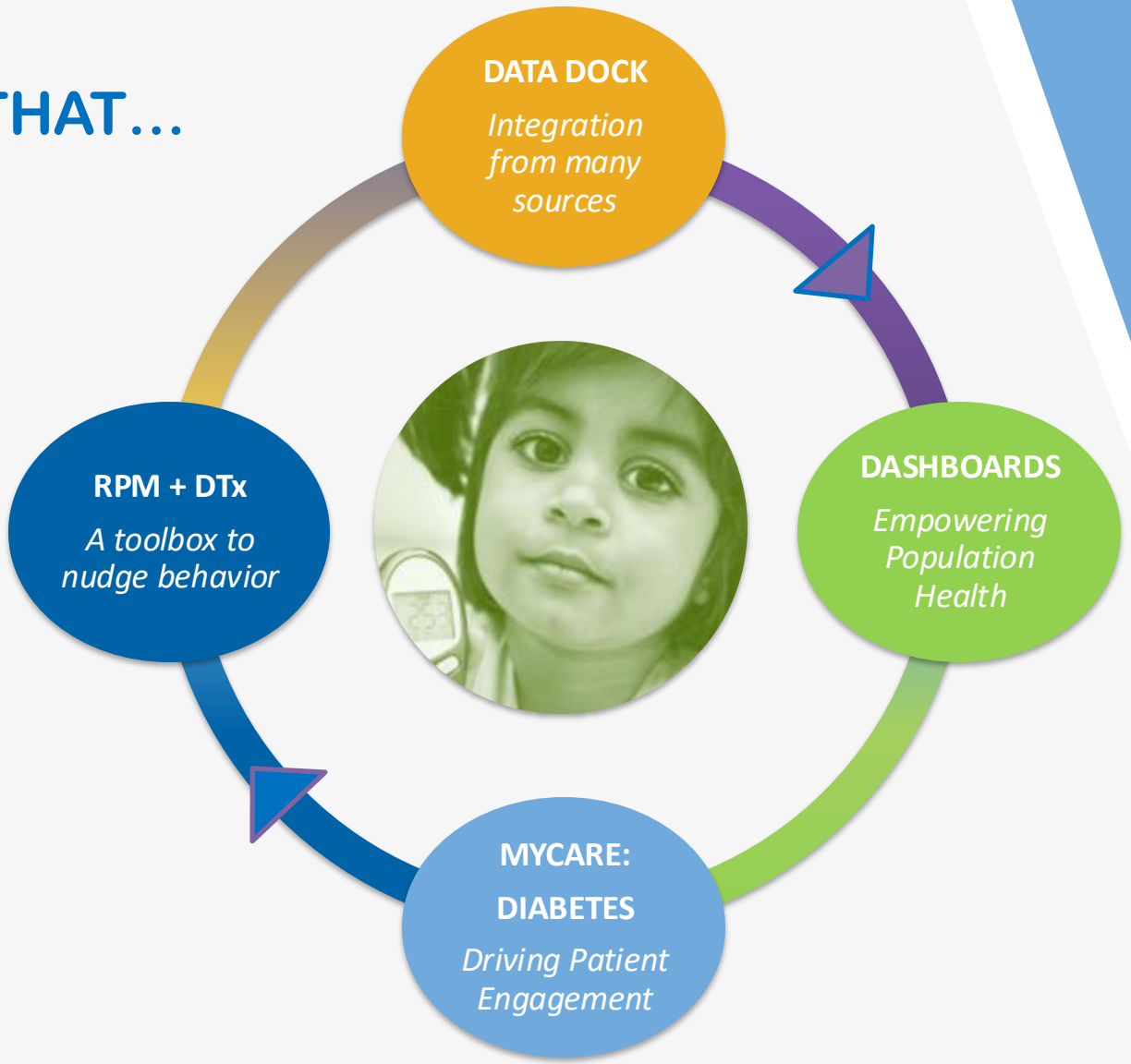
THE SOLUTION: A PLATFORM THAT…

CONNECTS medical record data to device data and patient-reported outcomes and experience measures

EMPOWERS clinical care teams with population health dashboards that allow them to visualize risk in their clinic

ENGAGES youth with diabetes and their families by creating “a diabetes clinic in their pocket”

ACTS on some of the most challenging problems facing diabetes clinics today by connecting families to digital and behavioral interventions that promote healthy behaviors



Rising T1DE Overview

Solutions include:

-**D-data dock** for data aggregation from multiple sources including patients personal health devices on an Azure cloud architecture – soon to be completely cloud agnostic

-**Dashboards** for population health management and individual patient data visualization
- -**Risk biomarkers** with logic/sorting
- -**AI/Machine learning-based Predictive Algorithms**
- -**Air Traffic Control**
- -**Propensity score matching (in silico clinical trial)**

-**MyCare** patient and family engagement and content delivery tool

-**Intervention Tool Kit** evidence-based health behavior change, education, and digitized care in the patient's/family's flow of life;

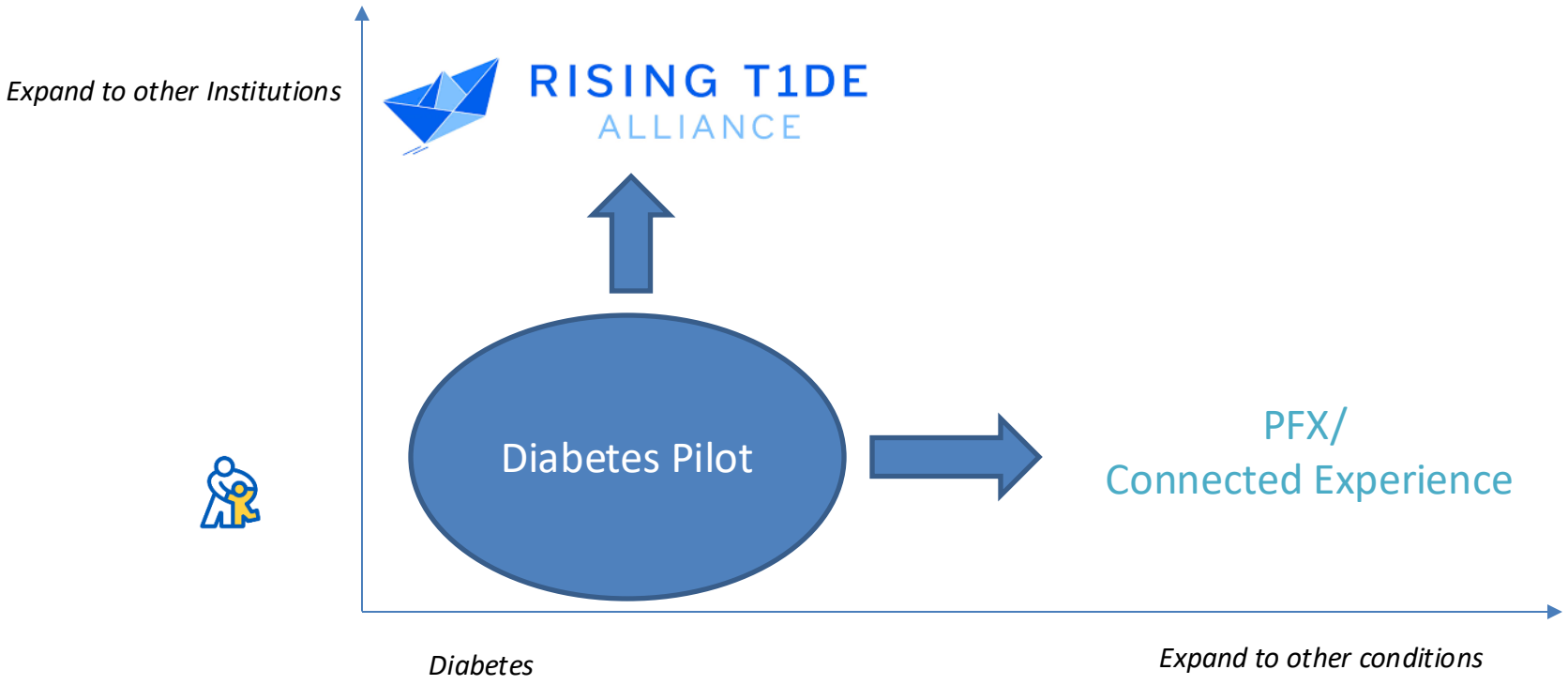
-**Clinical and billing training** to implement the care delivery model that is used within the CM Rising T1DE team

Executive Summary

Rising T1DE is a CMH asset that is

- making an impact for CM diabetes patients
- requested and FUNDED to go to other sites
- creating new revenue models as:
    - the prototype for ICS's value-based specialty care program
    - the prototype for implementing CMS' Remote Patient Monitoring billing codes with the intended staffing model (i.e., physician extenders)
- requested and *likely funded* to go to Hem/Onc
- a key enabler to Connected Experience and winning new markets/expanding CM's impact

Dissemination Approach



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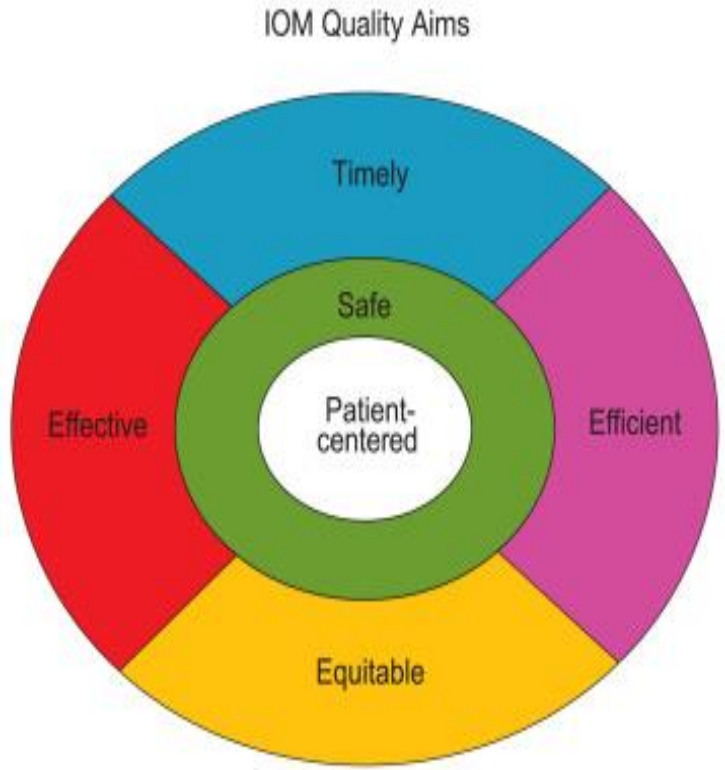
Reinventing Care Delivery Vision/Patient View

From	To
Quarterly visits	**Just-in-time, micro visits** scheduled based on **patient status**
9am-5pm scheduling	Efficient use of **telehealth** to meet patients where they are (including **evenings and weekends**)
One-size fits all	**Personalized Care**



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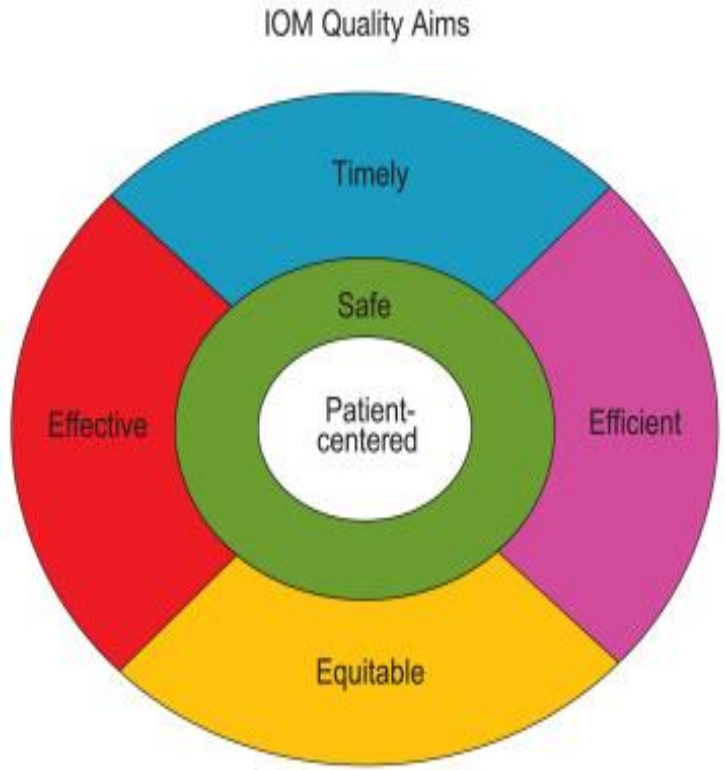
Reinventing Care Delivery Vision/ Clinic View

From	To
Traditional pay models	Value based care and new RPM codes
Traditional staffing and participation in revenue generation	Clinic staff physician extenders (e.g., nursing and dietitian staff activities support physician billing and increases physician capacity)
Geographic proximity	Remote empowerment of local population health management approaches



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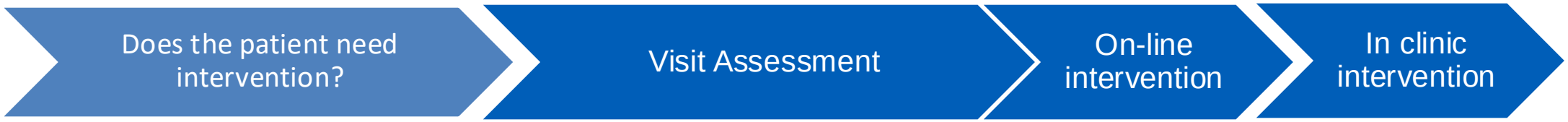
Rising T1DE Portfolio & Revenue Overview



Rising T1DE Portfolio

D-data doc, MyCare

Dashboards Algorithms to risk

Intervention tool kit
New clinical flow and billing manual and consulting

New Revenue Models

Billing for collecting monthly remote patient data

Billing for monthly interpretation

Billing for cumulative 20 or 40 min of encounter time (based on what is needed)

Value based care transformation

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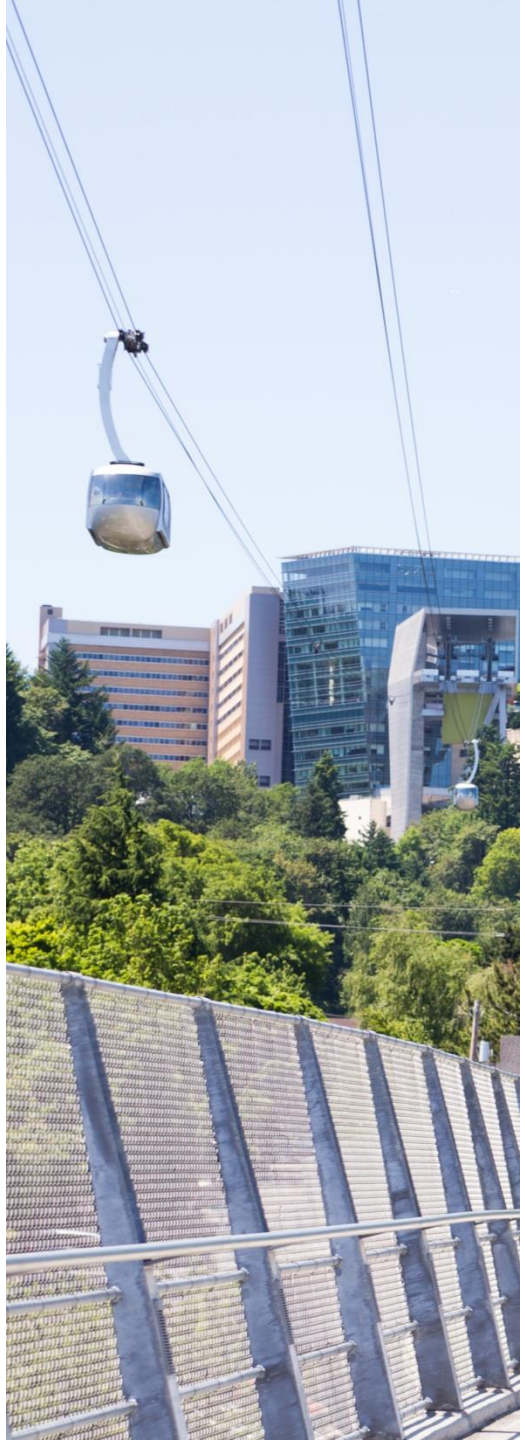
OHSU

OHSU Harold Schnitzer Diabetes Health Center

Improvement Initiatives

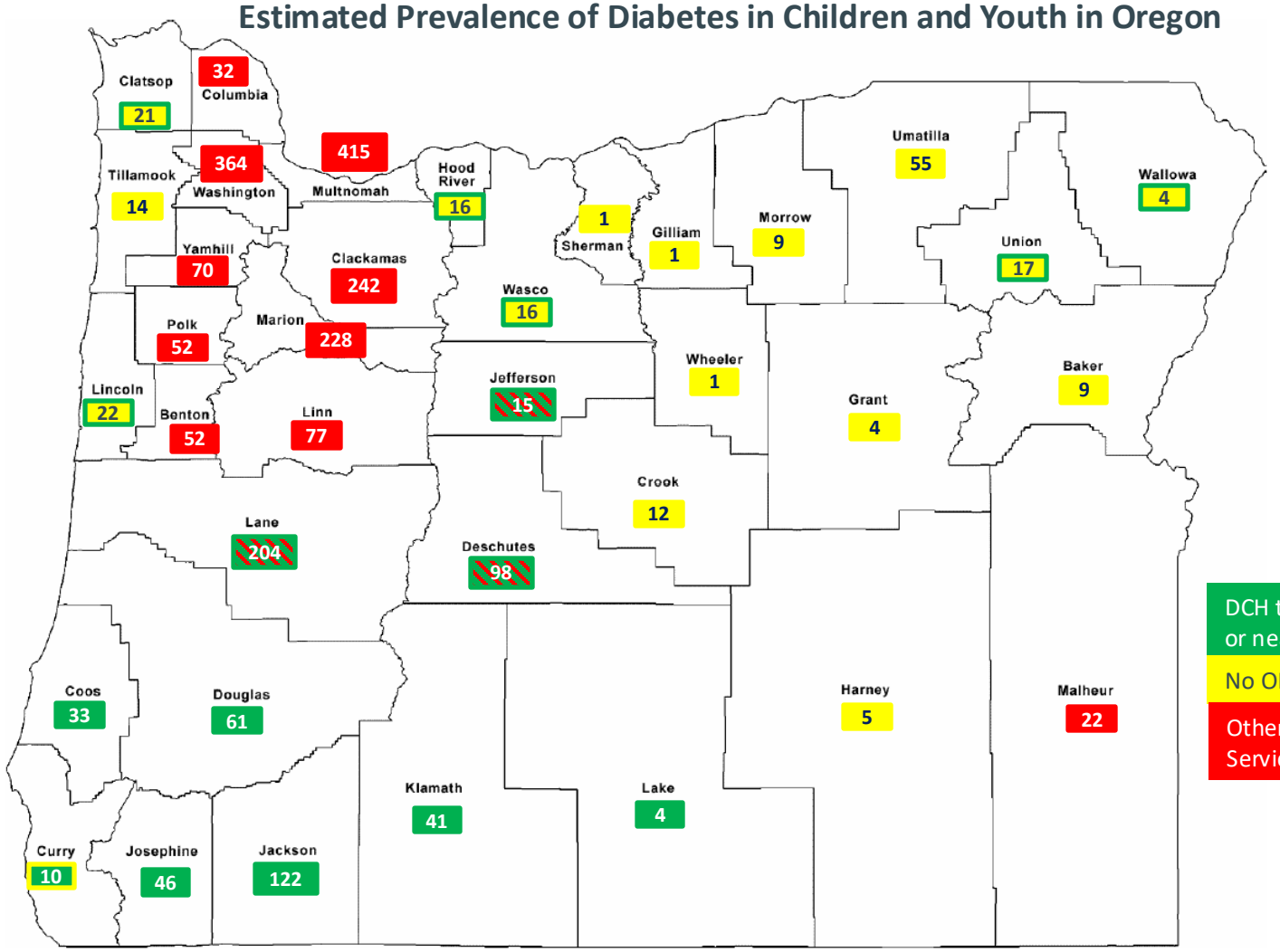
July 23, 2024 PRESENTED BY: Ines Guttmann – Bauman, MD



Who are we?

- Harold Schnitzer Diabetes Health Center at OHSU is a combined pediatric and adult practice at the Oregon's only academic medical center,
- Following about 1000 pediatric patients with T1D
- Located in Portland, but providing care in multiple locations across the state,
- Joined the Exchange QI Collaborative in 2022, currently in process of data mapping,

Estimated Prevalence of Diabetes in Children and Youth in Oregon

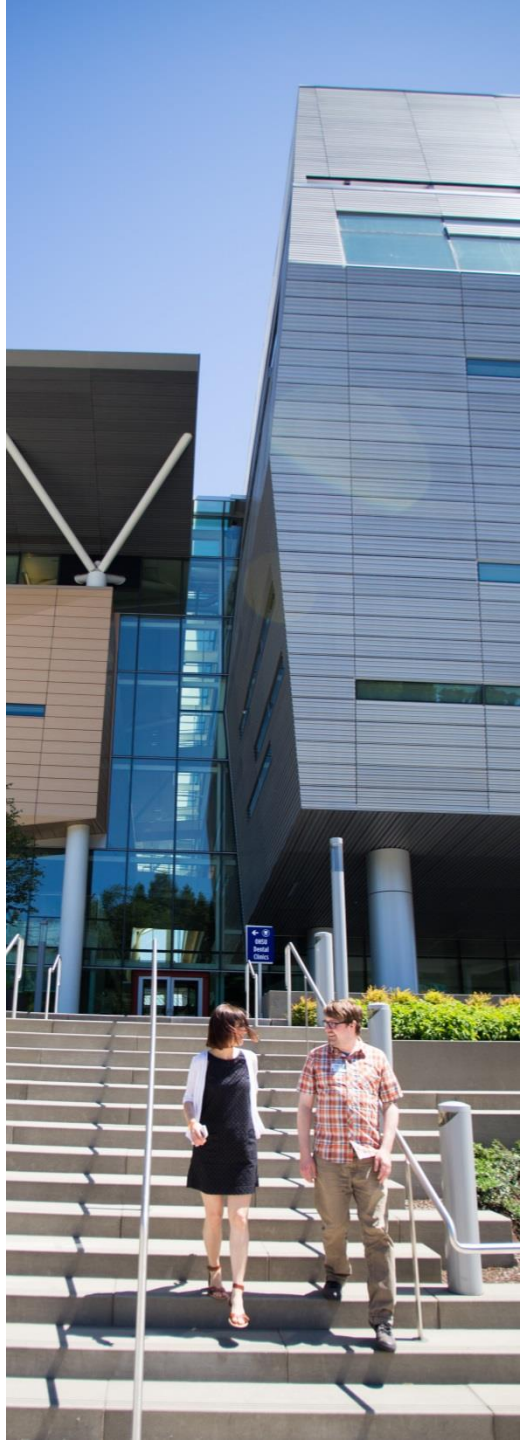


DCH telehealth site in or near county

No OHSU sites currently

Other Ped diabetes Services Available

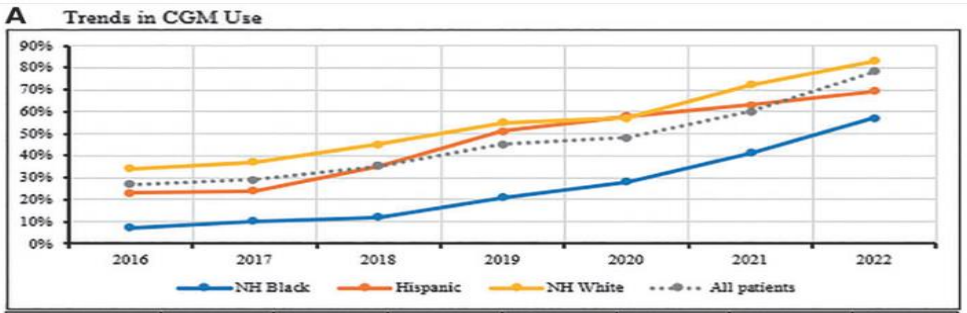
OHSU



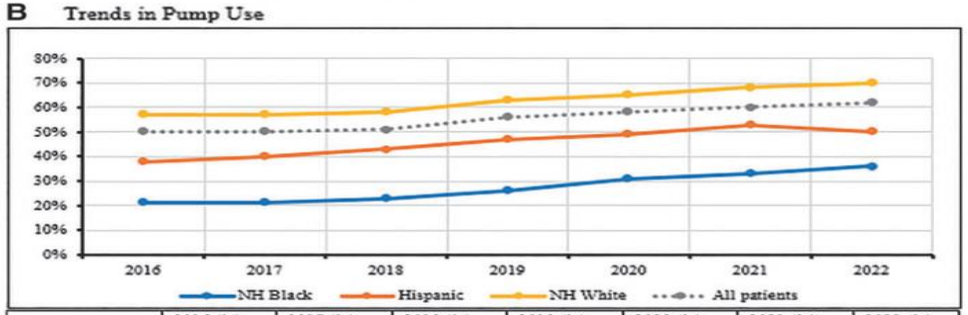
Problem at hand: Technology start bottlenecks in 2023

- Many patients using CGM (about 75%) - standard practice to introduce it at diagnosis,
- Pump starts lagging behind: wait time for appointment 6-9 months , low capacity allowing only up to 10 new starts/month. Best estimate is that about 45 -50% of our patients are on insulin pumps.
- Process owned by Center's educators, thorough and individualized, but very time consuming and is overwhelming available appointment time for DSMT

Slow pump uptake is a widespread problem (T1D Exchange database data)..



	2016 (%)	2017 (%)	2018 (%)	2019 (%)	2020 (%)	2021(%)	2022 (%)
NH White	34	37	45	55	57	72	83
Hispanic	23	24	35	51	58	63	69
NH Black	7	10	12	21	28	41	57
All patients	27	29	35	45	48	60	78



	2016 (%)	2017 (%)	2018 (%)	2019 (%)	2020 (%)	2021 (%)	2022 (%)
NH White	57	57	58	63	65	68	70
Hispanic	38	40	43	47	49	53	50
NH Black	21	21	23	26	31	33	36
All patients	50	50	51	56	58	60	62

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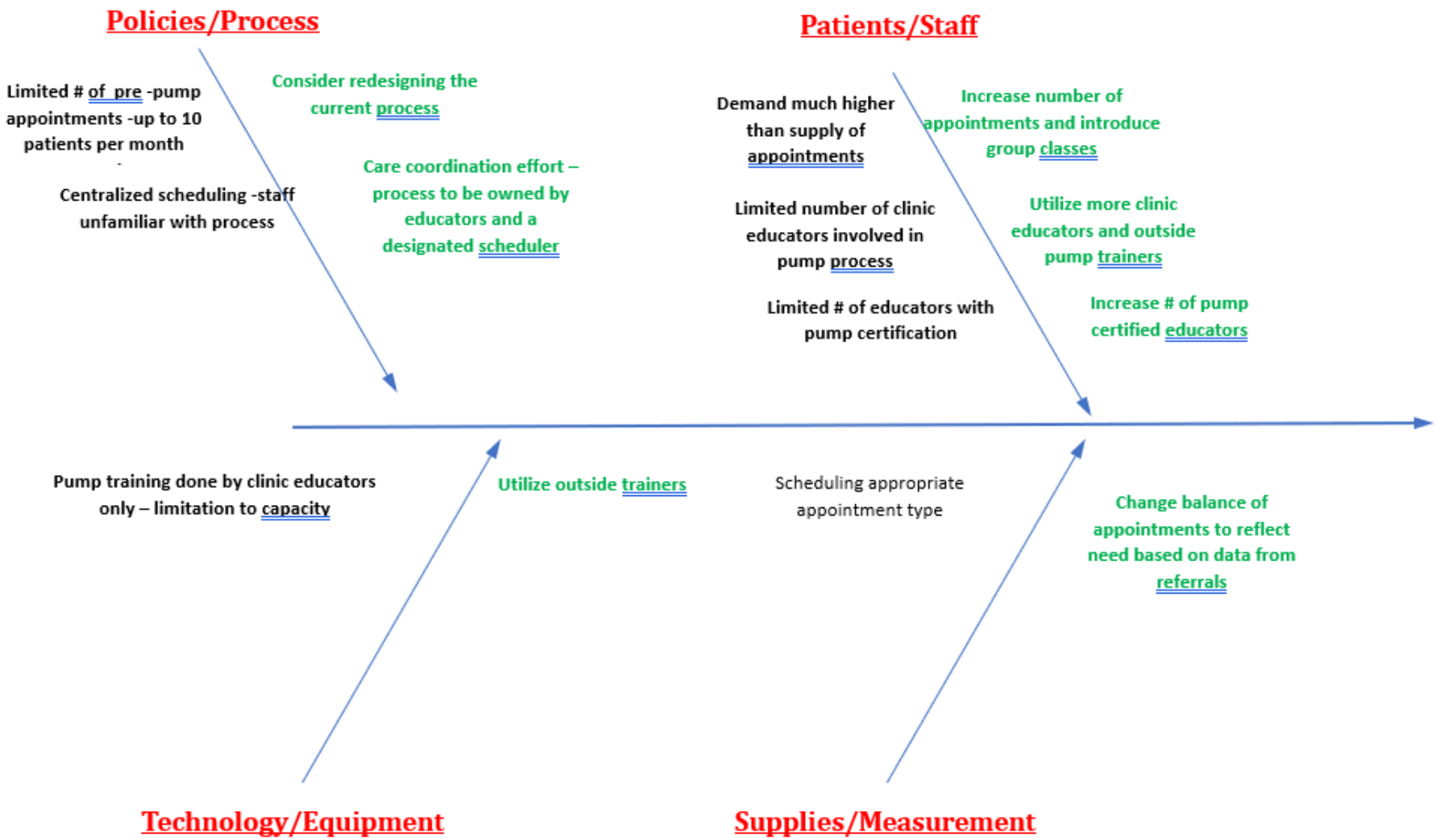

Key Drivers: People, Processes, Policies, Equipment, Supplies, Measurements

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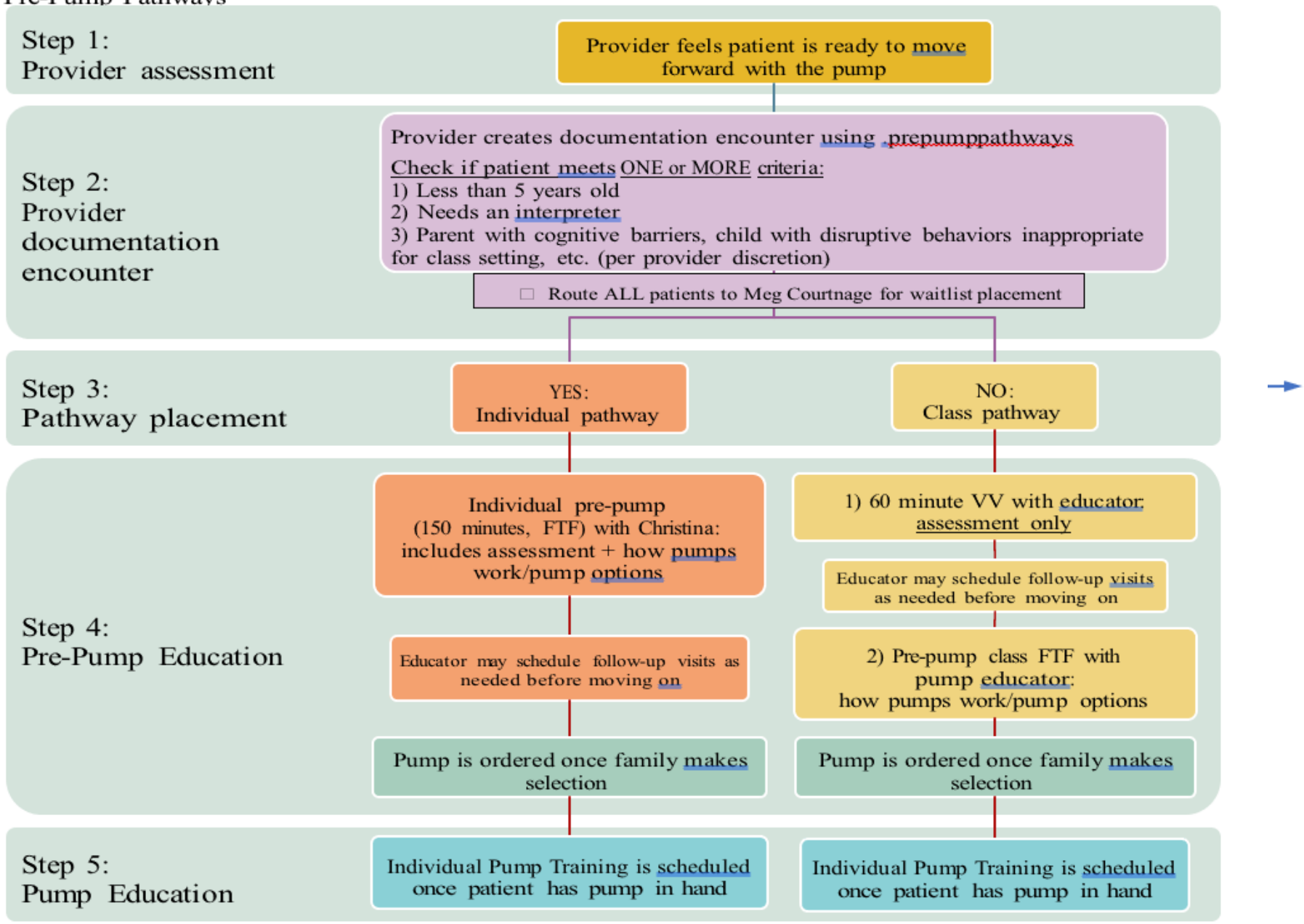
Pilot of a new approach – Pre-pump Pathways -started in October 2023 – revised protocol formally implemented in January 2024

Pre-Pump Pathways



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What we did to make this happen:

- Pre-pump coordinator CDCES who triages waitlist, coordinates with scheduler, maintains data of patients through entire process, and teaches classes
- Used dedicated PASR (will for scheduling) all pieces of pre-pumps, instead of AAS
- Increased number of diabetes educators
- Increased educators getting pump certification.

Current State Pre-Pumps

- **8 individual (traditional) 150 min pre-pump evaluations per month** (2 pump educators focus on this)
- **No set number of 60 min VV** (class pathway) assessments per month, see data table below, **average 12 per month Jan-May**. These are easier to schedule because they are only 60 minutes and be put on any educator's template. Scheduled in batches to align with flow of classes offered.
- **2 classes offered per month** (accommodating 8 patients)
- **Starting in August, will offer 4 classes per month** (accommodating 16 patients)

Current State Pump training:

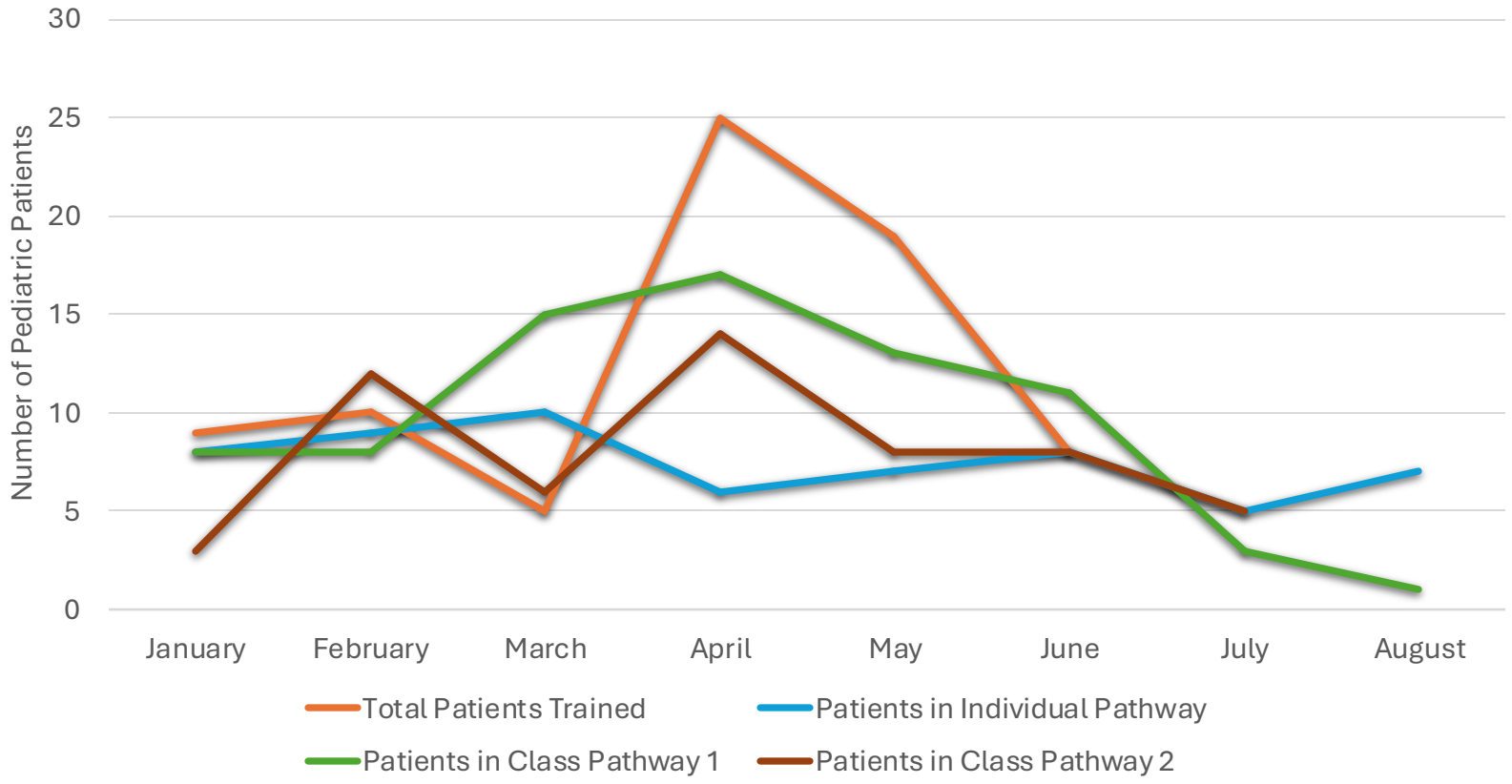
- With additional hires and additional educators getting pump-certified, have been ramping up capacity
- By July will have space to start **up to 28 patients per month on their pump training series** (nearly tripling previous training capacity)
- We also offer **2 dedicated pump upgrade trainings per month**. If pump training series visits go unused, these spots can also be used for pump upgrade trainings.
- Patients are trained by pump company trainers as needed, with one educator as point person to coordinate outside training. Follow-up visit with a clinic pump educator is now routinely scheduled.

	seen			referred			trained			
	Iniv	Class	Class	Total	Indiv	Class	seen by	seen by	seen by	Total
	n	n	n	d	d	d	n	n	n	d
	#seen	# seen part 1	# seen part 2	# Referred	# Indiv	#class	# company	# educator	# in house	# trained
Jan-24	8	8	3	14	7	7	2	1	6	9
Feb-24	9	8	12	19	8	11	1	2	7	10
Mar-24	10	15	6	24	5	19	0	2	3	5
Apr-24	6	15	14	15	5	10	4	2	20	26
May-24							3	3	13	19
Jun-24										
Jul-24										
Aug-24										
Sep-24										
Oct-24										
Nov-24										
Dec-24										

		Class	Class						
	Indiv	part 1	part 2				company	educator	in house	
Jan-24	57%	57%	21%	of total referred			22%	11%	67%	of total trained
Feb-24	47%	42%	63%				10%	20%	70%	
Mar-24	42%	63%	25%				0%	40%	60%	
Apr-24	40%	100%	93%				15%	8%	77%	
May-24										
Jun-24										
Jul-24										
Aug-24										
Sep-24										
Oct-24										
Nov-24										
Dec-24										

OHSU

OHSU Pediatric Patient Pump Trainings in 2024



OHSU

Future directions

- Continue to decrease wait time for pre-pump appointments
- Study barriers to technology uptake, particularly the differences between patients seen in outreach and those seen in Portland, and work on removing those barriers

Thank You

Increasing automated insulin delivery system use by reducing disparities at UW Health Kids in Madison, WI

Liz Mann, MD – PI
Kim Vidmar, MD – Peds Endo Fellow
Whitney Beaton, MSN, RN, ACCNS-P, CDCES – Site Coordinator

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UW Health Kids Pediatric Diabetes

Team Members

- 7 Attendings and 3 fellows
- 3 Nurse Practitioners (2 outpatient, 1 inpatient)
- 1 Clinical Nurse Specialist
- 6 RNs (3.0 FTE)
- 0.6 FTE RN CDCES
- 0.3 FTE Social Work
- 3 RDNs (1.0 FTE)
- 2 Medical Assistants
- 1 Health Psychologist

Clinic Locations

- Academic children's hospital connected to adult facility in urban midwestern city
- 2 satellite clinics in surrounding area

Patient Volume

- 1,000 T1D patients
- 80-100 T2D patients
- 80-100 newly diagnosed T1D patients annually

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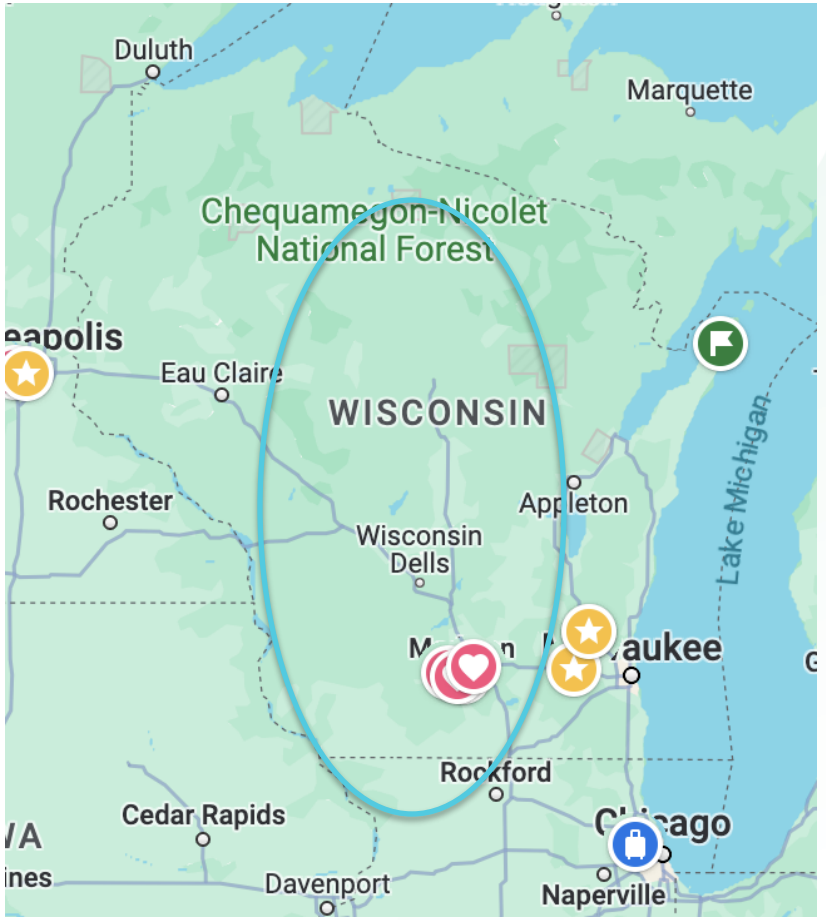
Demographics of our ~1000 individuals with TID

- From Madison and surrounding communities into Northern Illinois and Northern Wisconsin
- 40% Medicaid insurance
- 10-15% self-identify from racial and ethnic minority groups
  - ~50% Hispanic or Latino
  - ~50% non-Hispanic Black
- Over 99% of patients report preferred language of Spanish or English
  - 2.5% Spanish
  - 0.5% other
  - 97% English



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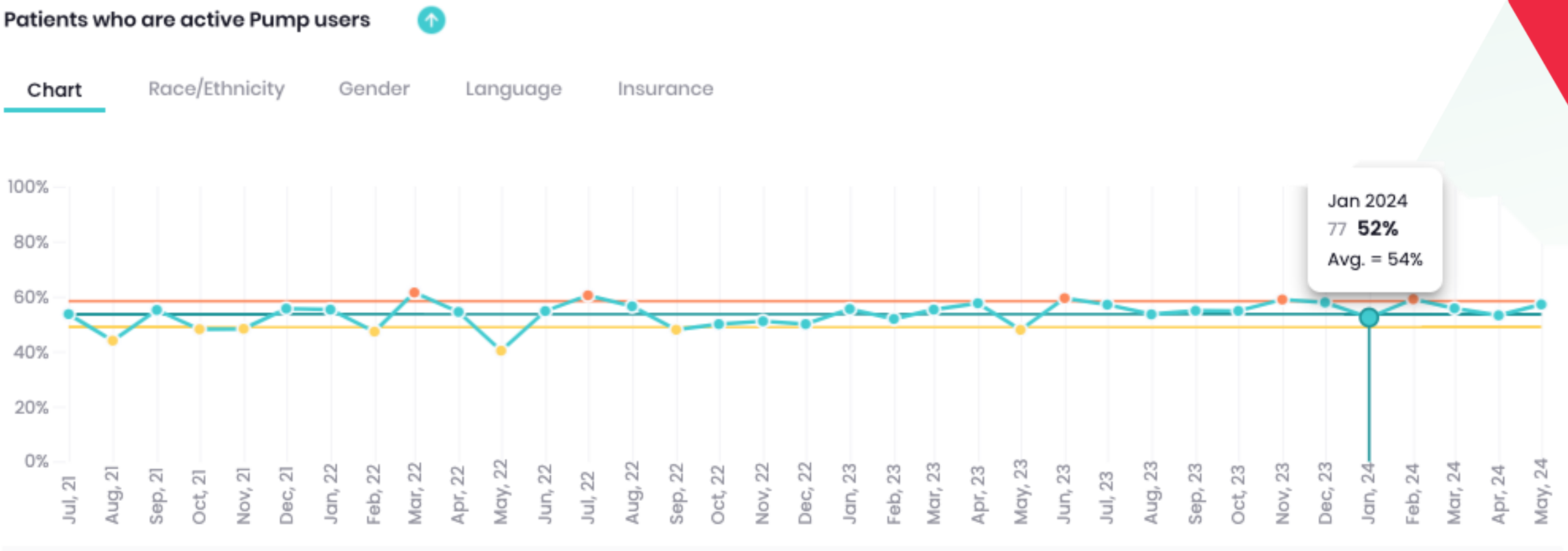
Since joining TIDX-QI in 2021, insulin pump use has consistently been 55%



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Increasing insulin pump (AID system) use will help our patients achieve glycemic targets

Pediatric Centers Improvement Scorecard April 2024 (data from Jan - Dec 2023)							
Metric	A1c < 7%	CGM use	Insulin Delivery Sys use	TIR > 70%	DKA Events	Documented Transition	SDOH Screening
T1DX-QI Goal	Greater than 25%	Greater than 70%	Greater than 65%	Greater than 25%	Less than 6.3%	Greater than 10%	Greater than 50%
T1DX-QI Rank	**26%**	**85%**	**53%**	**19%**	**5.3%**	**20%**	**84%**
1	Center #32 - 44%	Center #36 - 95%	Center #32 - 85%	Center #32 - 34%	Center #32 - 0.6%	Center #6 - 21%	Center #6 - 88%
2	Center #38 - 38%	Center #26 - 94%	Center #60 - 77%	Center #38 - 22%	**UW Health Kids - 1%**	Center #60 - 17%	Center #32 - 86%
3	Center #36 - 31%	Center #32 - 94%	Center #6 - 76%	Center #2 - 20%	Center #33 - 1.4%	Center #32 - 14%	Center #60 - 14%
4	Center #33 - 31%	Center #38 - 93%	Center #38 - 74%	Center #60 - 19%	Center #4 - 2%		
5	Center #60 - 31%	Center #4 - 92%	Center #13 - 73%	Center #6 - 18%	Center #20 - 4.2%		
6	Center #20 - 29%	Center #2 - 92%	Center #33 - 63%	[illegible]	Center #5 - 5%		
7	Center #5 - 27%	Center #20 - 91%	Center #36 - 60%	**UW Health Kids - 15%**	Center #60 - 5.5%		
8	Center #26 - 26%	Center #37 - 88%	Center #48 - 59%	[illegible]	Center #2 - 6%		
9	Center #2 - 26%	Center #6 - 86%	[illegible]		Center #38 - 6%		
10	Center #7 - 25%	Center #13 - 85%	**UW Health Kids - 55%**		Center #13 - 6%		
11	Center #23 - 25%	Center #60 - 84%	[illegible]		Center #36 - 6%		
12	[illegible]	Center #48 - 82%	Center #7 - 51%		Center #42 - 8%		
13	**UW Health Kids - 23%**	**UW Health Kids - 79%**	Center #42 - 48%		Center #6 - 8%		
14	Center #48 - 22%	Center #42 - 77%	Center #26 - 45%				
15	Center #37 - 22%	Center #23 - 70%	Center #4 - 43%				
16	Center #6 - 21%	Center #5 - 64%	Center #2 - 43%				
17	Center #13 - 20%	Center #33 - 55%	Center #5 - 42%				
18	Center #4 - 19%		Center #23 - 25%				
19	Center #12 - 17%						

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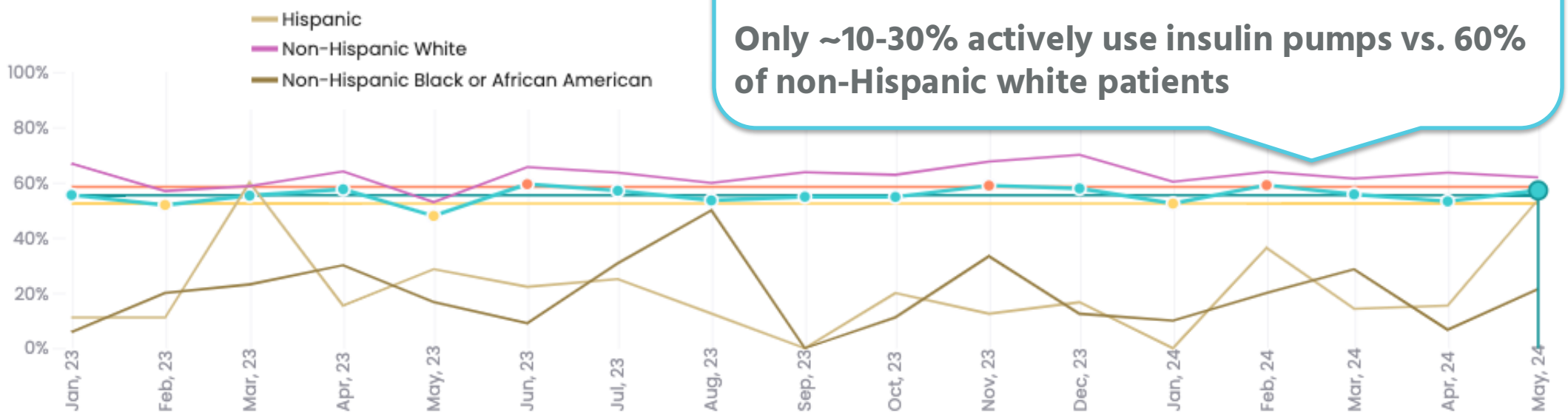
Non-Hispanic White patients are more likely to be active pump users than Hispanic or non-Hispanic Black patients

15-20% T1D patients are from racial and ethnic minority groups (e.g. ~ 20-25 patients per month)

Only ~10-30% actively use insulin pumps vs. 60% of non-Hispanic white patients



	JAN 23	FEB 23	MAR 23	APR 23	MAY 23	JUN 23	JUL 23	AUG 23	SEP 23	OCT 23	NOV 23	DEC 23	JAN 24	FEB 24	MAR 24	APR 24	MAY 24
Metric	96	69	84	95	57	104	85	91	79	80	76	81	77	101	73	92	88
T1D Population	173	133	152	165	119	175	149	170	144	146	129	140	147	171	131	173	154

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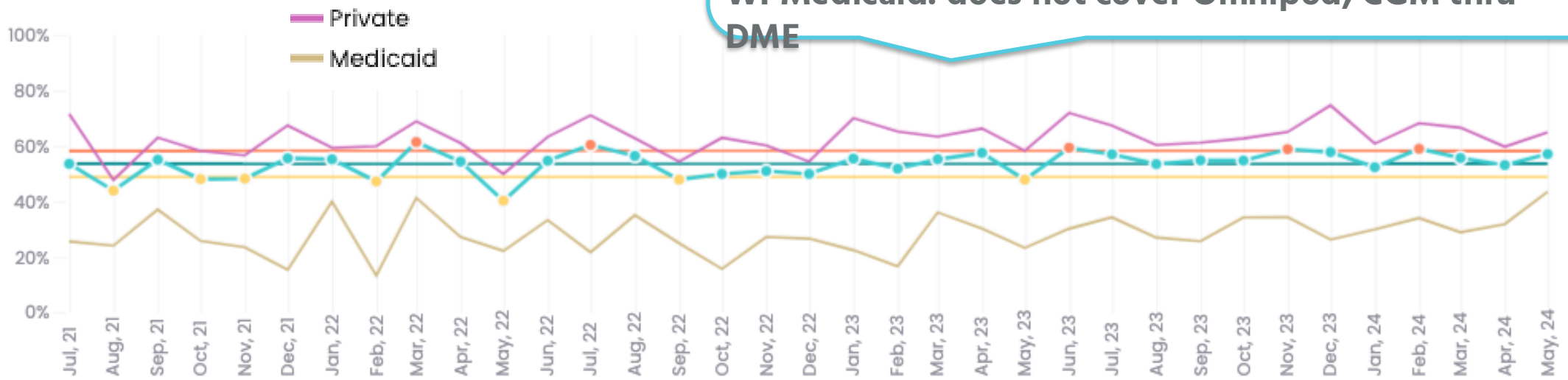
Privately insured patients are more likely to be active pump users than publicly insured patients

~30% patients use Medicaid (WI or IL)

25-40% of Medicaid patients actively use insulin pumps

WI Medicaid: does not cover Omnipod, CGM thru DME



	JUL 21	AUG 21	SEP 21	OCT 21	NOV 21	DEC 21	JAN 22	FEB 22	MAR 22	APR 22	MAY 22	JUN 22	JUL 22	AUG 22	SEP 22	OCT 22	NOV 22	DEC 22
Metric	74	62	70	64	70	74	84	69	83	80	50	75	81	105	70	64	74	73
T1D Population	138	141	127	133	145	133	152	146	135	147	124	137	134	186	146	128	145	146

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SPECIFIC

MEASURABLE

ATTAINABLE

REALISTIC

TIME-BOUND

INCLUSIVE

Are the people most impacted included in discussions and decisions?

EQUITABLE

Design interventions to remove systemic barriers to address disparities

To increase the % of pediatric patients with T1D at UW Health who are active insulin pump users from **55% to 65%** by May 2025, specifically reducing disparities in use by race/ethnicity* and insurance type, by engaging patient/family stakeholders.

*Self-reported race and ethnicity are social constructs, not biological markers and act as a proxy for the effects of racism. They are used in this project to monitor disparities and opportunities for improvement.

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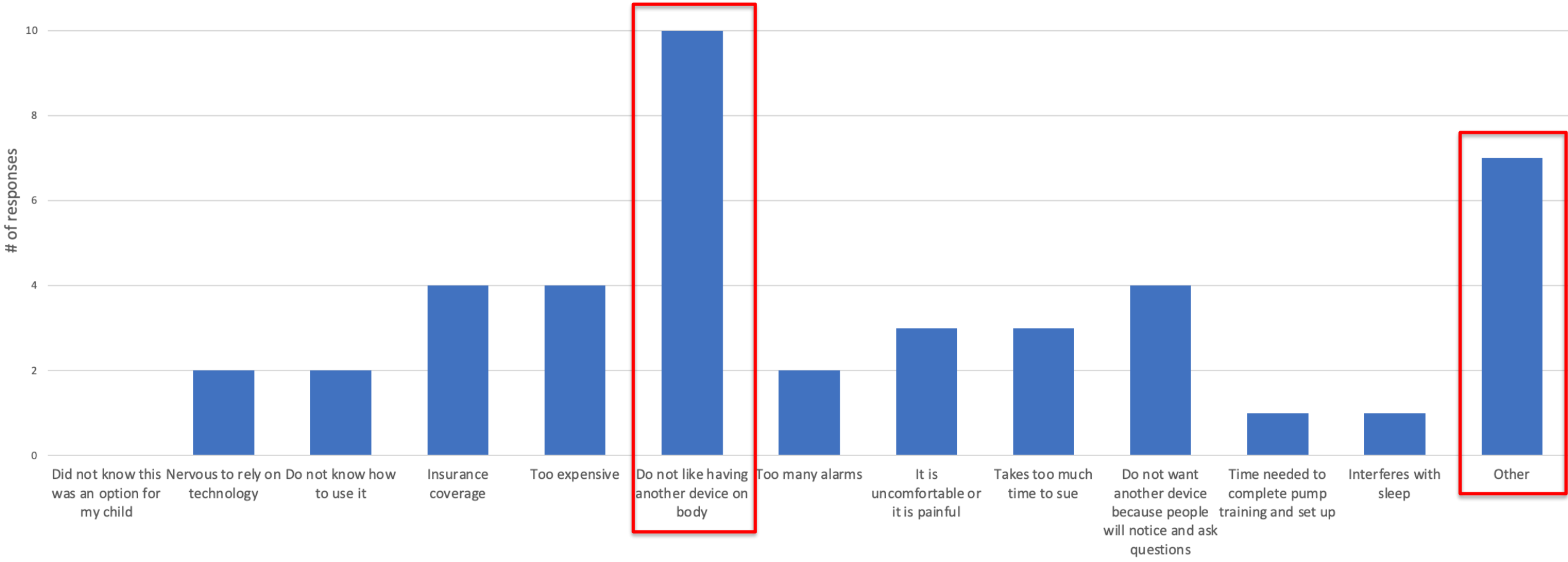
Gather input from all stakeholders

Patient & Family Survey Analysis

Select all the reasons you (or your child) do not use an insulin pump:



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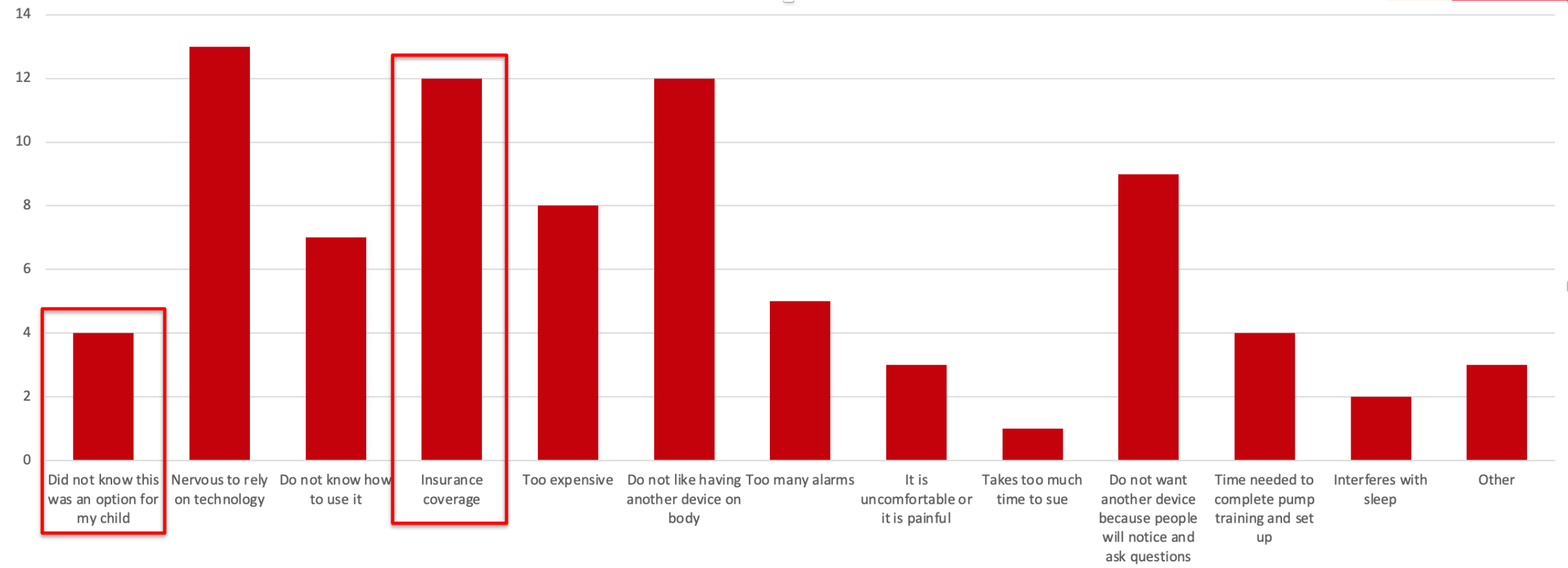
Diabetes Team Providers & Staff Survey Analysis

Select all the reasons that have contributed to your patients with T1D not being on insulin pump therapy:



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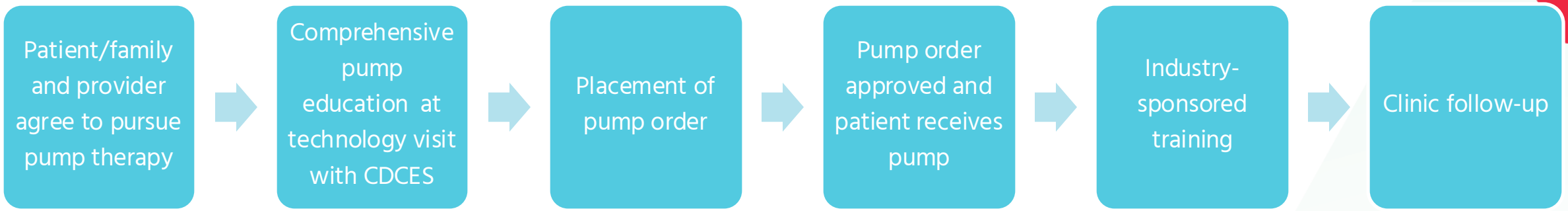
Diabetes Team Providers & Staff Survey Analysis

- 2 of 7 providers self-reported consistently discussing insulin pumps at diagnosis
- 0 of 7 providers self-reported discussing insulin pumps at ALL clinic visits
- Factors considered when choosing to bring up insulin pump therapy were HIGHLY variable
  - 1 cited goal A1c
  - 3 cited a specific time since diagnosis
  - 3 identified insurance coverage as a barrier

Process Map for Current State Pump Start



UW Health Insulin Pump QI Project - Key Driver Diagram

Revision Date: ***07/15/2024 (v2.0)***

Global Aim

Improve glycemic outcomes among pediatric T1D patients.

SMARTIE Aim

To increase the % of pediatric patients with T1D who are active insulin pump users from 55% to 65% by May 2025 *while reducing disparities in use by race/ethnicity and insurance type.*

Population

Pediatric patients with T1D treated at UW Health outpatient diabetes clinic.

Key Drivers	Secondary Drivers	Interventions
Equitable introduction	Provider consensus on pump readiness criteria & pump selection criteria	Provider education on safety and outcomes data for insulin pumps to build consensus on eligibility criteria
	Standardized process to introduce insulin pump therapy with individuals and families	Introduce insulin pump therapy to all individuals/families within 1 month of diagnosis
Education & training	Ample opportunity for initial pump education – CDCES staffing, flexible scheduling	Create separate process with extra support for those patients/families deemed "high risk"
	Adaptive process to individualize educational offerings based on needs of the individual and family	Develop virtual pump education resources (in multiple languages)
		Diabetes technology fair
Ordering process	Equitable, standardized process for education staff and prescribing providers to assess pump start readiness before ordering	Create pump start "checklist" with discrete criteria needed to move forward with ordering, starting
	Clear communication & open contact between clinic, DME companies, industry partners and individuals/families	Communicate clear expectations with families about their responsibilities during the pump initiation process.
Set up & follow-up	Clear process for follow-up after pump initiation, including expectations of roles/responsibilities for family, clinic, and industry partners	Modify pump start protocol/process based on learnings from specific pumps (e.g. iLet in person)
		Create standard time-line for follow-up
		Create resource (dot phrase) with info on insurance company and associated requirements for each pump.
Access & insurance	Equitable access to all available insulin pumps without need for PA	State Medicaid advocacy: CGM as pharmacy benefit and OP5 coverage
	Coverage of insulin pumps as pharmacy benefit, when applicable	

Legend

- Potential intervention
- Active intervention
- Adopted/abandoned intervention

Slide adapted from James M. Anderson Center for Health Systems Excellence

Technology Fair

Developed Curriculum

- Adapted from individual visits
- Updated PPT, Developed companion booklet

Identified Space

- Reserved room

Invited Patients

- CDCES offered class through MyChart to patients who expressed interest to provider or were previously scheduled for Technology Discussion
- Reminders sent via MyChart ahead of session
- Working on formal scheduling process

Invited Vendors

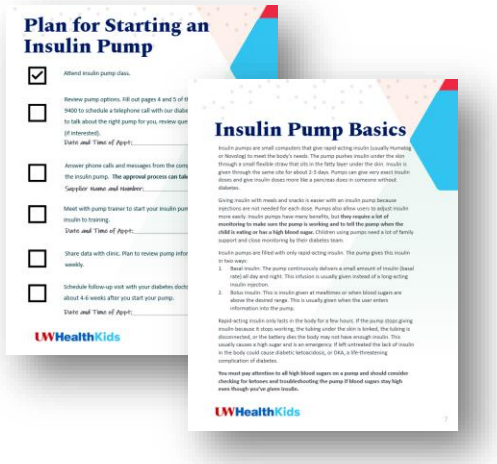
- Provided dates and confirmed ability to attend
- Asked vendors to update information with UW Vendor Liaison Office (VLO)

Billing

- Not yet billing for class

Technology Fair

Folder with Tech Fair Booklet Provided to Family



Didactic Presentation by CDCES

60 MIN

- What is an insulin pump
- How does therapy change when pumping
- Available AID systems
- Strategies for success on AID Systems
- Next steps/setting expectations

Families Interact with Reps from Each Device Company

60 MIN

Follow-up Phone Call with CDCES

30-60 MIN

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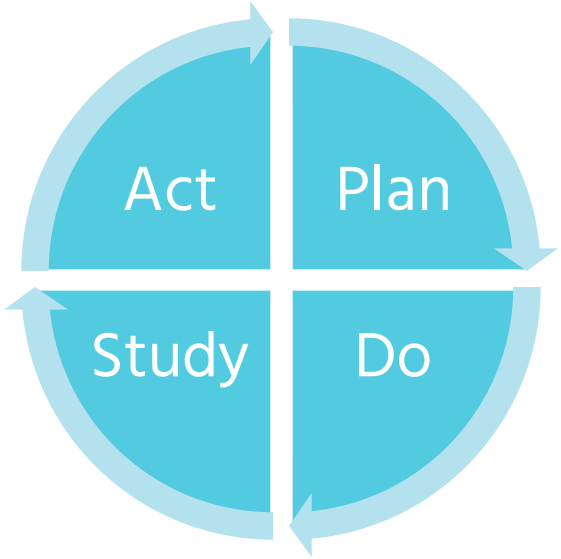
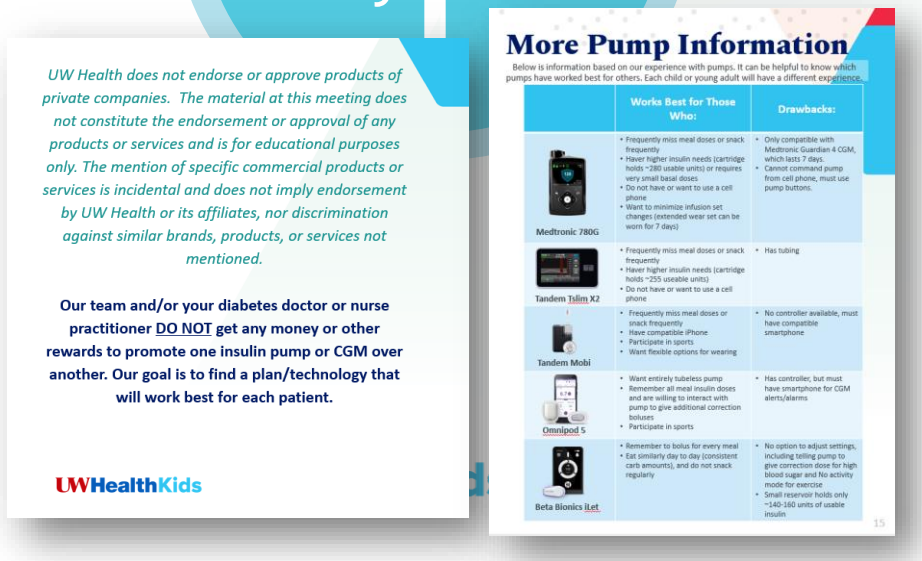
Initial PDSA Cycles – Technology fair intervention

- Initial Technology Fair
- Presentation and companion booklet developed
- Electronic survey to collect family feedback

- Minor changes to PPT and booklet to increase readability
- Trialed paper survey in folders + electronic version
- New location



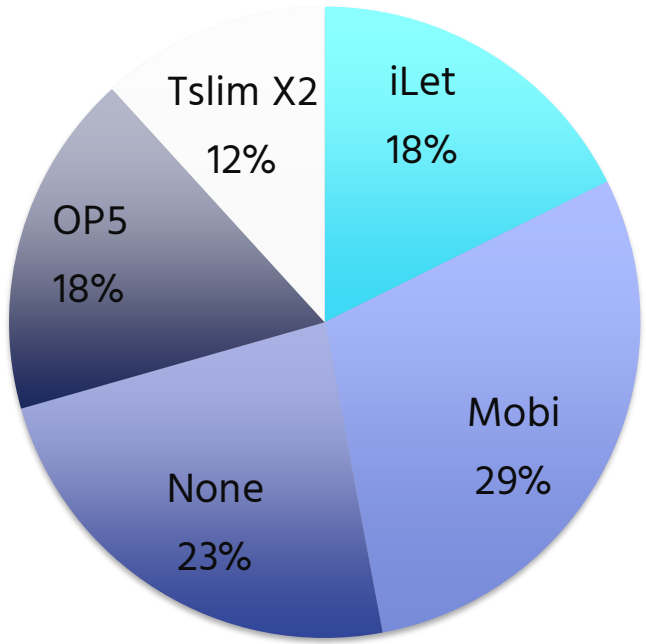
- Presentation and booklet updates: added language r/t compliance and content with clinical insight about which system may be best
- Paper survey only



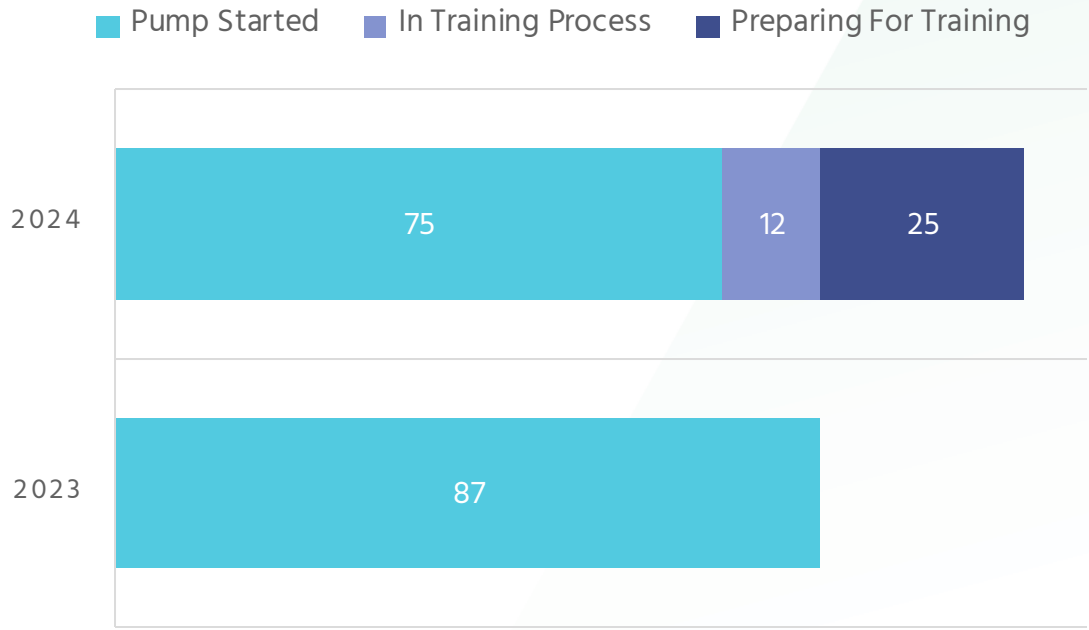
Process Measure: New Pump Starts following Technology Fair

- 18 individuals and their families have **attended technology fair**
- 13 individuals have **ordered AID systems** following the fair
- NEW pump starts in 2024 have already almost surpassed pump starts in 2023

AID System Ordered After Tech Fair



PUMP STARTS BY YEAR



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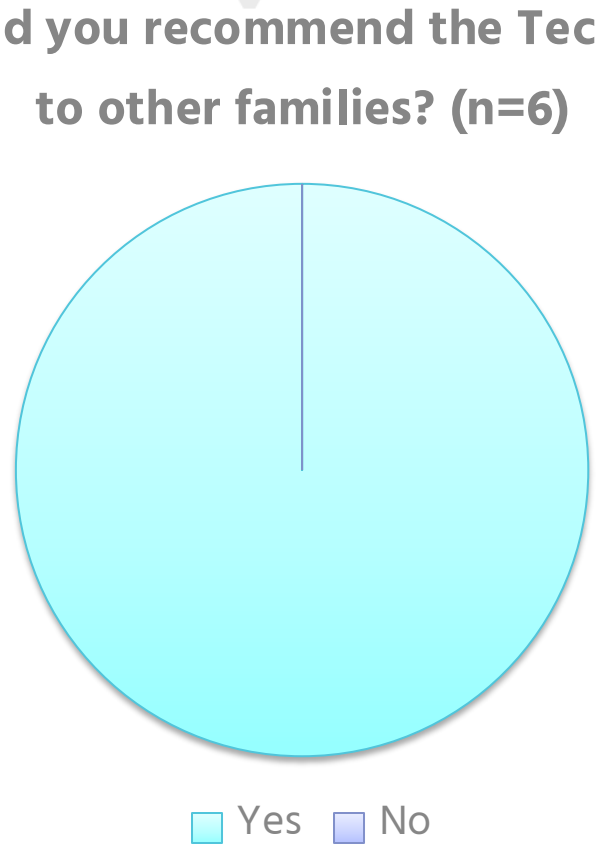
Feedback from Families



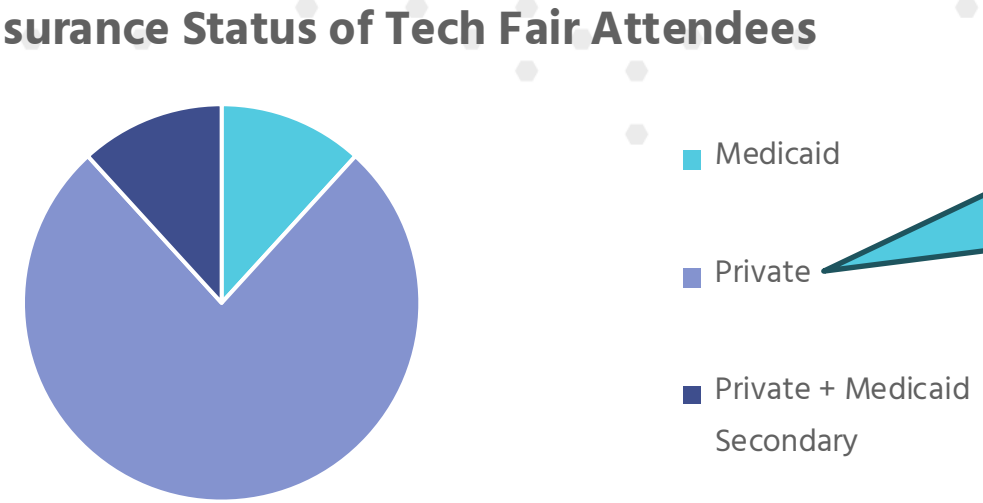
What did you like:

- I loved being able to talk with the reps about pumps and CGMs
- One-on-one time with vendors
- Wonderful information provided
- Just the right amount of information and like the format

What would you change?

- Have someone do a child-specific talk about pumps
- Showing what the pump displays are and having each vendor do a short presentation before going station to station
- Offer deeper understanding of algorithms for those with more experience

Process Measure: Access for Tech Fair



Most attendees are privately insured vs. ~60% of total population

	Individual Tech Visits	Tech Fair
Mean Age	12.9	**11.8 years**
Mean Distance from Clinic	31.7 miles	**40 miles**
Mean Years since Diagnosis	4 years	**2 years**
Mean Hgb A1c	8.49%	**8.94%**
Race/Ethnicity Breakdown	73% non-Hispanic White 26.7 Black/African American	**100% non-Hispanic White**

All attendees were non-Hispanic White vs. 88% of total population

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Key Learnings

- Tech fair is well-received
- Consolidating tech education for some opens CDCES clinic space for one-on-one education
- Limitations of tech fair (time of day, duration, location)
- **More targeted interventions needed to address disparity**

Future interventions

1. High risk pump start protocol
2. Introduce pump therapy to ALL newly diagnosed education
3. Use pump start checklist for clinical team to document order/start process

Thank you to the our amazing Pediatric Diabetes Team!

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Updates from the Coordinating Center

8th Annual T1D Exchange Learning Session 2024

The T1DX-QI November Learning Session will be held Monday, November 11, in Chicago, IL.

The Learning Session will be a 1-day event this year. Please use this link to view the FAQ.

Call for abstracts: abstract submissions are now open, please use this link to submit your abstract to share your centers work.

For additional questions please email qi@t1dexchange.org

Learning Session and ADEPT Conferences

- Please use this link to register for the 2024 T1DX-QI 8th Annual Learning Session.
  - Nov 11: 8 am – 6:30 pm Learning Session
  - Nov 12-13 (with half-day session on the 13th) ADEPT
- We are offering ADEPT Registration for 2 Free Members from each center:
  - Link for free registration
  - Link for paid registration

- Hotel registration: use this link to register for your rooms for the Learning Session and ADEPT. When registering click on "I have an access code" and enter the code (T1DX-LS2024) for the discount.
- T1DX-QI will cover the hotel costs for 2 team members for the nights of 11/10/2024 and 11/11/2024. Please confirm with your PI and mail qi@t1dexchange.org if your room should be covered.

- Use this link or scan the QR code to register.

Announcing New Diabetes Conference!
Achieving Diabetes Equity Practice Today (ADEPT 2024)

T1D Exchange, in collaboration with the ADA, will be hosting a new diabetes equity focused conference titled, ADEPT. ADEPT 2024 will be held Tuesday and Wednesday, November 12-13 following the T1DX-QI Learning Session 2024 in Chicago, IL.

- The conference objectives: highlight equity best practices and practical strategies on all areas of diabetes.
- We encourage members to attend and invite your colleagues.

Use this link to view the FAQ. Please view these details before registering and use this link to register.

Children's Mercy Integrated Care Solutions (CMICS) Chronic Condition Value Based Care (VBC) Program Overview

National Challenges to Specialty Engagement in Pediatric Value Based Care

- **Quality Performance Incentives** within Value Base Contracts are Almost Exclusively Based on Primary Care Measures
- **Existing Specialty Payment Models Not Aligned with Value Based Care**. Specialty Business Models Primarily Driven by Fee-For-Service (Volume).
- Specialty Providers **Focused Primarily on Care for Patients Seen at their Clinic**.
- **Most Adult Specialty Value Based Payment Models (i.e. Bundled Payments) Not Likely Feasible with Pediatrics**
  - Insufficient Volume and Spend for Payers
  - Too Significant Risk and Volatility for Children's Hospitals

Innovative Response: *CMICS is innovating by developing specialty-based programs within existing value based agreements*

Children's Mercy KANSAS CITY

New CMICS Chronic Condition Value Based Care Program

- **Global Aim:** Transform the way specialty services are delivered by supporting care model transformation and promoting high quality, cost-effective specialty care that encourages care coordination and reduces ineffective, preventable, and inappropriate treatments for CMICS VBC patients.

The Program will enable Children's Mercy specialty divisions to:

- Take ownership and accountability for a population of patients
- Independently drive clinical interventions and improvements

Supported with data, information, engagement, & collaboration with Children's Mercy Integrated Care Solutions

- **Foundational Components:**
  - **Operational Framework:** A systematic, structured, sustainable, and scalable framework structured around a pediatric chronic condition.
  - **Infrastructure & Investment Opportunity:** Supports infrastructure investment and a VBC investment opportunity to support transition from fee-for-service (volume) to value-driven, population-based care and payment.
  - **Advance Innovation**: Creates a mechanism for specialty clinics to take ownership & accountability to implement, evaluate, and iterate on innovations and interventions that lead to reduced utilization, decreased total cost of care, and better health outcomes.

Program Payment Objectives:

- Reward Improved Health Outcomes
- Support Non-Visit Based Care
- Support Investment in Non-Traditional Staffing & Interventions

Important: Infrastructure & Investment Payment is NOT bonus compensation for providers/care team members. The payment is for specialty division investments in the care model to support whole-person, integrated, accessible, and equitable clinical care.

Children's Mercy KANSAS CITY

Program Participation Requirements

CMICS Responsibilities:

- Assist in specialty clinic's understanding of VBC program, related data, performance metrics, etc.
- Provide data in a timely manner once the data and information is available to CMICS.
- Provide access and training to CMICS Population Health Management tools, data, and resources.

Specialty Division Responsibilities:

- Clinical & Administrative Champions to Support Engagement
- Identify, implement, and/or modify interventions to improve quality and efficiency of care.
- Collaborate with CMICS to develop reasonable and meaningful targets for measures.
- Provide performance data (summary & patient detail) quarterly for applicable clinical quality measures

Responsibilities of Both Parties:

- Meet at least quarterly to review performance, address challenges/barriers, and review improvement opportunities

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CMICS VBC Program Payment Framework & Methodology

The Chronic Care VBC Program provides two value-based payment mechanisms:

1. Infrastructure Payment:

- Aim of supporting resources a specialty division needs to provide highly coordinate care
- Support care coordination / care management / coaching, enhanced efforts to target patients with high or risking risk, and care not reimbursed through fee-for-service.
- What is the Value of the Infrastructure Payment and When is it Paid?
  - Paid at the Start of the Program Year | CMICS & Division Agree to % of Total VBC Program Payment (e.g. Year 1: 50%)
  - Recalibrated Every Year Based on Available ICS Funding, Existing Division Capabilities, & Existing Division Resources
  - In Year 1, the Infrastructure Incentive Payment is 100% Guaranteed. In successive years, the total value & portion guaranteed are expected to decrease (e.g. Year 1: 50% | Year 2: 25% | Year 3: TBD; with the full payment opportunity remaining the same).

Important: Development of care coordination (CC) capabilities and use of funds for CC will be done in collaboration with enterprise CC strategy.

*Typically, the **Infrastructure Component** is a portion of the overall incentive opportunity that eventually falls to 0%. Within existing CMICS agreements, the guaranteed portion is **phased out after 1-3 years** by either eliminating the funding OR requiring the network to pay back the amount if we fail to meet minimum performance standards. CMICS and Divisions will recalibrate the total value & portion guaranteed each program year.*

Implication: If the division fails to earn sufficient payments to cover the "Non-Guaranteed" portion of the "Advanced Infrastructure" Payment, that portion of the advanced payment would need to be paid back to CMICS.

Infrastructure Payment + VBC Investment Opportunity = **Total VBC Program Payment**

- 50% Quality
- 50% Utilization and/or Cost

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CMICS VBC Program Payment Framework & Methodology

The Chronic Care VBC Program provides two value-based payment mechanisms:

2. Value Based Care (VBC) Investment Opportunity :

- Aim of rewarding accountability and performance for clinical quality, cost, and utilization measures that improve health outcomes
- Performance targets are transparent & finalized prior to Measurement Year
- 50% of VBC Incentive is based on Quality Performance & 50% based on Cost / Utilization Performance
- Measures clearly defined and agreed upon by CMICS and the specialty division prior to the start of the VBC Program.

3 or 4 Quality Measures: 1 Required | 2 or 3 Selected by Specialty Division
2 Cost & Utilization Measures: 2 Required

- Measures are equally weighted within each component (Quality = 50% | Cost & Utilization = 50%) and Program points earned only if performance exceeds the agreed upon target (i.e. no partial Program points within each measure)
- Performance targets set based on historical performance, available national/regional benchmarks, and/or best practice rates as defined by applicable academic publications and specialty division societies, etc.

Infrastructure Payment + VBC Incentive Opportunity = **Total VBC Program Incentive**

- 50% Quality
- 50% Utilization and/or Cost

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CMICS VBC Program Payment Framework & Methodology

Value Based Care (VBC) Investment Opportunity – Quality Measures

- **Required Clinical Quality Measure:** % of CMICS Value Based Patients Enrolled and Participating in 1 or More Chronic Care Interventions OR Active in CMICS Care Management During the Measurement Year. The intervention(s) and the qualification for "active participation" is defined by the specialty division with review and approval by CMICS.

Important: In addition to the chosen and agreed upon specialty division intervention(s), any eligible chronic care VBC patient that is actively enrolled in CMICS Care Management/Care Coordination services is included as a patient receiving an intervention (added to the numerator).

- **Specialty Division Selection of 2 or 3 Clinical Quality Measures**
  - Division shares detailed definition AND historical performance data (summary & patient detail) for, at least, the previous 3 full calendar years (i.e. in preparation for CY2024 Program Year, specialty division provides performance for CY2020, CY2021, CY2022, & CY2023 YTD).
  - CMICS must approve clinical quality measures to be included. Both CMICS and Division will review historical performance (based on CMICS VBC patients) & identified benchmarks to establish reasonable targets.

VBC Incentive Opportunity

Each quality measure is worth 12.5% (4 Measures) or 16.7% (3 Measures) of the total VBC incentive

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Finalized Quality Measure Definitions

CM Endocrinology Defined:

- Patients must have Type 1 Diabetes
- Patients must have had diabetes for duration of 18 months (i.e. patients included in assessment after 6 months from diabetes diagnosis)
- Patients must have an encounter within the applicable measurement year
- Patient Compliance for:
  - % Receiving 1 or More Intervention(s) [RPM[1]]*
  - Median A1C
  - % with Median A1C Above 9.0%
  - % with 1+ DKA Validated Admissions

[1] See next slide for CMICS mapping of CMH Endocrinology Interventions and Intervention Statuses to be considered a "successful" intervention.

* Interventions to remain static for CY2024. However, CMICS is committed to supporting ongoing innovation with new interventions. New interventions must be identified, reviewed, and finalized for inclusion for the following measurement year.

CMICS Defined:

- Patients must be active within a CMICS value based agreement during the measurement year.
- Patient Compliance for:
  - % Receiving 1+ Intervention(s) [Active in CMICS Care Management]

- **Quality Measures**
  - % Receiving 1 or More Intervention(s) [**Definition**: % of qualifying patients receiving 1 or more interventions]
  - Median A1C [**Definition**: Median A1C level of all qualifying patient median A1c measurements]
  - % with Median A1C Above 9.0% [**Definition**: % of qualifying patients with median A1C levels above 9%]
  - % with 1 or More DKA Validated Admissions [**Definition**: % of qualifying patients with one or more validated DKA admissions]

Finalized Quality Measure Targets

Trending Quality Performance
(CMICS Value Based Patients Only)

Target Objectives
1. Year-Over-Year Improvement
2. Sustain/Maintain Best Practice Performance
3. Align with National/Regional Benchmarks

Measurement Year	Population Group	Patient Count	% Receiving 1 or More Interventions	Median A1C	% Median A1C Above 9	% with 1 or More Validated DKA Admits
2023	Overall	770	14.7%	8.0	33.4%	7.2%
2022	Overall	729	14.8%	8.4	37.8%	8.6%
2021	Overall	654	15.0%	8.6	41.8%	10.0%
2020	Overall	608	13.3%	8.7	43.5%	6.6%
2019	Overall	567	12.0%	8.9	47.7%	10.5%
2023	Medicaid	436	18.1%	8.7	44.8%	10.6%
2022	Medicaid	418	17.9%	9.0	49.5%	13.0%
2021	Medicaid	372	18.0%	9.2	54.9%	15.7%
2020	Medicaid	351	15.7%	9.3	55.3%	10.6%
2019	Medicaid	326	14.4%	9.6	61.4%	15.7%
2023	Commercial	370	11.4%	7.5	20.1%	2.7%
2022	Commercial	342	12.0%	7.8	23.5%	3.2%
2021	Commercial	307	12.7%	8.0	26.2%	3.0%
2020	Commercial	278	11.5%	8.1	29.7%	2.5%
2019	Commercial	261	10.3%	8.3	30.8%	4.6%

Target Setting References

5% Improvement from MY2023	15.4%	7.6	31.7%	6.8%
10% Improvement from MY2023	16.1%	7.2	30.1%	6.5%
30 More Patients w/ Interventions	18.6%	N/A	N/A	N/A
Average Overall Yearly Change	N/A	(0.2)	-3.6%	-0.8%
Final Agreed Upon Targets	18.6%	7.8	30.0%	6.8%
CMICS Comments	*Target 30 more CMICS VBC patients than 2023. Adjusted down from target of 50 more since limited to 2 interventions (RPM, CMICS Care Management)*	*Set based on average annual decrease of 0.2.*	*Set based on 3.4% decrease (~ avg annual decrease of 3.6%).*	*Due to increased annual variability, set to 0.4% decrease (vs. annual avg decrease of 0.8%).*

Cost & Utilization Performance – Admissions

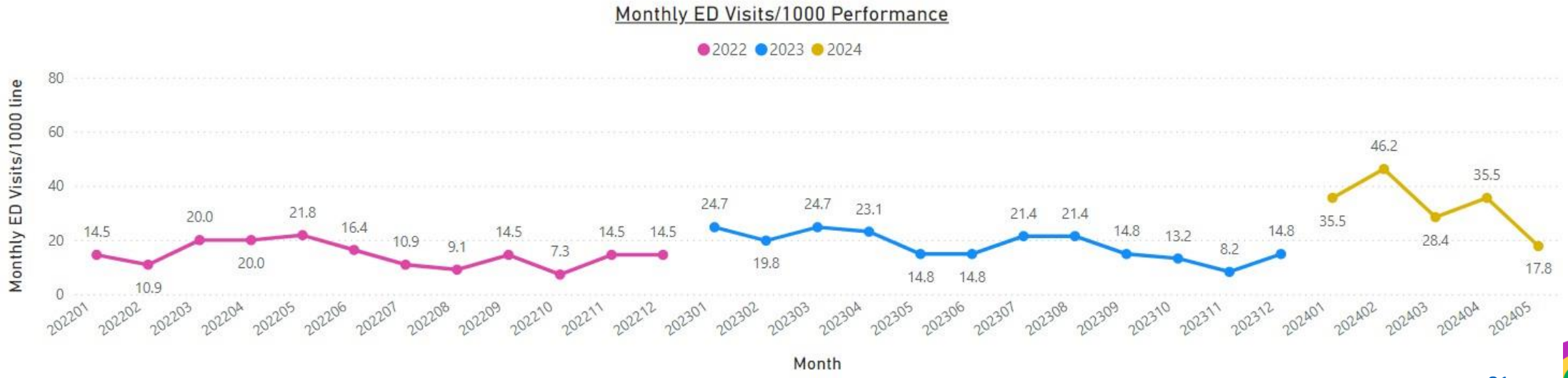
2024 Target

10.4

Cost & Utilization Performance – ED Visits

2024 Target

15.0



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Role – Childrens Mercy	Name
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Director, Intervention Dev.	Susana Patton, Nemours
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Role – Stakeholder Advisory	Name
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