



Implementing Patient-Reported Intake Forms to Integrate Clinic Efficiency with Patient-Centered Care

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November 15, 2023

UW Health Kids Pediatric Diabetes

Team Members

- 6 Attendings with 3 Fellows
- 3 Nurse Practitioners (2 outpatient, 1 inpatient)
- 1 Clinical Nurse Specialist
- 6 RNs (3.0 FTE)
- 0.3 FTE Social Work
- 3 RDNs (1.0 FTE)
- 2 Medical Assistants
- 1 Care Coordination Assistant
- 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

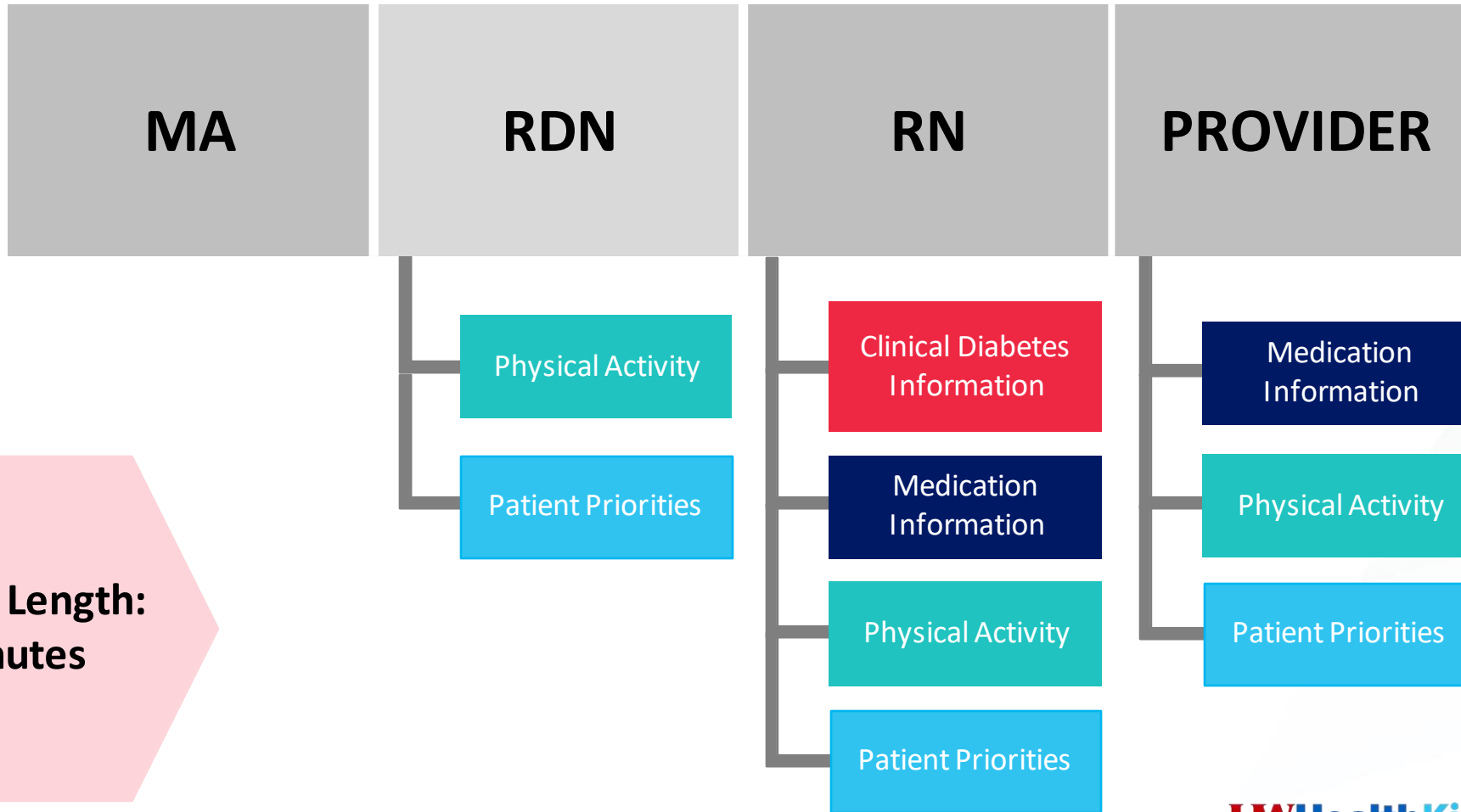
- 850 T1D patients
- 75-80 T2D patients
- 80-140 newly diagnosed patients annually

Patient Characteristics

- ~85% using Continuous Glucose Monitors
- ~60% using Insulin Pumps
- Median A1C 7.8%
- A1C <7%: ~24%



Outpatient Clinic Workflow



**Average Visit Length:
80-90 minutes**

Collecting pertinent information on
a printed form would reduce
redundancy AND allow providers to
focus visits on family's priorities.

Patient-Reported Intake Form

Patient
Priorities

Medication
Information

Physical
Activity

Clinical
Diabetes
Information

Clinical
Diabetes
Information

Social
Determinants
of Health

Patient Name: _____
DOB: _____
MR #: _____

Pediatric Diabetes Clinic Visit

What questions do you/your child have today?

The most important thing to discuss today is:

If you need a school excuse letter for today's visit, please ask for one at the reception desk when you check out.

Do you/your child need updated school orders today? Yes No

Do you/your child need any other forms completed? FMLA Camp Form Other _____

What medications or supplies do you/your child need new prescriptions for?

Insulin (List Types) Syringes Glucometer -- Brand: _____ Metformin
 Blood Ketone Strips CGM - Dexcom or Libre
 Pen Needles Urine Ketone Strips Blood Sugar Test Strips Other diabetes meds (list below): _____

Who do you/your child live with?

Parent/caregiver: Home 1 Parent/caregiver: Home 2
 Siblings: _____ Siblings: _____
 Other: _____ Other: _____

What activities, sports, or hobbies do you/your child participate in? _____

School Name: _____ Grade: _____

Does your/your child participate in physical education class? Yes No

Days per week: _____ Time of class: _____

In the last 12 months have you/your child had a FLU SHOT (a/k/a flu vaccine, influenza vaccine)? Yes No

If yes, please list date: _____

In the last 12 months have you/your child had a DILATED EYE EXAM or retinal scan? Yes No

Have you/your child seen the DENTIST in the last 6 months? Yes No

How many times have you/your child been to the hospital since your last diabetes visit?

Hospital Visits 0 1 2 3

ER Visits 0 1 2 3

How many days of school have you/your child missed due to diabetes? _____ Days

Please flip to complete reverse side.

Do you have concerns about insurance or affording medications? Yes No

Since the last visit have you/your child seen a counselor or mental health professional? Yes No

Do you/your child have any mood, behavior, or mental health concerns? Yes No

If you/your child does not take insulin, skip to the next section.

Do you/your child have the following supplies: Medical ID/Wallet Card Yes No

Ketostix Yes No

Glucagon Yes No

Have you/your child used glucagon since your last visit? Yes No

How many times PER WEEK are you/your child having a low blood sugar (<70 mg/dL)? _____ times/week

When do the low blood sugars usually happen?

Morning Afternoon Evening Unpredictable
 After Physical Activity Before Meals 1-2 hours after meals Other: _____

What are you/your child's symptoms when they have a low blood sugar?

No Symptoms Nausea Fast Heartbeat Tired
 Weak Shaky Dizzy Nervous/Anxious
 Sweaty Hungry Sleepy Confused
 Difficulty Speaking Irritable/moody Headache Fatigue
 Blurry Vision Slurred Speech Hard to Focus Chills

What do you/your child use to treat a low blood sugar?

How do you manage your/your child's diabetes when ill? (Sick Day Plan)

Within the past 12 months, we worried whether our food would run out before we got money to buy more.

Often true Sometimes true Never true Don't know/prefer not to answer

Within the past 12 months, the food we bought just didn't last and we didn't have money to get more.

Often true Sometimes true Never true Don't know/prefer not to answer

Would you like to hear about food resources in your area?

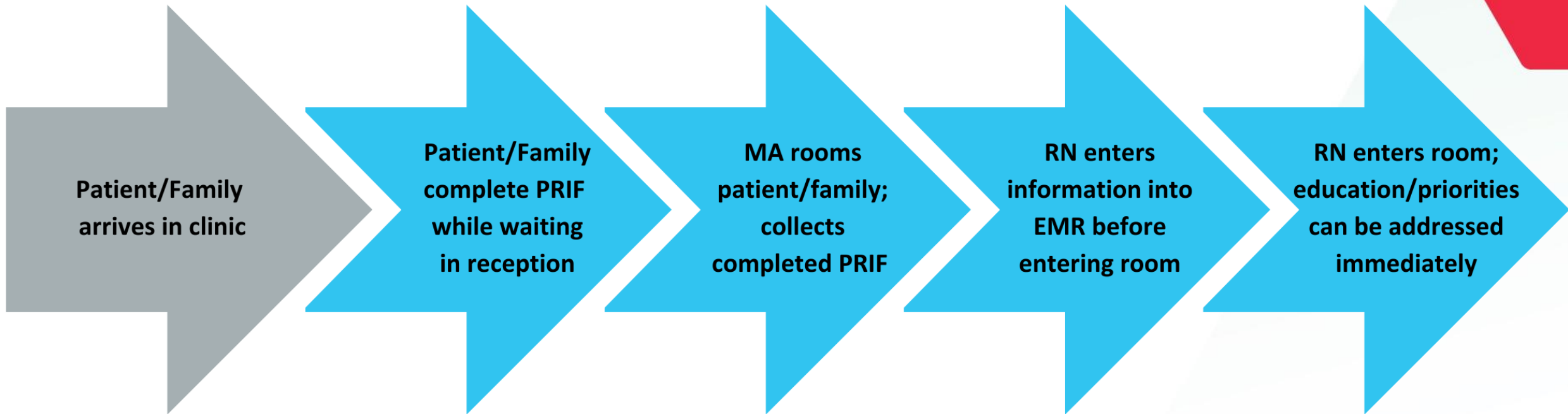
Yes No I'd prefer a phone call after today's visit to discuss resources, rather than chatting today.

In the past 12 months, has lack of transportation kept you from medical appointments or kept you from getting medications? Yes No Prefer not to answer

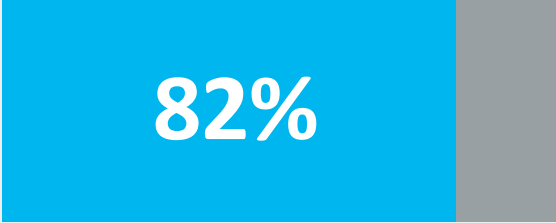

In the past 12 months, has lack of transportation kept you from meetings, work, or from getting things needed for daily living? Yes No Prefer not to answer

Clinic staff will collect completed form.

Clinic Workflow **AFTER** PRIF



Families accepted PRIF workflow; low response rate for free text questions

Number of Clinic Visits Assessed:	42
PRIF Completion Rate for ALL Questions:	 <p>82%</p>
Completion of Goal-Setting Questions Only (#1 and #2):	 <p>40%</p>

PRIF workflow was acceptable to clinic team

RN FEEDBACK

More
meaningful
conversations

Helps gauge
diabetes
engagement

More
flexibility
with visit
time

Less
nonverbal
feedback

Not always
filled out
accurately

Next steps to build upon PRIF workflow

How can we address low response rate for open-ended questions?

- Integration of “My Diabetes Journey” tool could assist patients/families with idea generation and visit priorities.

How can we continue to reduce redundancy?

- Remove medication refill questions from document

How can we gather more feedback from patients and families?

- Develop a short survey to be completed at the end of the visit

How can we reduce survey burnout for our patients and families?

- Utilize EPIC tools to track completion of other surveys including PHQ-9 and screen for disordered eating

Patient
Advisory
Council

Electronic
Form
Completion



We are grateful for our patients, families, and clinic team members for their participation and support as we roll-out these changes.





Engaging People with Diabetes in Quality Improvement Clinical Projects: Insights from the T1D Exchange Quality Improvement Collaborative

Nicole Riales
11/15/23

Background and Aim

- Involving people with diabetes (PWD) in research and quality improvement (QI) has led to improved processes in clinic and a deeper understanding of how care can be individualized for each patient¹.
- Understanding the importance of inclusion of PWD to elicit real world perspective, T1D Exchange Quality Improvement Collaborative (T1DX-QI), has expanded its Advisory Committee to engage more PWD in care improvement processes.
- Engaging PWD in clinical care can lead to improved processes, but there are challenges in how to effectively engage them.
- The aim of this study is to investigate common practices from T1DX-QI centers in engaging PWD in QI efforts.

1. O'Hara, M.C., Cunningham, Á., Keighron, C. et al. Formation of a type 1 diabetes young adult patient and public involvement panel to develop a health behaviour change intervention: the D1Now study. *Res Involv Engagem* 3, 21 (2017). <https://doi.org/10.1186/s40900-017-0068-9>

Methods & Results

- In 2022, T1DX-QI surveyed 11 clinics with active PWD advisors to learn about their approaches.
- T1DX-QI asked additional survey questions to eight clinics that responded positively to the use of PWD advisors, asking how they include PWD in their QI work and how they collaborate, communicate, and elicit feedback.
- Of the 8/11 (73%) that responded to additional engagement survey questions, all had at least one PWD advisor engaged with their team.
- Four (50%) had PWD advisory panels
- Four (50%) invited PWD to join QI process teams
- Eight clinics (100%) engage PWD in meetings

Discussion

- Two of the clinics with strong PWD advisor roles are also supported by hospital policies that require stipend payments for patient advisors. At these locations, the patient engagement numbers are considerably higher than at any of the other institutions.
- Clinics that compensate PWD for their time and contributions through some kind of financial stipend are best able to diversify the PWD group, so they are not limited to volunteers who are largely white, educated, and affluent. Limiting to this group of people with resources can skew perspectives and representation, which is problematic.
- Clinics with strong collaborative engagement made PWD/advisors a true part of the team, inviting them to internal meetings, including them in internal email messaging, and assigning them tasks related to the QI activities. Having this level of engagement requires having advisors with the time, capacity, and resources to contribute.

Conclusion

- There are more opportunities to increase PWD engagement in co-design and co-production in practice.
- Asking PWD how they would like to contribute to the team may result in more collaborative engagement.
- Clinics that make clear role definitions, set expectations, and support and empower advisors lead to successful engagement with PWD which also leads to improved outcomes, better policies, and stronger clinical programs.



PWD Survey

What is your idealized clinical appointment?

October 2023 PWD/Parent survey

28 responses

- 17 People with type 1 diabetes (PwT1D) (61%)
- 11 Parent of PwT1D (39%)

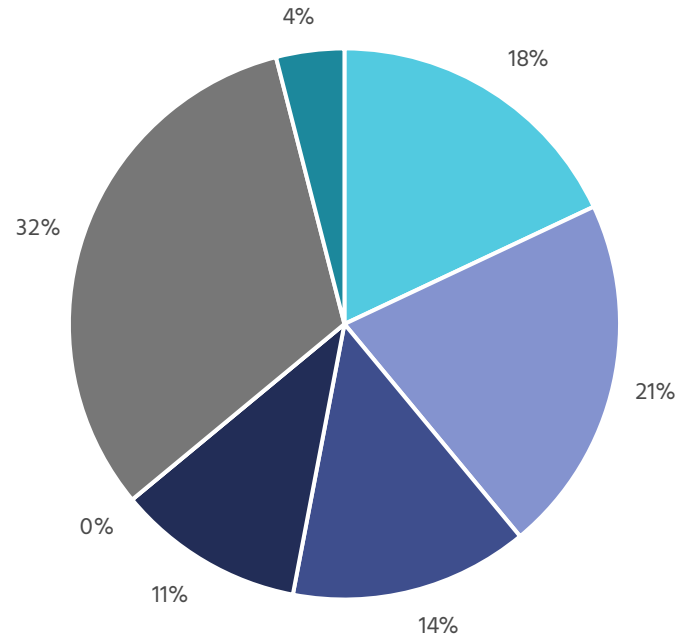
Where respondent receives care

- 11 Pediatric (39%)
- 17 Adult (61%)
- 1 Other (4%)

How would you like visit topics of discussion planned/documentated?

- Intake form (MyChart etc) (29%)
- Fill out questions before rooming (0%)
- Nurse/MA ask while taking vitals (0%)
- Endo/NP/Diabetologist ask during visit (68%)
- Other (4%)

Lab preferences



- Hospital/Clinics before the visit
- Labs at Hospital/Clinic before appointment (same day)
- Labs after visit (same day) hospital/clinic
- Labs after visit at 3rd party
- Other
- 3rd party lab before visit
- Point of care (A1C during visit)

Other comment: All tests can be done by PCP and forwarded on. I wouldn't need or want to go to the clinic beforehand. It's a complete waste of time and money for me (self-employed)!

Discussion Topic Preferences

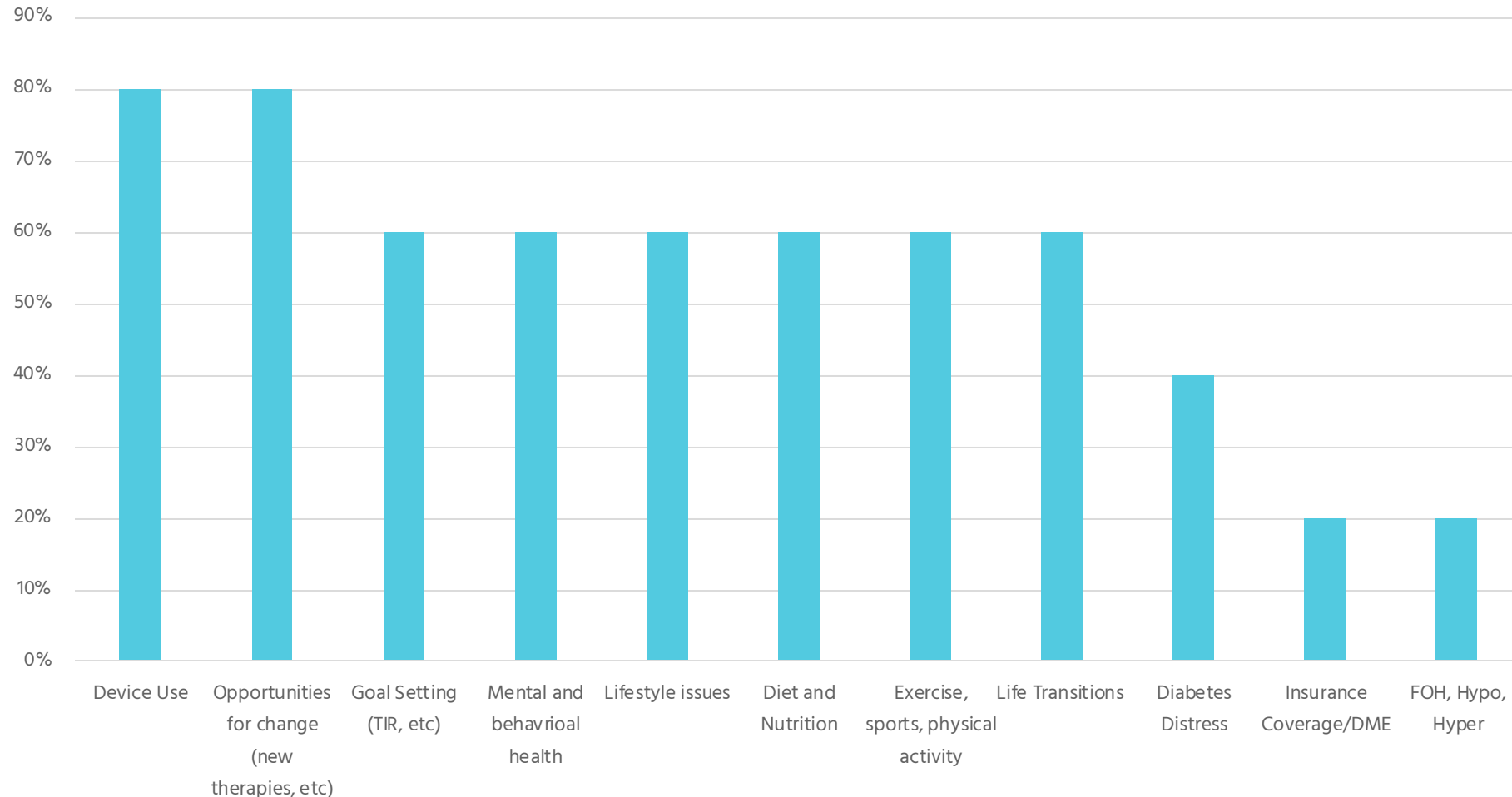
1 highest – 7 lowest priority N=28

- **What I need most help with**
 - 1 (10), 2 (6), 3 (6), 4 (2), 5 (1), 6(3), 7(0)
- **What has been going well with diabetes management**
 - 1 (9), 2 (6), 3 (4), 4(2), 5(5), 6(2), 7(0)
- **What has been challenging with diabetes management**
 - 1 (1), 2 (8), 3 (10), 4 (7), 5 (2), 6(0), 7(0)
- **Any significant life changes since last visit (home, work, school)**
 - 1(2), 2(2), 3(3), 4(11), 5(8), 6(2), 7(0)
- **Any Significant changes to health since last visit**
 - 1(6), 2(3), 3(3), 4(4), 5(10), 6(2), 7(0)
- **What has been happening in my life lately**
 - 1(0), 2(3), 3(2), 4(2), 5(2), 6(19), 7(0)
- **Other**
 - 7(28)

How would you like to spend visit time?

- Allow me to share and prioritize my list of topics (64%)
- Giving me an outline of topics to discuss during visit and me arrange priorities (18%)
- Giving me a list of topics suggestions (18%)
- Other (0%)

Discussion Topic Preferences During Visit



Quotes

- I wish that providers would ask at each visit if we think the suggestions they have made will work for us or if we agree with their assessment/orders.
- I would like to see my doctors look more at my lifestyle and personal needs. I think it is important for my doctors to understand where I am in life and how my diabetes management might look different than other patients who are older or younger.
- Ideally would love to have an authentic conversation and not have providers, nurse educators or RNs be rushed, have their backs facing a patient, or not listening/repeating. Additionally, it is important to spend time hearing patient self identified needs that may take a moment to uncover - and may not even be what is on the intake form - but it is critical in creating a care management plan that supports the individual person living with T1D.
- To be seen as a person and listened to.
- Visits being kept to and not being cancelled with no explanation given
- So many doctors waste time go over things the patient does need. Let the patient drive the conversation so they can highlight the help/challenges/concerns!



Accessible on the QI Portal



PRE-VISIT DIABETES DEVICE DATA CAPTURE

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Background:

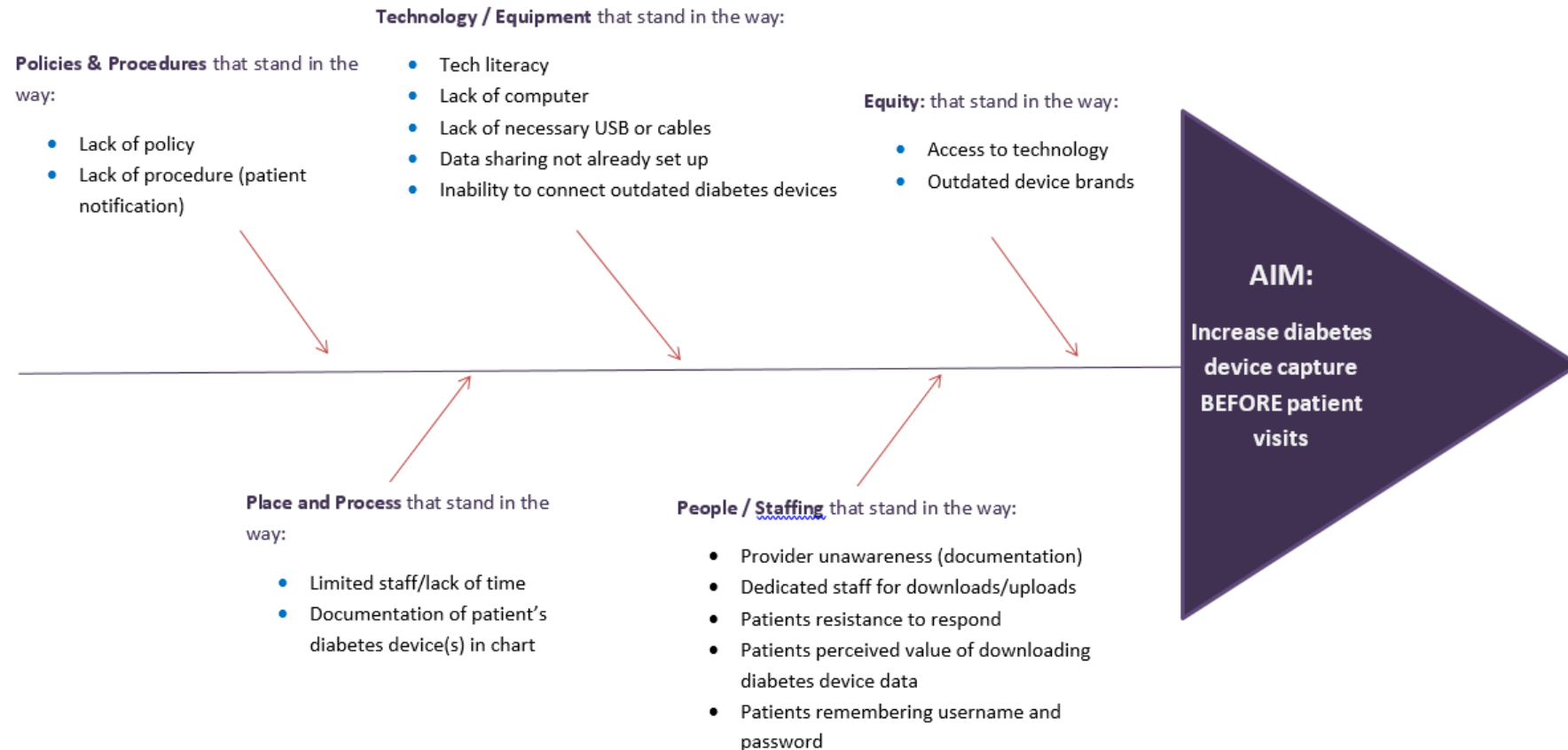
- Diabetes device data capture is essential for effective and efficient patient care
- **Benefits of diabetes device(s) data**
 - Better patient outcomes
 - More active role in their treatment
 - Improved glycemia
 - Time-stamped: analysis of how self-management behavior or glycemic control changes
 - Objective measures of self management vs relying on self-reported measures
 - Data from multiple devices (pump, CGM, BGM) integrated and viewed together
 - Remote review by healthcare provider
 - Targeted diabetes care & education

Limits & challenges uploading diabetes device data

- Tech literacy
- Data sharing not already set up
- Remembering username and password to facilitate access
- Lack of computer access
- Variety of USB and cable connectors required for data extraction from multiple brands and models of diabetes devices
- Time consuming
- Staffing
- Inability to connect some devices
 - outdated device brands
- Patient perspective of perceived value of downloading diabetes devices data

QI Project

- Identified a deficit in pre-visit diabetes device data capture



- Strategies to improve pre-visit downloads/uploads (“data”) implemented

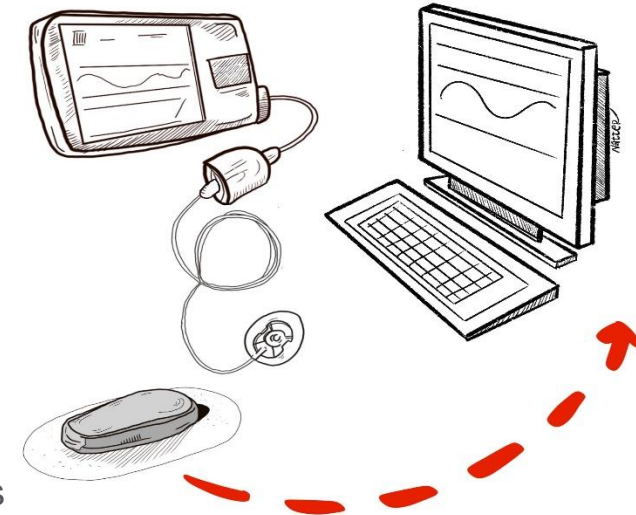
Methods

The patient care coordinator (PCC)

- Collected 2 week glucose data **prior** to patient's scheduled visits
- November 2022 to mid-April 2023 (24 weeks)
- Logged & tallied
 - # available downloads/uploads to capture prior to visits
 - # available downloads/uploads captured prior to visits

Patients notified in 2 ways:

1. Epic MyChart message 5 day notice sent to patients
 - Instructions on how to download their diabetes device reports
 - Devices included: continuous glucose monitor, meter, insulin pump, or smart pen
 - Instructions on how to upload as an attachment on MyChart prior to visit, if not already linked to share their data with our practice.
2. Follow up call 24-48 hours prior to the patient's visit
 - Reminder to download/upload their diabetes device data
 - Reminder to link their device with the practice



5 day Epic MyChart Message

Please follow these directions for your upcoming appointment with the
The NYU Diabetes and Endocrinology Associates on **/**/**.

You must arrive 30 minutes prior to your appointment time to allow us time to review your blood sugar data. This is the best way for your provider to have a productive visit with you.

1. For blood sugar meters, please record your readings from the last 2 weeks before your visit into a log and bring it on the day of your visit. For video visits, attach your log in MyChart or send to NYUDEAMA@nyulangone.org. We also accept picture attachments in MyChart. A sample log is attached for your convenience.

Please note that our downloading software is no longer compatible with some glucose meters. While we are working to update our systems, please be sure to have your logs available for all visits.

2. Complete the "NYU Diabetes Quarterly Intake Exchange Questionnaire" using MyChart.

Other devices for glucose management could be any/all of the following:

- Continuous glucose monitor
- Smart insulin pen
- Insulin pump
- Download ALL device reports and upload your data 48 hours before your scheduled visit for the last 2 weeks and send as an attachment on MyChart or notify us if you are linked to our practice for sharing your data.

Here is list of devices and resources for your reference:

CARELINK -(800) 646-4633 or carelink.minimed.com
Medtronic Minimed insulin pumps and glucose sensors

CLARITY-(844) 607-8398 or clarity.dexcom.com
Dexcom G6

GLOOKO-(800) 206-6601 or my.glooko.com
Omnipod
Omnipod DASH

LIBREVIEW-(855) 786-4263 or Libreview.com
PRACTICE ID: 02840489
Libre

TCONNECT- (877) 801-6901 or tconnect.tandemdiabetes.com
Tandem insulin pumps

EVERSENSE or us.eversensedms.com
Eversense

TIDEPPOOL
tidepool.org
Insulin pumps/CGMs: Medtronic, Tandem, Omnipod, Dexcom, Libre
App connections through Apple Health: mySugr, InPen, One Drop, Dexcom G5 and G6 apps

Day Before Call Script

Good (morning, afternoon) this is (name) from NYU DIABETES & ENDOCRINOLOGY, I am calling regarding your appointment with (Provider, RD, NP, PA) on (date).

1) How do you monitoring your glucose (sugar) levels? Do you use a meter, CGM? Pending response: (MAKE SURE PATIENT HAS INTERNET SERVICE)

Meter:

IF TECH EQUIPPED: (has cable for device to upload or device has app- Onetouch (not all models), Accucheck, TrueMetrix, Livongo)-please connect your device and upload readings. Make into a PDF and send to our practice via mychart, fax or email.

NOT TECH EQUIPPED: do you keep a written log? **YES-** need to send a picture of the log as an attachment through a message on NYU MyChart **NO-** need to go through meter and write down past 2 weeks of readings and send via MyChart message **NON-COMPLIANT-** If you are unable to send log we expect you to arrive 30 minutes prior to your visit to allow us time to download your device and not take away time from your allotted visit time.

CGM (Dexcom, LIBRE... note: LIBRE2 needs constant uploads)

Please make sure you upload your recent readings as we have lost connection, so we may retrieve the reports on our end (If disconnected from sharing)-

NOT linked with practice- you are able to share your device reading with our practice, it helps facilitate with retrieving your readings and prepare for your visit ahead of time. We will send you a device invite via your email please accept and follow direction on how to link your device.

NON-COMPLIANT- If you are unable to provide upload we expect you to arrive 30 minutes prior to your visit to allow us time to download your device and not take away time from your allotted visit time.

2) Are you injecting Insulin? Pending response:

NO: End of call

YES: how is it being administered (see below)

Pumps (Tandem, Omnipod, Medtronic)-

Please upload your pump so we may retrieve the reports on our end.

Inpen/Looping: we need you to please send your report reading as an attachment via your NYU MyChart message. ****NOTE-This report needs to send ahead of time****

Results

- At week one of intervention, data capture was 43%.
- Data capture improved to an average of 52% over the intervention period of 24 weeks, with a peak of 65%.

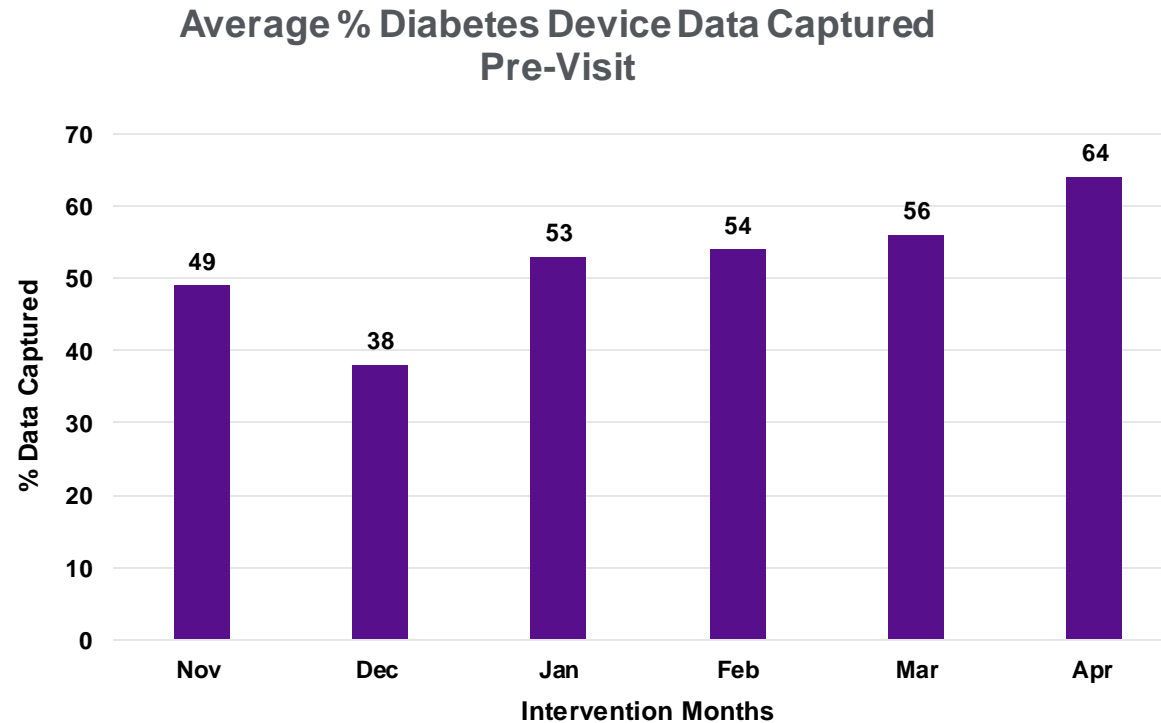


Figure 1. Percentage of diabetes device data captured prior to visit.

Conclusion:

- The pre-visit data capture enabled clinicians to tailor patient care and provide targeted diabetes care given they had the data needed to make clinical decisions
- Increase in data capture due to:
 - Multi-modal reminders
 - Patients' increased familiarity with the pre-visit diabetes device data process
 - Patients linking their devices to share with the practice
- Limitation of intervention:
 - Amount of time spent by PCC to collect diabetes device data prior to visit
 - Timing of data collection occurred over major holidays
 - Type of diabetes device
- Future steps:
 - Ongoing: monitor and adjust data capture strategies
 - Staffing consideration
 - Interventions to diabetes care after implementation of data capture

References

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THANK YOU

The authors would like to acknowledge and thank Ginza Zurita, Patient Care Coordinator, for collecting data for this QI.





Using a Shared Decision-Making Model to Increase Pump Use

Grace Nelson, MD; Blake Adams, BSN

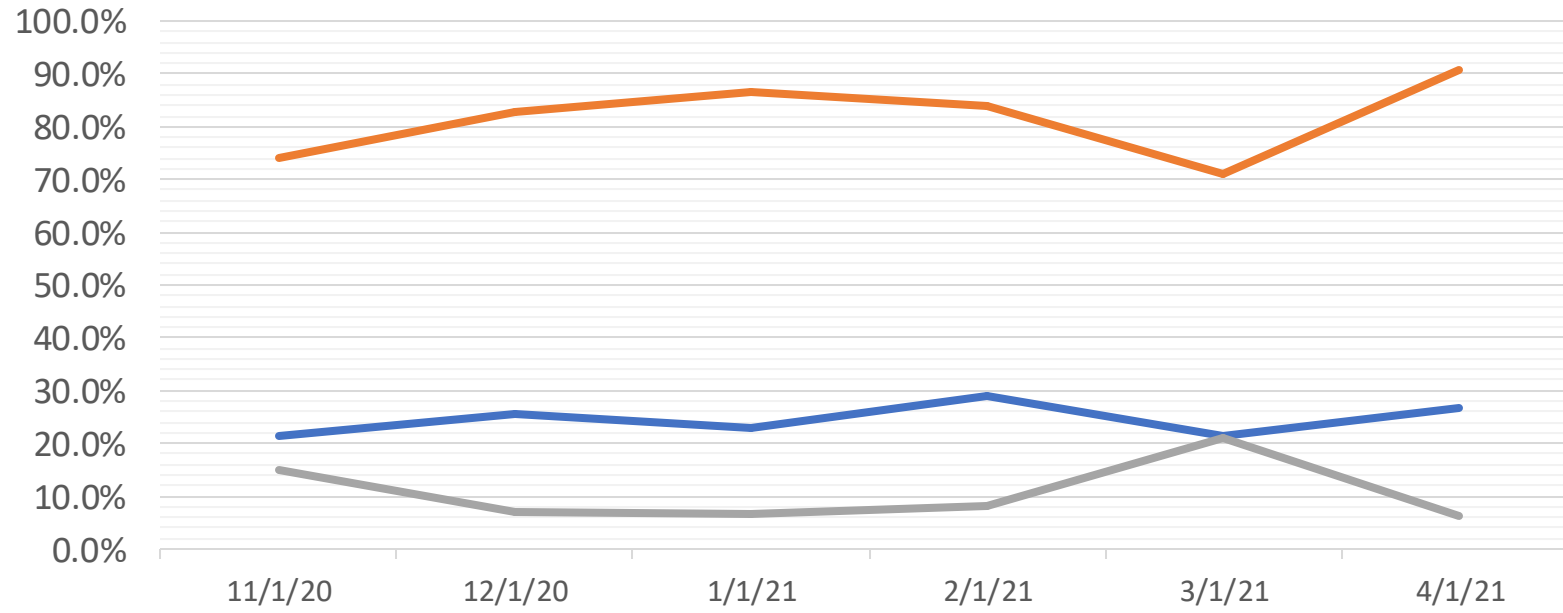
*University of Tennessee Health Science Center and
Le Bonheur Children's Hospital*



Very Low Pump use at LBCH

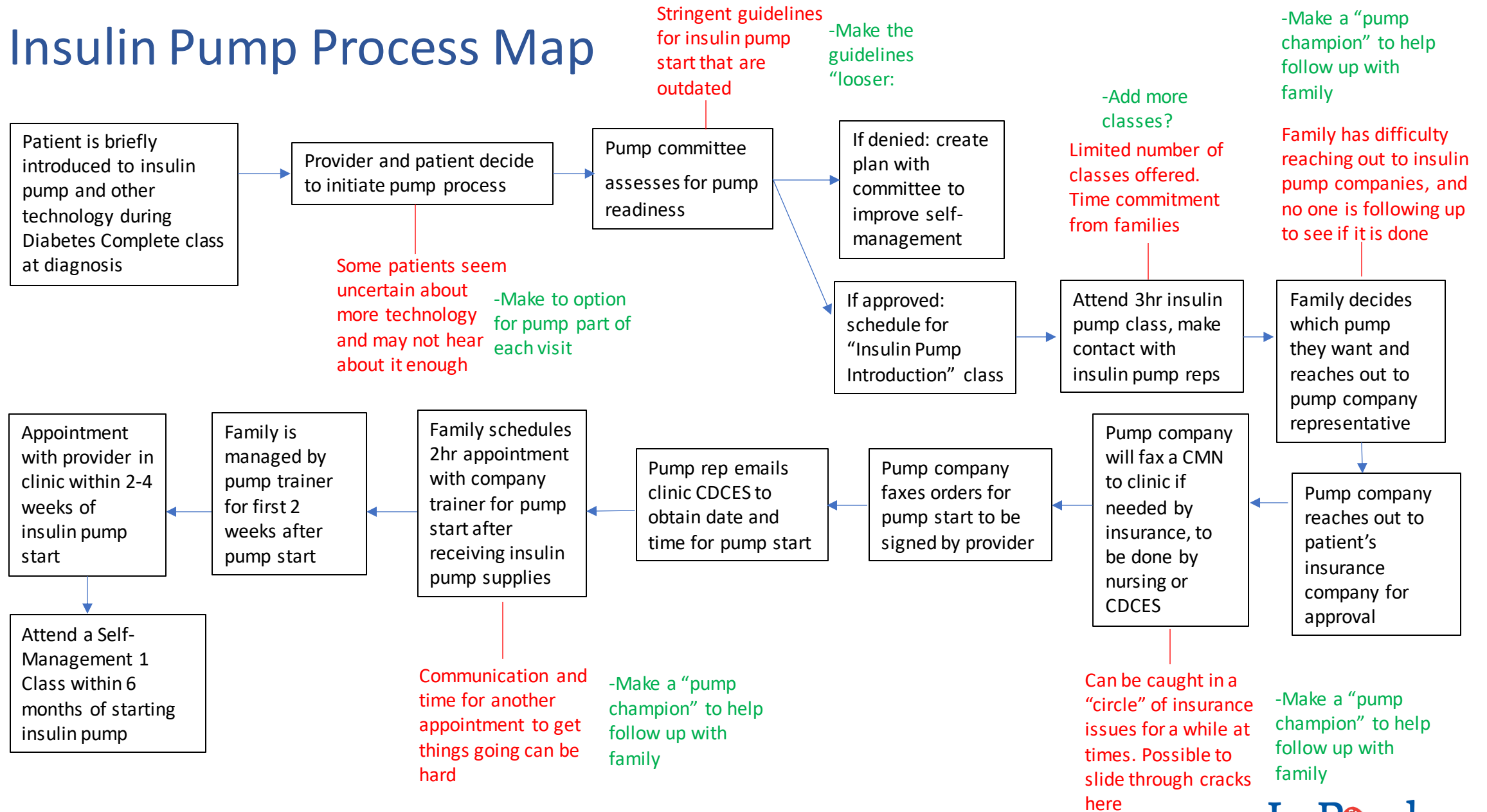
Pump use at baseline at ULPS Endocrine

- _2A) Out of T1D ct, % of patients using an insulin pump/rpt mth
- NH White % InsPump users
- NH Black % InsPump users





Insulin Pump Process Map





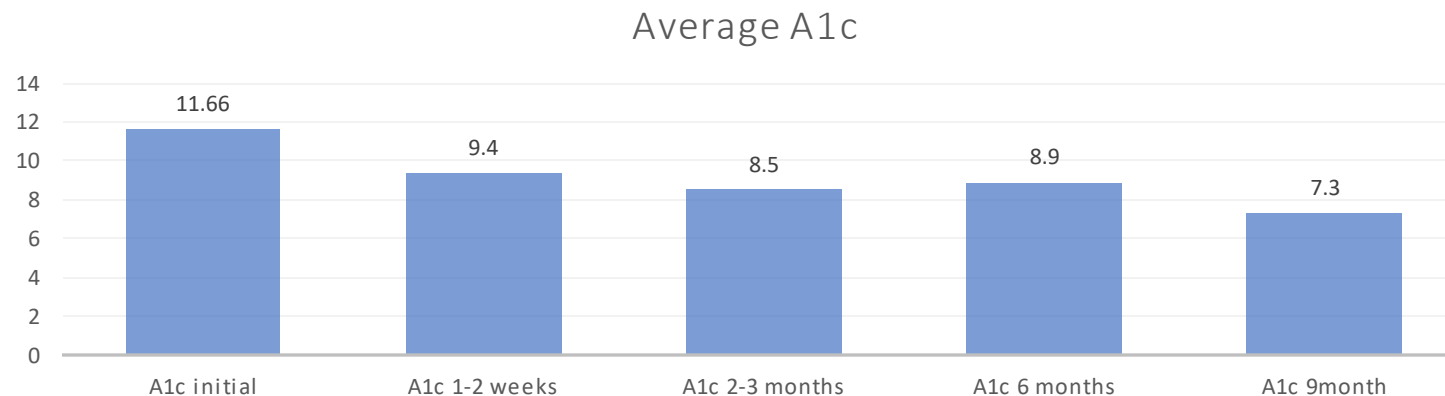
Pump Committee

- Put in place to avoid “misuse” of insulin pumps and decrease need to “remove” insulin pumps from patients not doing well
- Worked great, our rate of removal of pumps was basically zero...
- Criteria:
 - A1c less than 9, ideally less than 8
 - Evidence of regular pre-meal blousing
 - Good attendance to classes
 - No hospital admissions
 - No “social” concerns



Hybrid Closed Loop Insulin Pump Project:

- Started with a group of 10 patients (focused on non-white) who would not normally be considered for an insulin pump based on previous clinic standards.
- We met with a multidisciplinary group to established criteria and were able to add 10 patients over time to our project.
 - A1c >9
 - Added clinic visits
 - Initial rule of no DKA for 6 months
 - Wearing CGM for 3 months
- 19 current HCL users





My Diabetes Journey

- August 2022: Using the “My Diabetes Journey” questionnaire in conjunction with a brief technology handout we fostered conversations about technology options that allowed for shared decision-making

My Diabetes Journey Handout:

Date: _____

My Diabetes Journey

For my diabetes, I am doing well with:

I am _____ (circle any number of choices):

Skipping insulin for food because of the math	Skipping insulin for high sugar because of the math	Not sure how to take care of diabetes when I am sick	Not sure how to take care of diabetes outside of home or school
“Over” diabetes	Needing more help taking care of diabetes at home	Tired of checking blood sugar	Having a hard time taking my rapid-acting (bolus) insulin
Afraid of low blood sugars	Having a hard time taking long-acting (basal) insulin	Needing more help taking care of diabetes at school	Not sure how to take care of diabetes when I exercise or play

I currently have and/or am using _____ (circle any number of choices):

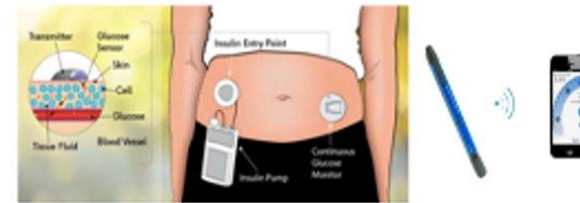
A continuous glucose monitor	Smart insulin pen	A sliding scale for high blood sugar corrections (rather than a correction factor)
An insulin pump	Alarms for insulin doses	Fixed insulin doses for meals (rather than a carb ratio)

I would like to try or have _____ (circle any number of choices):

A continuous glucose monitor	Smart insulin pen	A sliding scale for high blood sugar corrections (rather than a correction factor)	More school nurse supervision	Less school nurse supervision
An insulin pump	Alarms for insulin doses	Fixed insulin doses for meals (rather than a carb ratio)	More parent/caregiver supervision	Less parent/caregiver supervision

I think _____ has most helped me improve my diabetes self-management.

Diabetes Technology



Benefits of Insulin pump:

- Basal changes for time of day
- Bolus options
- Site changes every 2-3 days rather than 4+ shots

Benefits of Continuous Glucose Monitor:

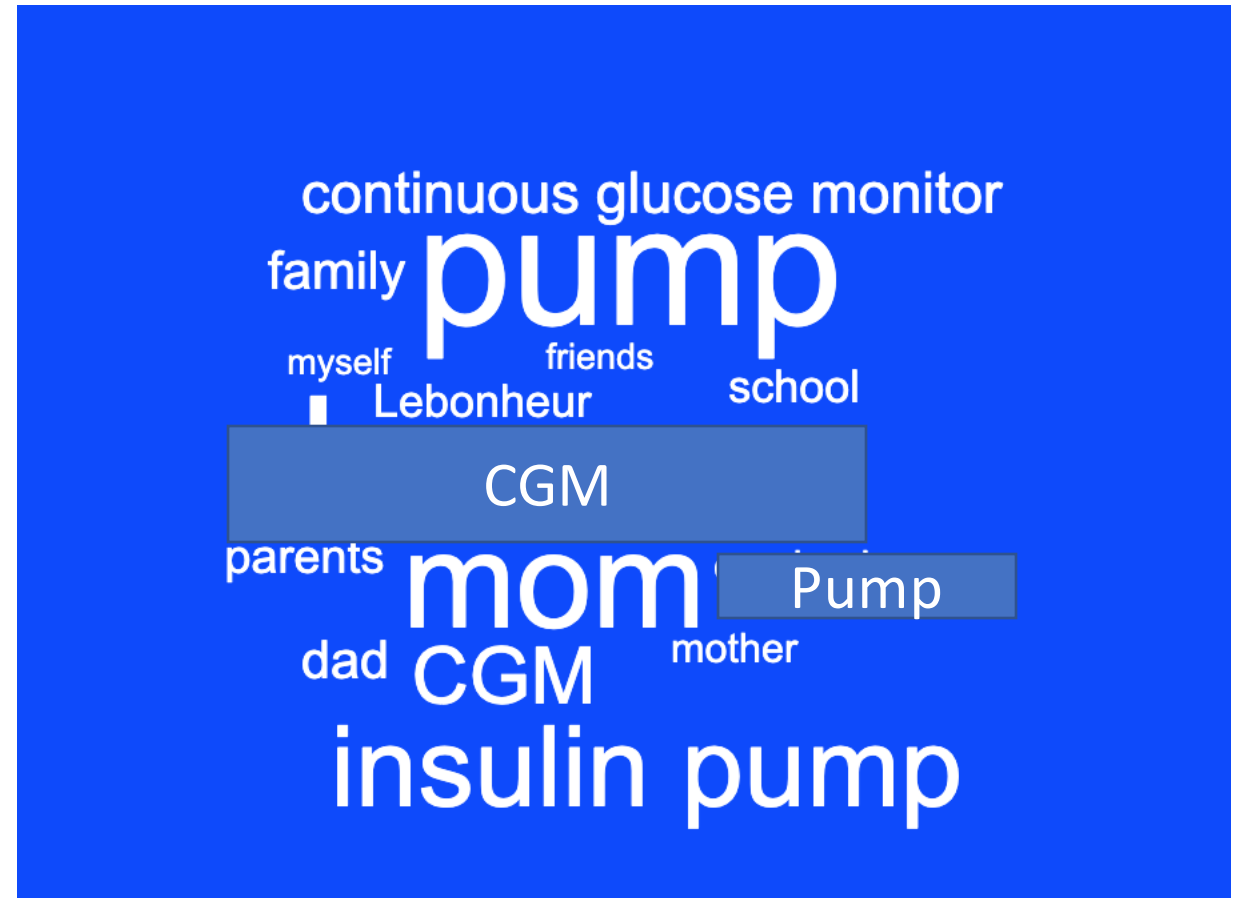
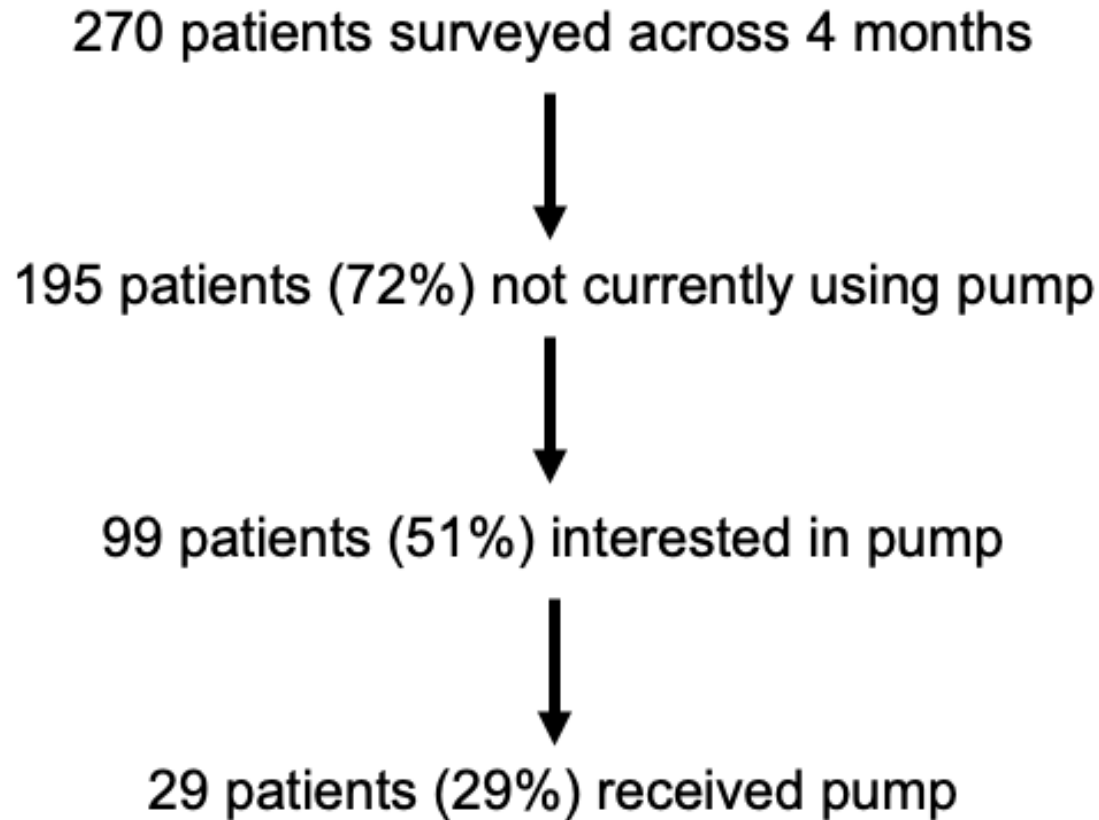
- Updated glucose readings every 5 minutes
- BG threshold alarms
- Reduction of finger sticks

Benefits of Smart Insulin Pen:

- Rapid-acting insulin dose calculator
- Tracks active insulin
- Built-in reporting software

Survey Results

“I think ____ has most helped me improve my diabetes self-management.”

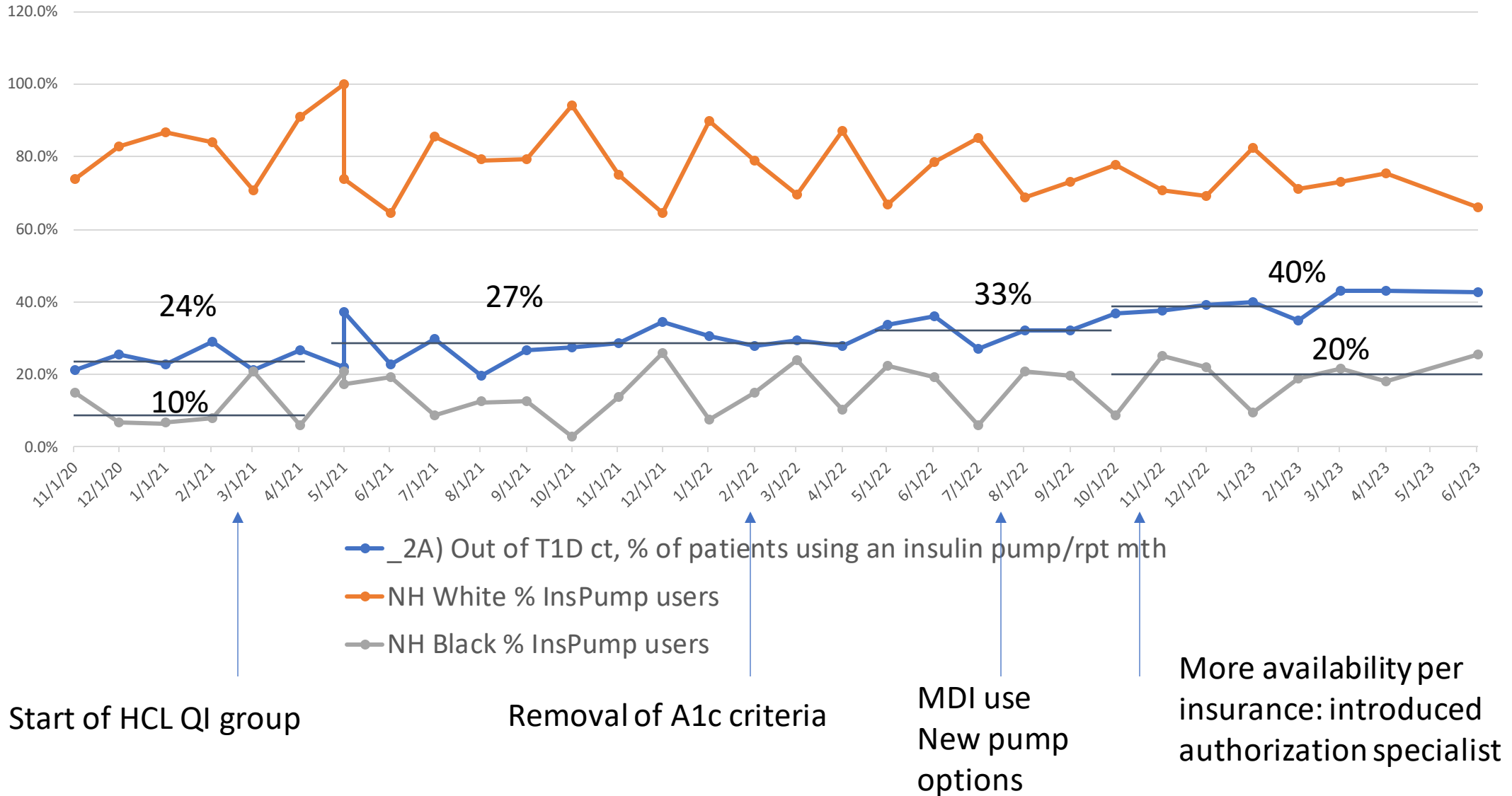




Methods

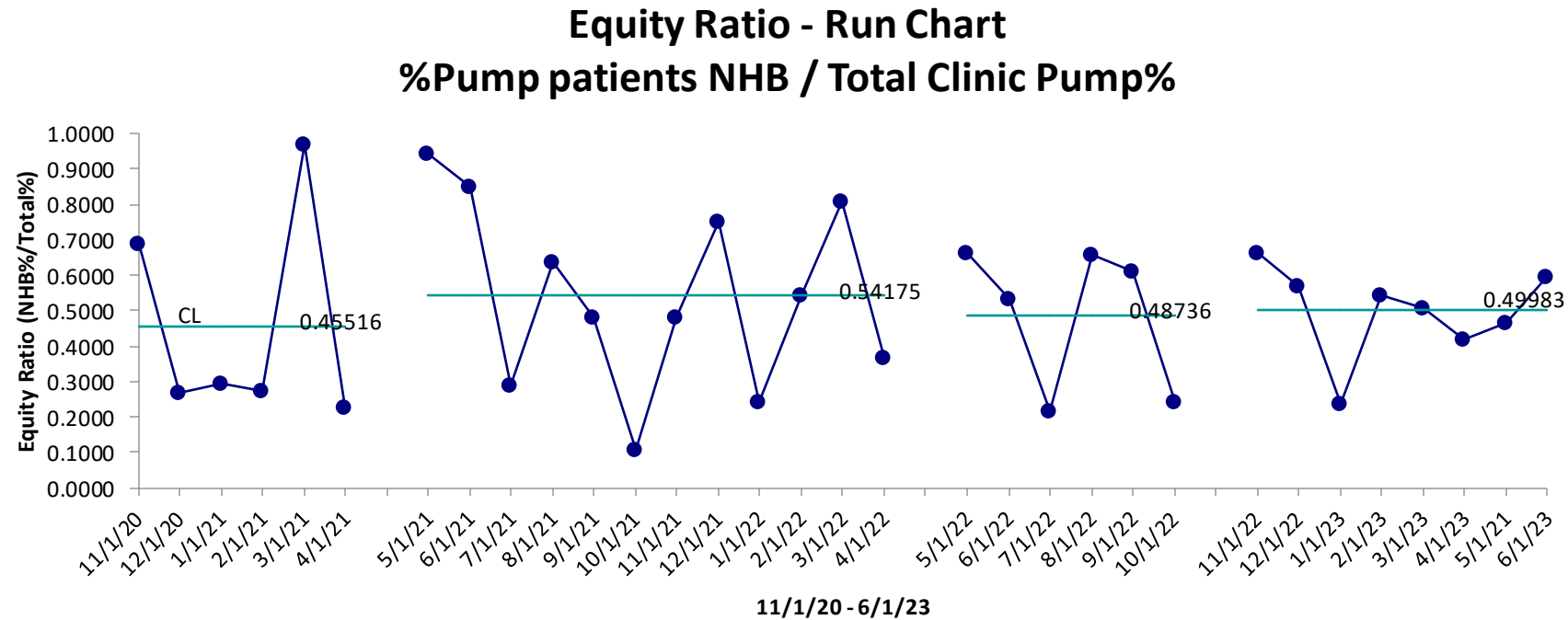
- March 2021: We met with a multidisciplinary group to establish criteria and identified a group of 10 NHB patients interested in the insulin pump, who previously would not be considered candidates (A1c over 9.0). We started with a group of 10 patients and added more over time. As we demonstrated safety of HCL in patients with A1c over target we worked to expand pump use in general.
- February 2022: Official removal of A1c “criteria” to allow pump start
- August 2022: Using the “My Diabetes Journey” questionnaire in conjunction with a brief technology handout we fostered conversations about technology options that allowed for shared decision-making
- August 2022: HCL tubeless pump launched in U.S., restriction for insurances
- Fall 2022: Broader insurance coverage for HCL tubeless system
- On-going: Continued clinic-wide education so entire staff was more comfortable with the new technology.

Pump Use Run Chart





Equity Ratio Run Chart



- Change in Education Curriculum, from Day 1 through Pump Education.
(In process now)
- Post pump start education to review common pitfalls
- Target all patients with A1c over 9.5



References

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Questions?





Improving Diabetes Self-Management Habits with Remote Patient Monitoring in the ROCKET T1D Program


**Texas Children's
Hospital**

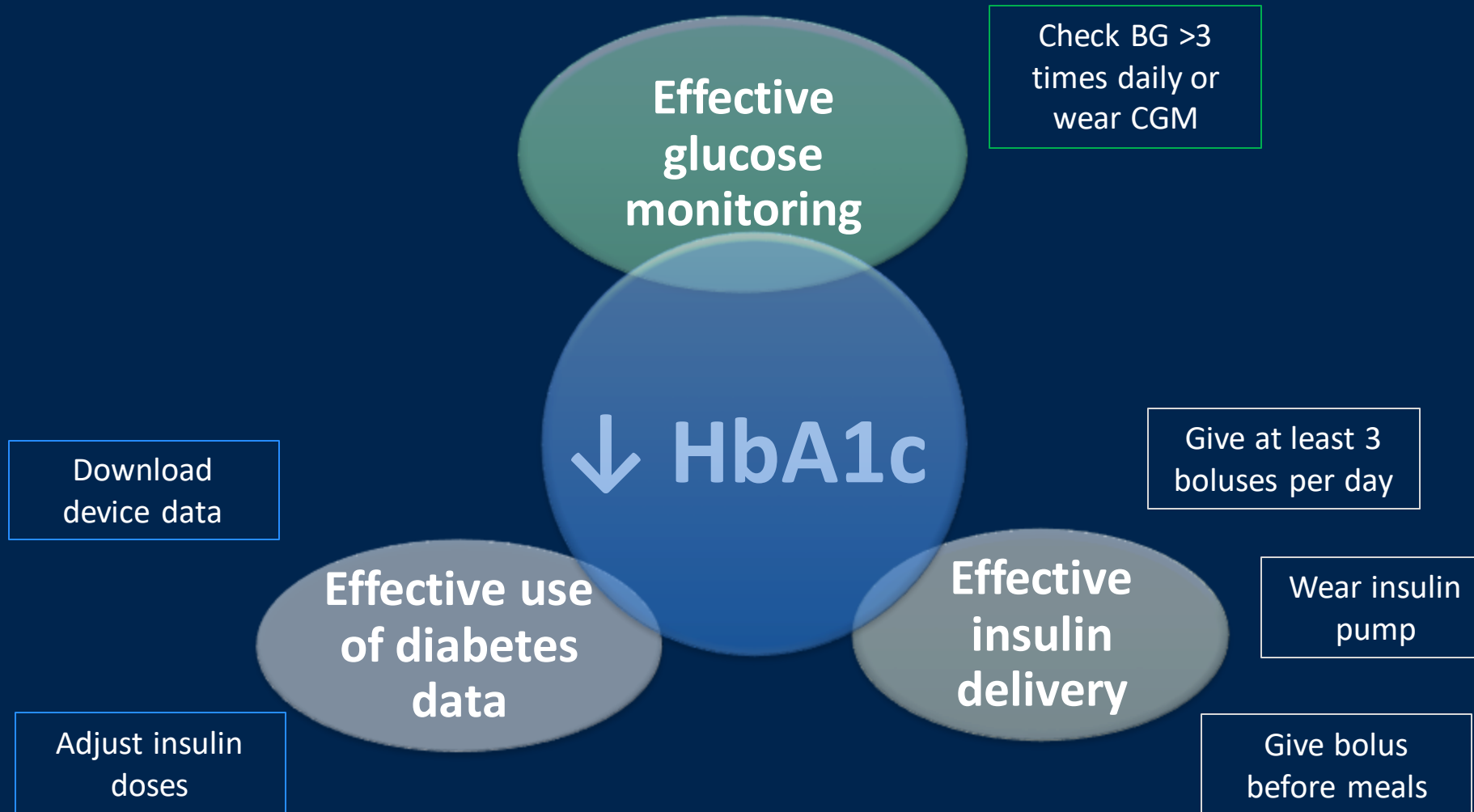
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College of
Medicine

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Pediatrics

Six diabetes self-management habits



Lee JM, Rusnak A, Garrity A, Hirschfeld E, Thomas IH, Wichorek M, et al. Feasibility of Electronic Health Record Assessment of 6 Pediatric Type 1 Diabetes Self-management Habits and Their Association With Glycemic Outcomes. *JAMA Netw Open*. 2021 Oct 1;4(10):e2131278

What is ROCKET T1D?

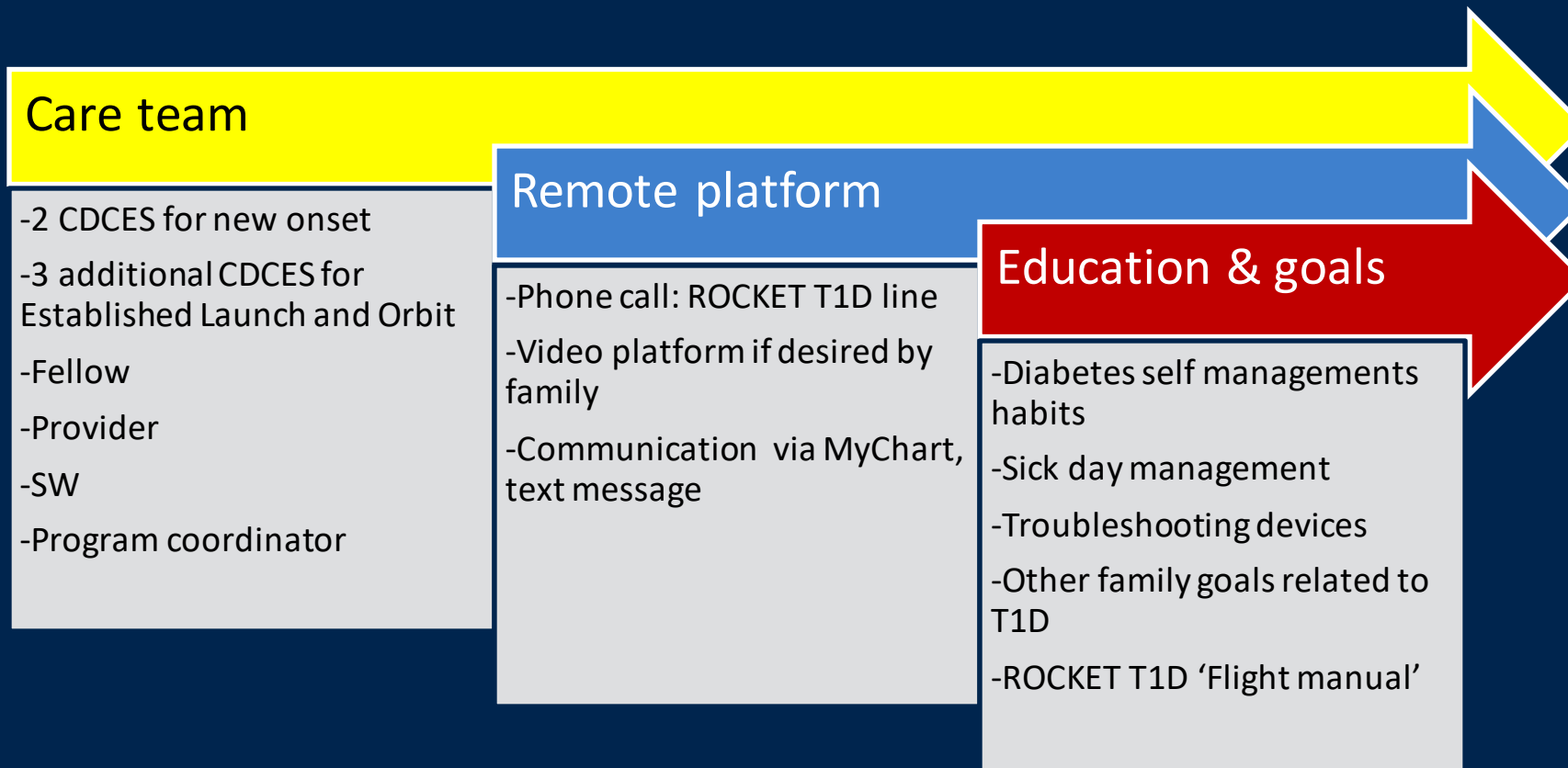
- Remote patient monitoring program to enhance diabetes management for youth with T1D and their families
- Goals:
 - Improve technology knowledge
 - Increase effective glucose monitoring
 - Optimize effective insulin delivery
 - **Overall:** Optimize glycemic control
- Target population:
 - All new onset patients with T1D
 - Established patients with T1D who are new to diabetes technologies



What is ROCKET T1D?

- Program is divided in the ‘Launch’ and ‘Orbit’ phases
 - Launch phase: Initial phase with ~weekly virtual visits/telephone calls with a CDCES or provider that focus on improving use of the 6 habits and supporting diabetes management
 - Orbit phase: Monthly remote monitoring of cloud-connected diabetes device data with therapy adjustments if indicated

Intervention: Remote patient monitoring



ROCKET T1D FLIGHT Manual



In collaboration with Joyce Lee, MD MPH; Ashley Garrity, MPH; and Justine Ross



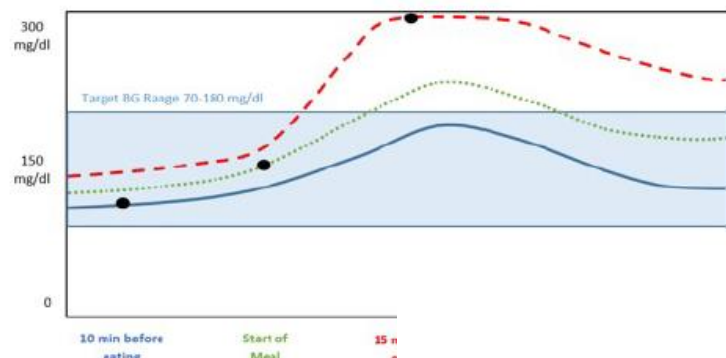
**U-M Pediatric
Diabetes**

A	Welcome!
B	Sick Day Management
C	Habit 1: Glucose Monitoring
D	Habit 2: Frequent Bolusing
E	Habit 3: Insulin Pump
F	Habit 4: Pre-Meal Bolusing / Insulin Timing
G	Habit 5: Reviewing Data
H	Habit 6: Insulin Dose Changes
I	Miscellaneous

Bolus Insulin Timing

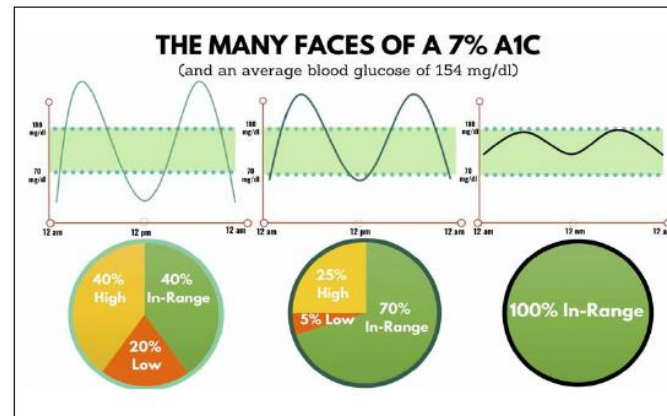
You may wonder why it's important to give bolus (rapid-acting) insulin before you eat. This is because the timing of rapid-acting insulin can have a big effect on your blood glucose levels.

Rapid-acting insulin begins to take effect after about 10 - 15 minutes, and it stays active in your body for 2 - 3 hours. Because of this delay, it is best to give the dose 10 - 15 minutes before you start eating carbohydrate. This is called pre-bolusing.



Importance of Time in Range

Time in Range (TIR) is the percentage of time that a person spends in a target blood sugar range (70-180mg/dL). TIR captures variations in blood glucose.



Not all people -- all with the same average blood glucose (154 mg/dL) and the same in-range blood glucose values are very different: the first person has a lot of highs and lows, the second has moderate variability and fewer highs and lows, and the third has almost all of their time spent in-range.

Source: [Foundation Time in Range Coalition \(www.diatribechange.org/news/\)](http://www.diatribechange.org/news/foundation-time-in-range-coalition)

5 Steps for Reviewing Diabetes Data (Meter)

- Is there enough data to make decisions?**
Are there at least 4 checks per day? Are there any missing checks?
- Are there any patterns at certain times of day?**
Are there patterns of low blood sugars? (2+ values less than 70 mg/dL per week at a certain time of day or any values less than 50 mg/dL)
Are there patterns of high blood sugars? (More than 50% of the numbers higher than 180 mg/dL at a certain time of day)
- Are there any behaviors that could be changed?**
Is there a potential cause for the blood sugar pattern when you look backwards?
Are there changes to diet, physical activity, or insulin habits that could address the pattern?
- Does the insulin dose need to be changed?**
What changes in insulin dosing could address the pattern?
- Reassess in 3 - 5 days**



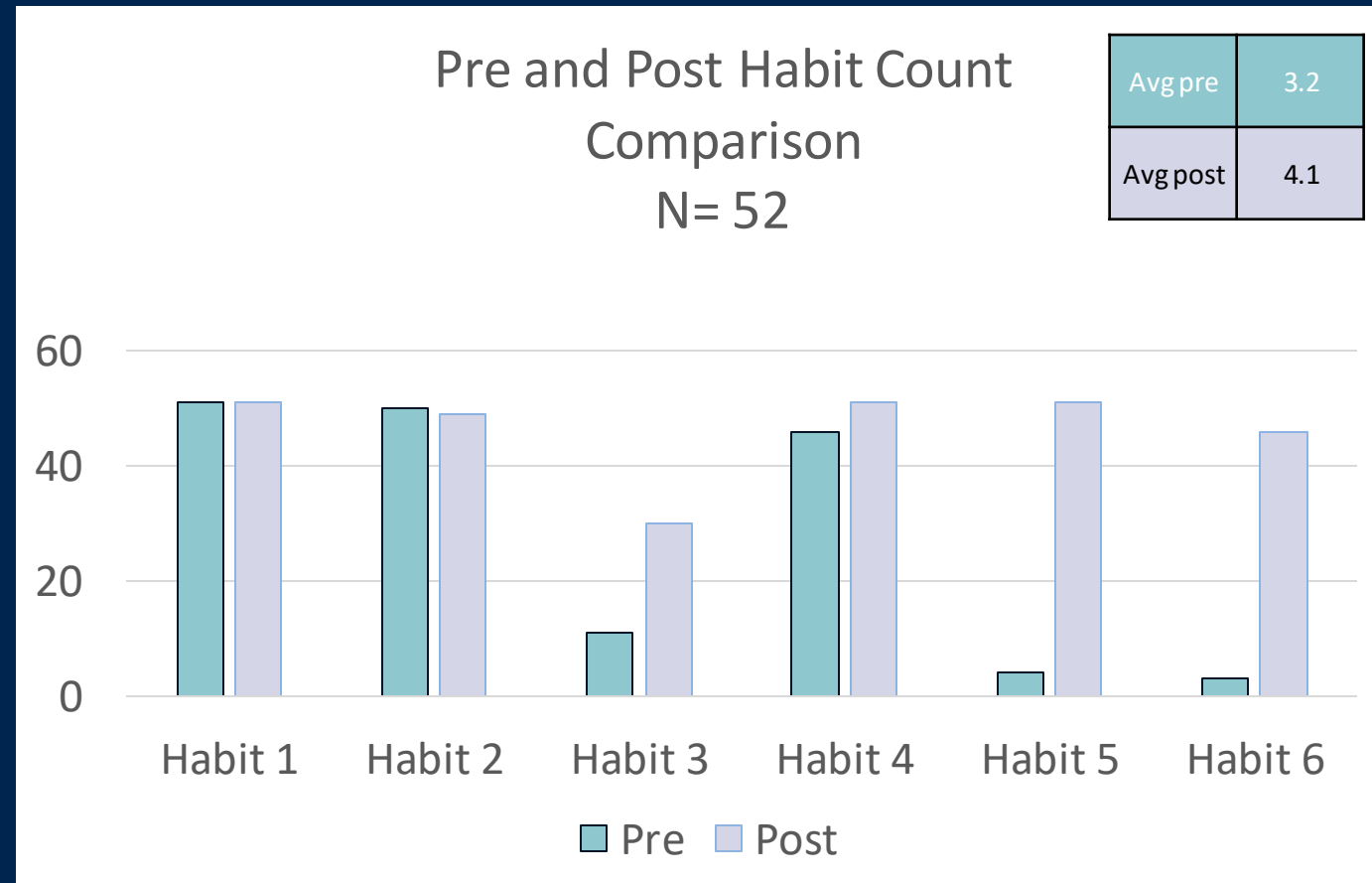
SMART AIM

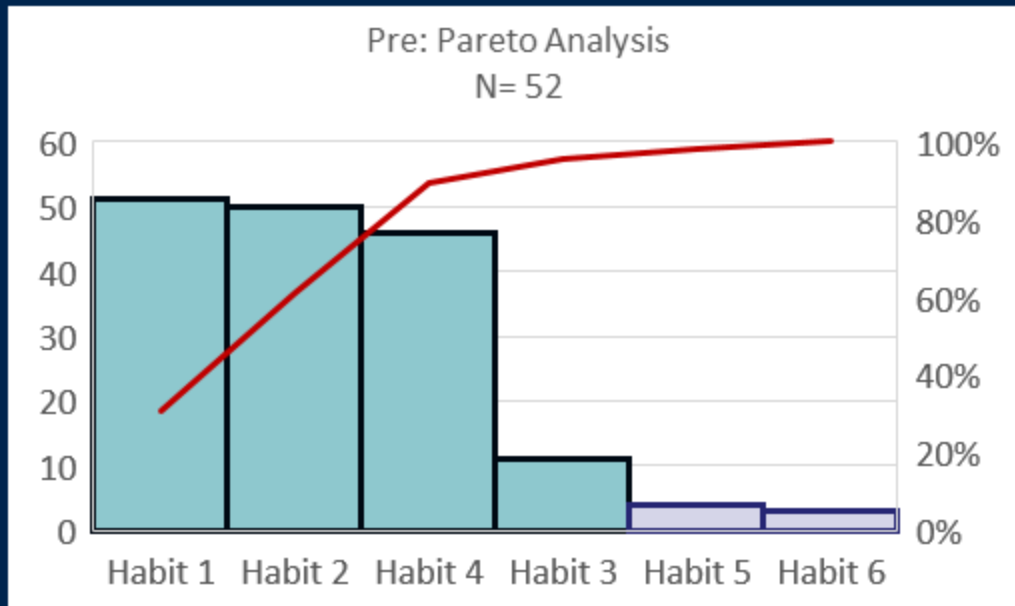
Increase use of the **6 diabetes self-management habits** by at least **2 habits** from enrollment to completion of the ‘**Launch phase**’ in $\geq 80\%$ of youth with T1D enrolled in the **ROCKET T1D program**.

- For example, if a patient is performing 1 habit at enrollment, aim is to increase to 3 or more habits by completion.

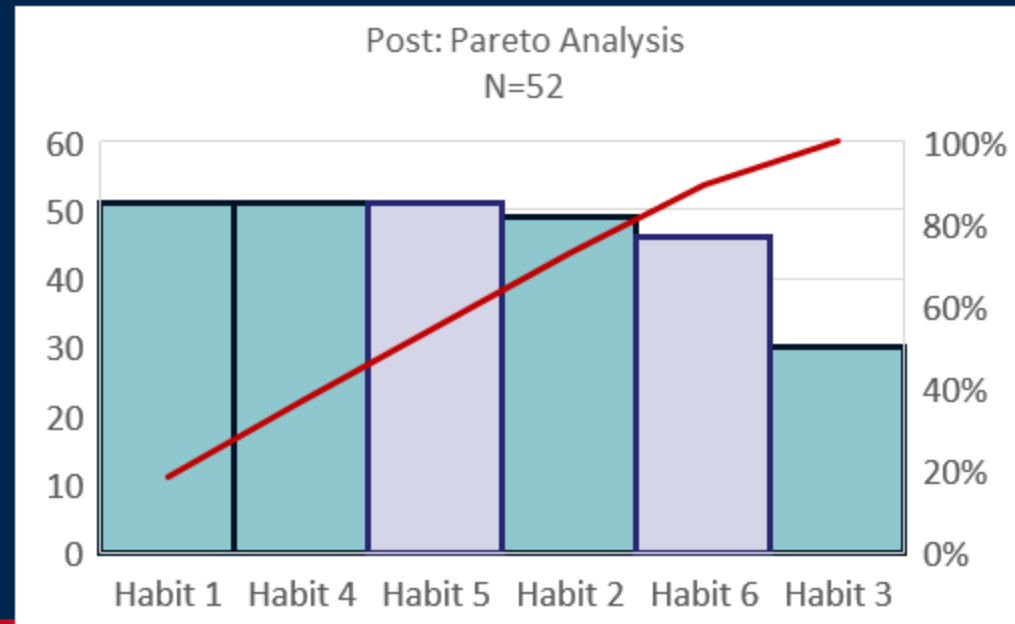
Results: Change in 6 habits

Six diabetes self management habits	
1	Checks BG>3 times daily or wears CGM
2	Gives at least 3 boluses per day
3	Wears insulin pump
4	Gives bolus before meals
5	Download device data
6	Adjust insulin doses

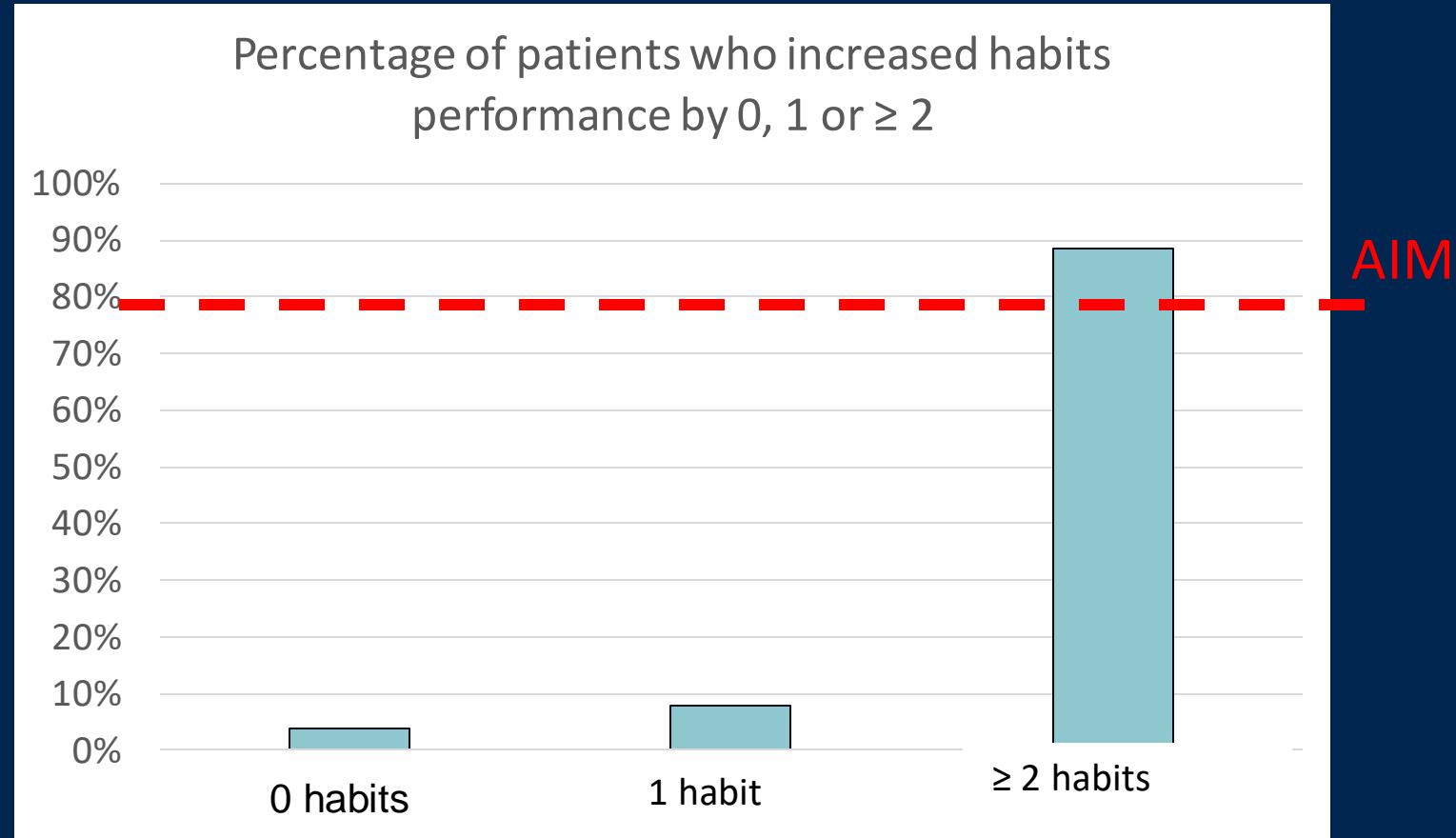




Six diabetes self management habits	
1	Checks BG>3 times daily or wears CGM
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Fulfilled AIM: Increase use of the 6 diabetes self-management habits by at least 2 habits from enrollment to completion of the 'Launch phase' in $\geq 80\%$ of youth with T1D enrolled in the ROCKET T1D program.



Conclusions

- 88% of patients had an increase of at least 2 diabetes self-management habits from enrollment to completion of the ROCKET T1D Launch phase
- The most pronounced improvement was in effective use of diabetes data (Habit 5 and 6)
- There was >50% increase in insulin pump use

What's next?

- Exploratory analysis of glycemic metrics from CGM data (i.e. GMI, TIR, glucose average).
- Spanish version of the 'Flight Manual'

Acknowledgements

- **Co-authors:** Don Buckingham, MBOE, CPHQ; Rona Sonabend, MD; David D. Schwartz, PhD, ABPP; Sarah Lyons, MD; Daniel J. DeSalvo, MD
- **University of Michigan collaboration:** Joyce Lee, MD MPH; Ashley Garrity, MPH; and Justine Ross
- **Helmsley Diabetes Care Innovation Award (G-2206-05307)**

