T1D Exchange

QI Collaborative Call, Adults

7/26/22

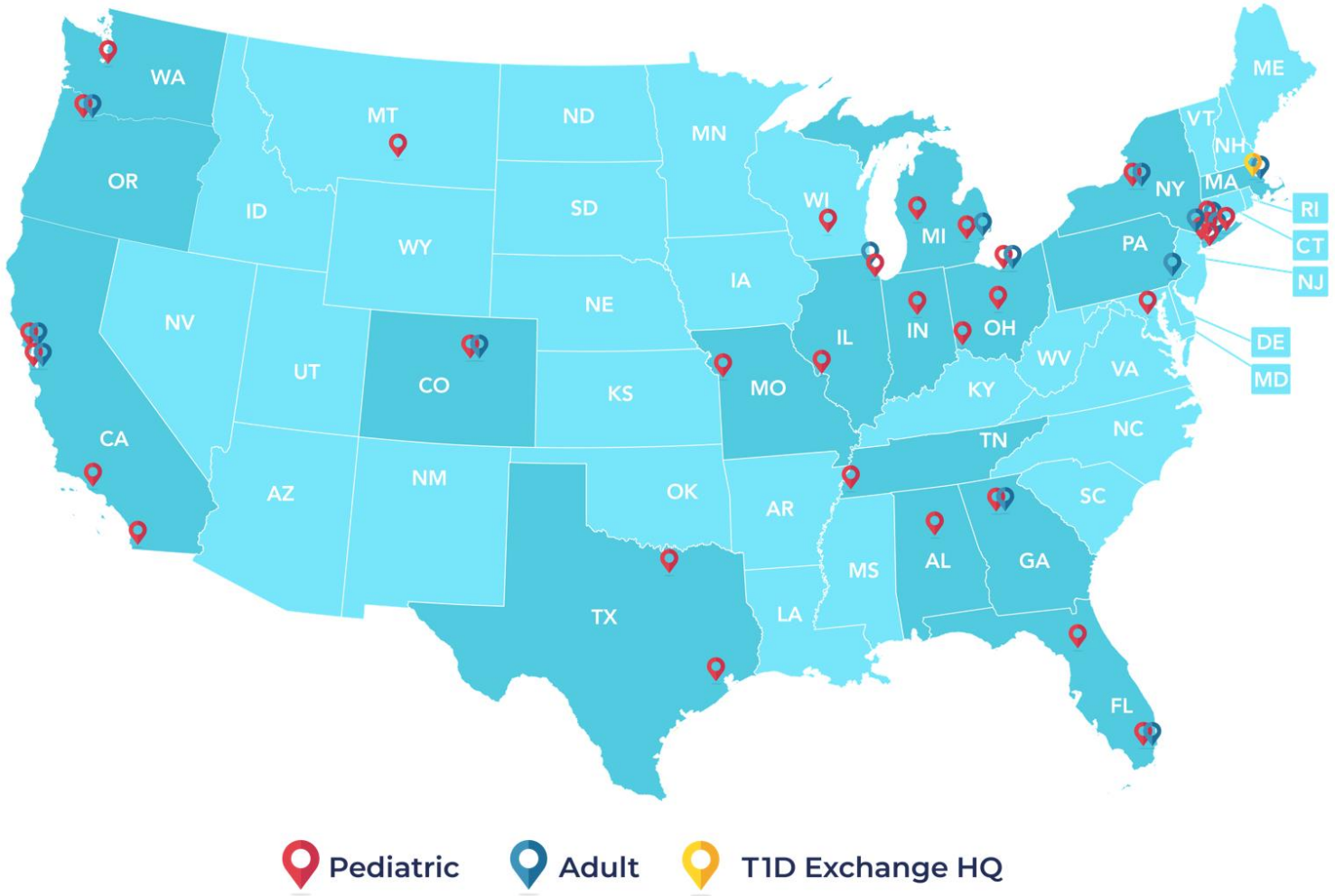
Welcome & introductions

Agenda

- Collaborative updates
  - New clinics joining the Collaborative
  - New T1DX-QI Team member
  - New measures for the 2023-2025 period
  - Annual survey
  - RSVP for the November Learning Session
  - Collaborative member website
  - August Newsletter
- July Collaborative member presentations
  - Dr. Basina, Stanford
  - Alisha Virani, RD, CDCES, Grady Memorial
- Publications updates
- Portal updates

T1D Exchange Updates

T1DX-QI network of 49 centers, caring for 72,000+ T1D patients across 19 states and Washington 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

18 adult clinics – caring for 26,000+ patients with T1D

49 Participating Clinics, 31 Pediatric & 18 Adult

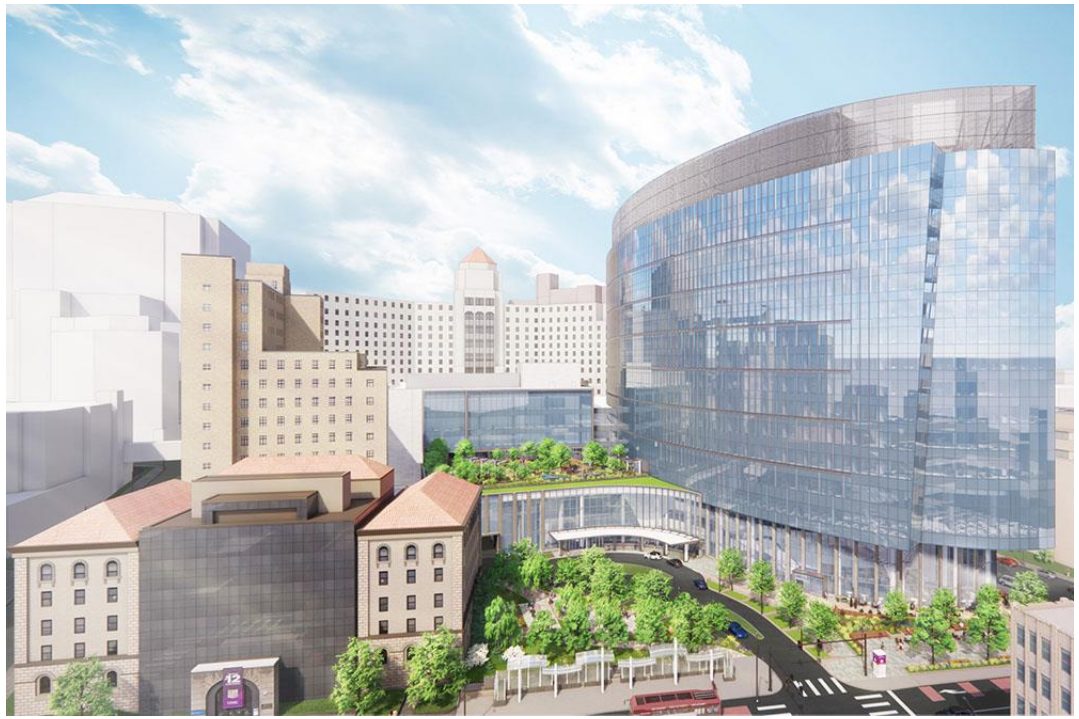
Pediatric Clinics	Lurie Children's Naomi Fogel MD	**Adult Clinics** Albert Einstein Shivani Agarwal MD MPH	**Pediatric and Adult Clinics**
Children's Mercy Hospital Mark Clements MD PhD	Mott Children's Joyce Lee MD	Billings Clinic Haleigh James MD	Cleveland Clinic, Pratibha PR Rao MD MPH & Andrea Mucci MD MASc
Children's Hospital Los Angeles Brian Miyazaki, MD	Nationwide Children's Manu Kamboj MD	Boston Medical Center Devin Steenkamp MD	Mount Sinai Carol Levy MD & Robert Rapaport MD
Cincinnati Children's Hospital Sarah Corathers MD	Rady Children's, Carla Demeterco Berggren MD PhD	Grady Memorial Hospital Sonya Haw MD	NYU Langone: Lauren Golden MD & Siham Accacha MD. Hassenfeld Children's Hospital at NYU Mary Pat Gallagher MD
CHOA Kristina Cossen MD	Seattle Children's Hospital, Faisal Malik MD, MSHS and Alissa Roberts MD	Northwestern Medicine Grazia Aleppo MD	Oregon Health & Science University Andrew Ahmann and Ines Guttmann-Bauman MD
Cohen Children's Medical Center, Northwell Health, Jennifer Sarhis MD & Allison Mekhoubad MD	Texas Children's, Daniel DeSalvo MD	Penn Medicine Ilona Lorincz MD	Stanford University Marina Basina MD & Priya Prahalad MD
Cook Children's Paul Thornton MD & Susan Hsieh	University of Florida Laura Jacobsen, MD	Washington University Alexis McKee MD	SUNY, Pediatrics and Adult Ruth Weinstock MD PhD Roberto Izquierdo MD
Helen Devos Children's Donna Eng MD	University of Alabama Mary Lauren Scott MD	Wayne State University, Berhane Seyoum MD & Elizabeth Morrison MD	UCSF, Pediatrics and Adult, Umesh Masharani MD & Jenise Wong MD
Indiana University Health Anna Neyman MD	University of Wisconsin, Madison Liz Man MD	**Pediatric and Adult Clinics**	University of Miami, Francesco Vendrame, MD PhD & Janine Sanchez MD
Le Bonheur Children's, U TN Grace Bazan MD	Weill Cornell Alexis Feuer MD	Barbara Davis Center Halis Akturk MD & Todd Alonso MD	University of Pittsburgh Medical Center, Jason Ng, MD & Alissa Guarneri MD

Washington University in St. Louis

Division of Endocrinology, Metabolism & Lipid Research

Multidisciplinary Team Members	Patient Demographics	Contact Names
• 13 attending faculty • 2 attending inpatient only faculty • 8 fellows • 3 NPs • 5 CDCES • 1 Foot RN	• ~ 8-10 newly dx T1DM patients per month • ~ 1500 established patients with T1DM • 60% commercial insurance • 40% Medicare/Medicaid	• Site PI Alexis M.McKee, MD, CDCES ammckee@wustl.edu • Site Coordinator Becky Sidberry, NP rebeccas@wustl.edu

Welcome two new University of Pittsburgh Medical Center clinics!



Adult PI: Jason Ng, MD
UPMC

T1DX-QI welcomes a new team member!

Data Integration Manager

Jesse Cases-Villablanca, MS, MPA

New measures for the Collaborative

- New measures will be circulated in early August
- Separate measures and definitions for Adult and Pediatric centers
- Google link will be share for a 30-day comment period
- After your feedback is collected and definitions are finalized, final measures will be distributed in October so that your analysts have 90 days to review and update/create new reports for the measures
- New measures go live Jan 1, 2023 and will remain in use until Dec 31, 2025

T1DX-QI Annual Survey

- A new survey link will be shared on Qualtrics for the T1DX-QI Annual Survey
- Survey link will be live 8/15-9/15
- Each clinic is being asked to complete 1 survey
  - Ideally you will review with your internal team members to have knowledge/consensus for your responses
  - A PDF of the survey will be shared so that you can review before answering the questions. PDF will be accessible on the T1D-QI member website
  - Topics
    - LGBTQ+
    - Equity
    - Transitions
    - Staffing

Friday 7/29 is deadline to RSVP for Learning Session

- Last day to RSVP for the November Learning Session is Friday 7/29
- Email your response to QI@t1dexchange.org so that we know who is attending in person or virtually/through Zoom
- Details for the event:
  - 2-day learning session: Monday November 7-Tuesday November 8
  - Activities begin by 8am on 11/7, so in person attendees are encouraged to fly in on Sunday 11/6
  - Activities end by 3pm on 11/8 so that you can fly home Tuesday evening
  - Activities will have CME/CEU credits
  - T1D Exchange will cover costs for:
    - Two team member flights and hotels for two nights (We book the hotel. You book flights and we reimburse for the flights.)
    - If you wish to bring a 3rd team member, communicate that to T1DX-QI. Those expenses will need to be covered by your institution
    - Our reimbursement form/details can be found on the T1D Exchange website, using this link

Friday 7/29 is deadline for Learning Session Abstracts

- Due COB Friday
- Abstracts should be sent to QI@t1dexchange.org
- Review process led by Publications Co-Chairs
- Accepted abstracts will be published in the *Journal of Diabetes*
- Accepted abstracts will be presented during the November Learning Session

T1DX-QI August Newsletter is released on Monday, 8/1

SCHOOL OF NURSING
UNIVERSITY OF MICHIGAN

Are you interested in helping to change diabetes care experiences for people with type 1 diabetes?

Take part in our research study to help determine if an educational video intervention is effective to raise awareness of issues around the use of effective language in diabetes care.

Register here or here!

https://umich.qualtrics.com/jfe/form/SV_3VmVBRx1EjpMwCO

You are eligible to participate if you:

- Currently work as a healthcare provider (physician, nurse practitioner, physician assistant)
- Regularly provide care for young adults with type 1 diabetes
- Have access to a computer, tablet, smartphone with internet access and a microphone. A camera is optional

Compensation: $40 Amazon gift card or $40 donated to the ADA or the T1D Exchange.

Questions? Contact Mackenzie Adams at mpadams@umich.edu

Study ID: 00219915 IRB: Health Science and Behavioral Sciences Date: 6/27/22

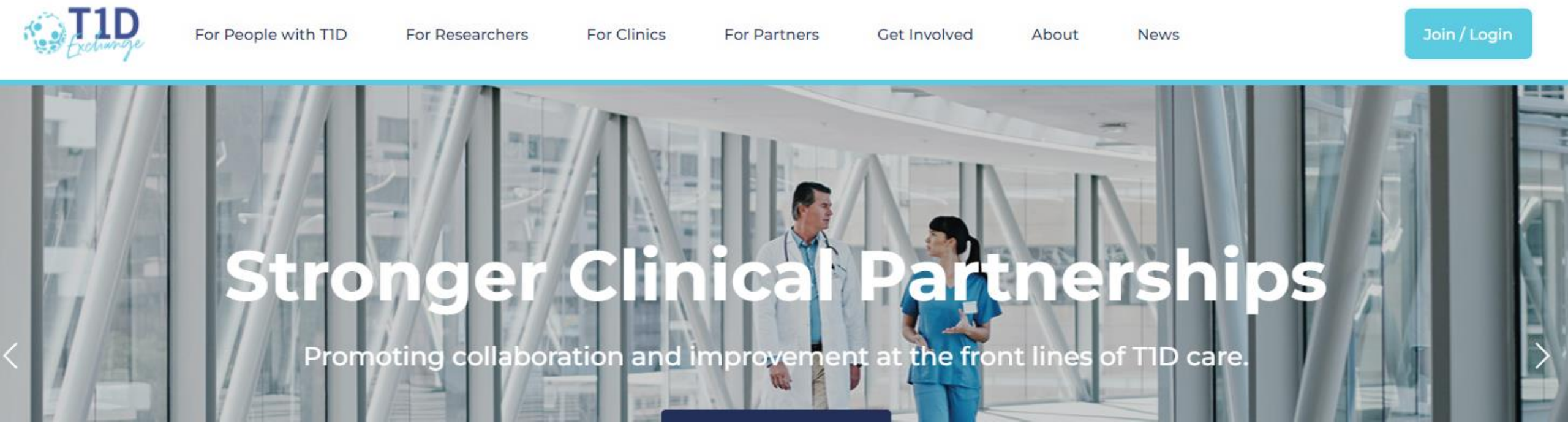
For example

Be sure to check out the newsletter next Monday

Resources, links, reminders, deadlines, highlights are all featured

If you have something that you would like to announce from your clinic, we'd be happy to highlight it on a newsletter

T1D Exchange Website

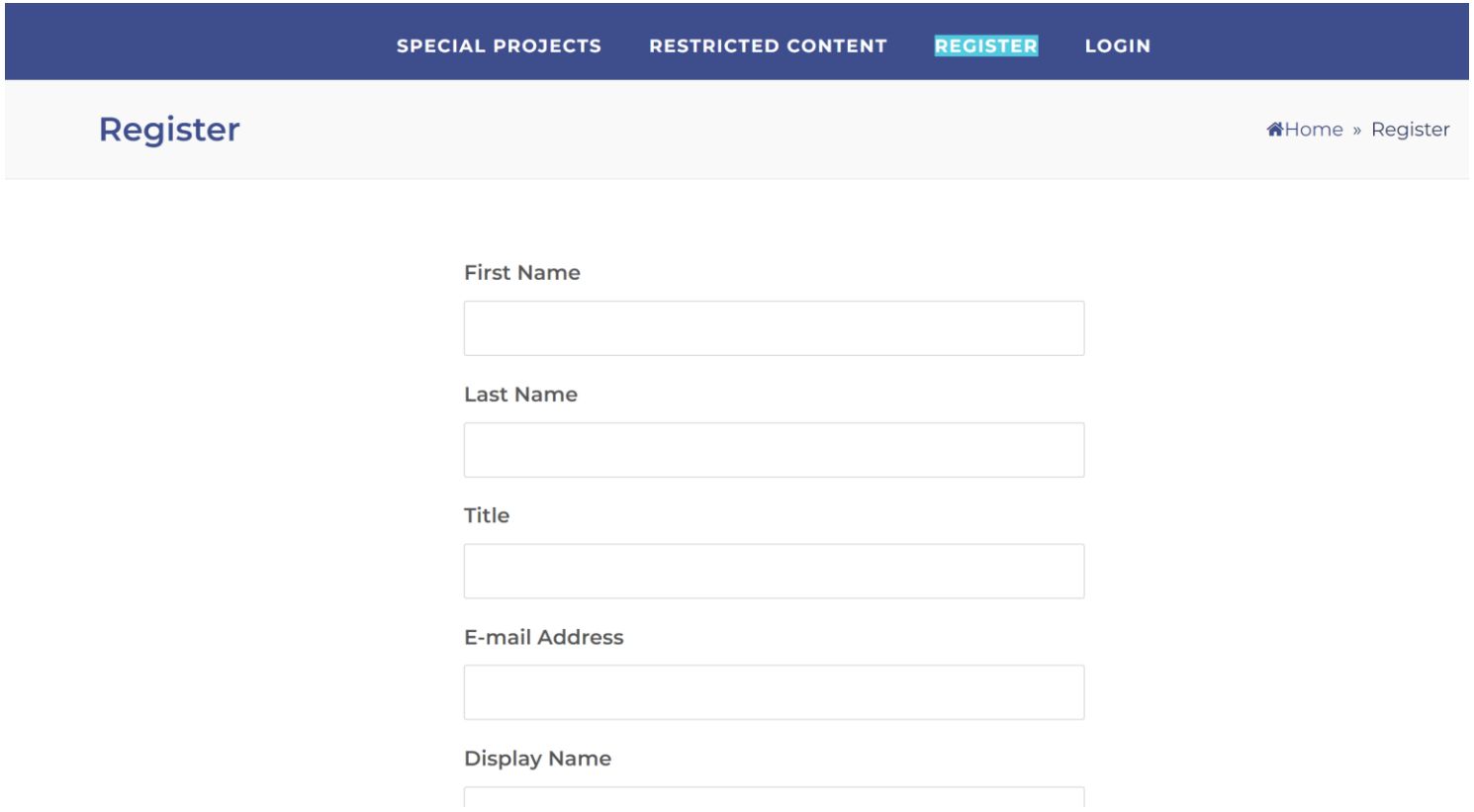


We use the protected space to:

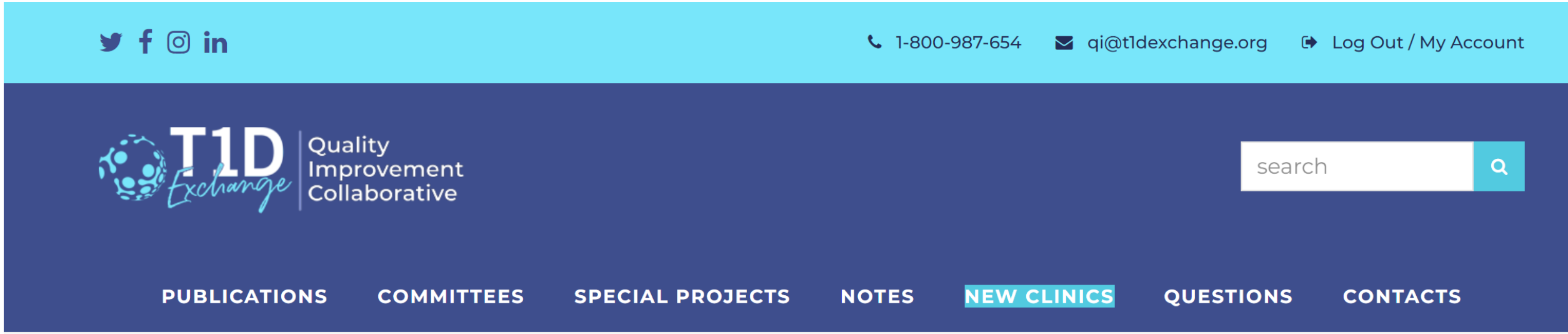
- Share work in progress, including emerging case studies and interventions
- Ask questions to the Collaborative network with the ability to view archived threads and responses

How to join website: 3 easy steps

1. Visit registration page: https://t1dx-qi.t1dexchange.org/register/
2. Register with name, title, email information. Create a password.
3. T1DX-QI team gets pinged to ensure that newly registered members are affiliated with the Collaborative- and you're in!



What you will find on the website



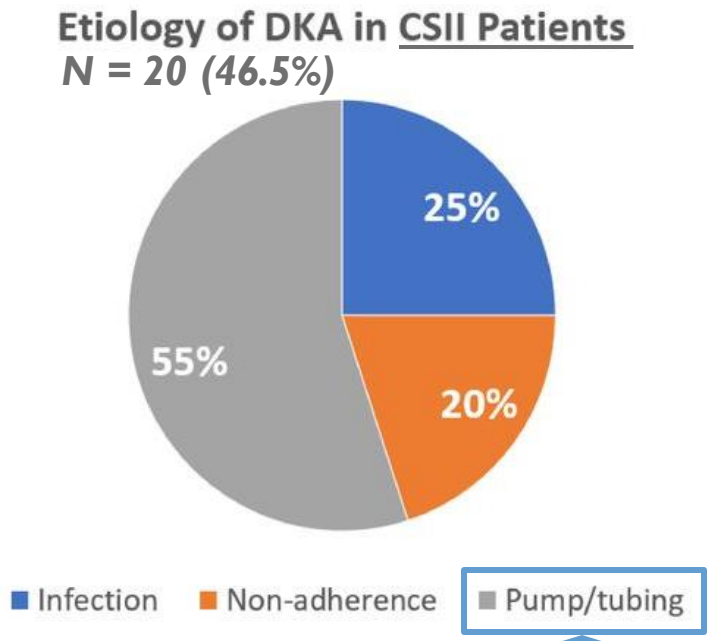
Clinical Presentation: Stanford

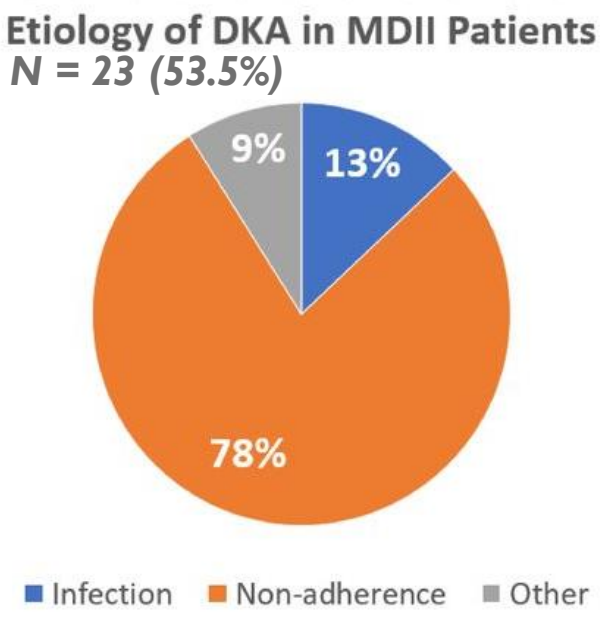
QI PROJECTS

MARINA BASINA, MD
STANFORD UNIVERSITY, DIVISION OF ENDOCRINOLOGY

TROUBLE SHOOTING OF INSULIN PUMP MALFUNCTION

PUMP MALFUNCTION IS A LEADING CAUSE OF DKA AMONG INSULIN PUMP USERS





"…most of the patients [55%] had been using insulin pumps for at least 5 years, 75% knew about their settings, and 76% recognized malfunction. These data are less suggestive of a lack of expertise but instead the problem seems to rely on the lack of knowledge regarding further actions after recognizing a pump malfunction."

Flores M, et al. *BMJ Open Diab Res Care*, 2020.

Stanford Endocrine Clinic Data

Estimated total number of patients on an insulin pump using STARR cohort discovery:

At least 1,150 patients on insulin pump

Search criteria: Encounter with "Endocrine clinic" or "Hover clinic" over past 2 years, Active Rx for Aspart, Lispro, or Glulisine, Any clinical document containing keywords "Insulin pump" AND either "Omnipod," "Tandem," or "Medtronic."

Comfort level of clinic staff with guiding patients is sub-optimal

Brief survey to endocrinology clinic nurses; n = 5 responses

- All participating RNs interact with patients with DM regularly, 80% (4/5) >50% of the time
- 60% (3/5) felt not at all or only slightly confident in helping patients troubleshoot pumps over the phone
- All reported receiving multiple calls per month regarding insulin pump malfunction, median 3-5 calls per month
- Calls can take 10 to >20 min each, median 10-15 min
- Estimated percent that required contacting a physician: 26±16%
- Estimated percent ultimately *not* able to be handled over the phone: 31±25%

IDENTIFIED CHALLENGES AND GOALS

- Older/outdated materials
- No systematic approach, taking longer to search for issue or make plan over the phone
- Over-reliance on patients to know what to do
- Patients get frustrated on the phone
- Generic advice for patients after encounter, not targeted to specific patient

Create protocol that structures approach to patients calling with concern about insulin pump malfunction in order to:

1. Increase confidence among nursing staff in managing pump malfunction over the phone
2. Limit average call time to 10 min or less
3. Provide patients with targeted summary/recommendations at encounter end
4. Better capture/track data and outcomes

DOT PHRASE: ".PUMPFAIL"

Encounter for insulin pump malfunction

A. Initial assessment (always completed, details on next slide)

B. Persistent hyperglycemia (Requests completion if question 3 from part A is answered, "yes." Otherwise, auto-populates, " – none" here.)

C. Pump troubleshooting: "Instructions – type "NA" if step is not applicable. Otherwise use dotphrase, ".PUMPTROUBLE" to complete." ***

D. Action plan, Summary, and Recommendations: "Instructions – Use dotphrase, ".PUMPACT" to complete. Copy and paste into patient instructions for encounter" ***

A. INITIAL ASSESSMENT

1. Pump/system: (Select Tandem, Medtronic, or Omnipod) – Automated? Yes/No

2. Current glucose and recent trend

- **Glucose *** mg/dl, checked at ***
- **Checked by continuous glucose monitor? yes/no**
  - **If yes --> Select type**
    - **Dexcom --> Select one from associated column on table to the right**
    - **Medtronic --> Select one from associated column on table to the right**
    - **Abbot/Libre --> Select one from associated column on table to the right**
    - **Eversense --> Select one from associated column on table to the right**
    - **Other --> Current trend is ***.**

Dexcom	Medtronic	Abbot/Libre	Eversense
Rising rapidly – double up arrow (>3 mg/dl/min)	Rising rapidly – triple up arrow (>3 mg/dl/min)		
Rising – single up arrow (2-3 mg/dl/min)	Rising – double up arrow (2-3 mg/dl/min)	Rising – up arrow (>2 mg/dl/min)	Rising – up arrow (>2 mg/dl/min)
Rising slowly – oblique up arrow (1-2 mg/dl/min)	Rising slowly – single up arrow (1-2 mg/dl/min)	Rising slowly – oblique up arrow (1-2 mg/dl/min)	Rising slowly – oblique up arrow (1-2 mg/dl/min)
Steady – Horizontal arrow (<1 mg/dl/min)	Steady – Horizontal arrow (<1 mg/dl/min)	Steady – Horizontal arrow (<1 mg/dl/min)	Steady – Horizontal arrow (<1 mg/dl/min)
Falling slowly – oblique down arrow (1-2 mg/dl/min)	Falling slowly – single down arrow (1-2 mg/dl/min)	Falling slowly – oblique down arrow (1-2 mg/dl/min)	Falling slowly – oblique down arrow (1-2 mg/dl/min)
Falling – single down arrow (2-3 mg/dl/min)	Falling – double down arrow (2-3 mg/dl/min)	Falling – single down arrow (>2 mg/dl/min)	Falling – single down arrow (>2 mg/dl/min)
Falling rapidly – double down arrow >3 mg/dl/min)	Falling rapidly – triple down arrow >3 mg/dl/min)		

3. Has there been persistent hyperglycemia? Yes/No

- Glucose >250 mg/dL >2 hours after last meal bolus
- Glucose not corrected by ≥50 mg/dl one hour after last correction bolus

B. PERSISTENT HYPERGLYCEMIA: ASSESS SYMPTOMS AND KETONES

1. Symptoms and ketones assessed, as below

- Minor symptoms: Patient reports [ ] Thirst, [ ] Frequent urination, [ ] Nausea (uses check boxes, not drop down multi-select)
- Major symptoms: Patient reports [ ] Vomiting, [ ] Blurry vision, [ ] Confusion, [ ] Weakness, [ ] Tiredness, [ ] Labored or rapid deep breathing
- Ketones were [select from single-selection drop down: "checked" OR "not checked." Result: (If "checked" --> select "Blood" and/or "Urine"; If "not checked" --> populate "NA, not checked because ***")
  - If "Blood" selected, add " – *** mmol/L" to the right
  - If "Urine" selected, add " – ***" to the right

2. Hyperglycemia managed per clinic algorithm

ALGORITHM, FOR REFERENCE (NOT INCLUDED IN DOT PHRASE)

Ketones	Symptoms
Urine: Neg-Trace Blood: <0.6 mmol/L	None

1. **Perform pump troubleshooting**
   Exchange indicated components
   Use dot phrase, .PUMPTROUBLE
2. **Give correction dose**
   using insulin pump with current BG
3. **Document action plan**
   Use dot phrase, .PUMPACT
4. **Monitor**
   Drink water (1-2 glasses per hour)
   Recheck glucose in 2 hours
   Check ketones in 2 hours (if glucose not improving)
   Call back clinic if no improvement or rising ketones

No improvement

Ketones	Symptoms
Urine: Small Blood: 0.6-1.5 mmol/L	Thirst, Frequent urination, Nausea

1. **Give manual subQ injection**
   (with syringe/pen)
   Use pump calculator for dose
2. **Perform complete exchange**
   of infusion site/pod, tubing, reservoir, and insulin
3. **Document action plan**
   Use dot phrase, .PUMPACT
4. **Monitor**
   Drink water (1-2 glasses per hour)
   Recheck glucose in 2 hours
   Check ketones in 2 hours (if glucose not improving)
   Call back clinic if no improvement or rising ketones

No improvement

Ketones	Symptoms
Urine: Mod-Large Blood: >1.5 mmol/L	Vomiting, Blurry vision, Confusion, Labored or rapid deep breathing, Severe weakness/tiredness

1. **Give manual subQ injection**
   (with syringe/pen)
   Use pump calculator for dose
2. **Contact MD or Refer to ER**
   (depending on symptom severity)
3. **Document action plan**
   Use dot phrase, .PUMPACT

Note: When giving manual subQ injection, bolus should also be programed and given via pump *while pump is disconnected* so it is counted toward "insulin on board." Advise patient to do this if not already done.

C. PUMP TROUBLESHOOTING (APPEARS WITH ".PUMPTROUBLE")

1. Verify most recent bolus delivery. Give correction bolus if missed bolus is identified.

- When/how long ago was the last bolus?
- How many units was the last bolus?
- Was there any missed bolus?

2. Assess current infusion site/pod, replace if persistent hyperglycemia or if any of the below are present.

- Does the cannula appear dislodged?
- Is there ANY redness/swelling at the site?
- Is there scar tissue at the site? (Skin feels thicker, more rubbery, lumpier around site)
- Is there leaking at the site? (Inspect site for wetness (especially at/in adhesive) or smell of insulin)
- Has there been a recent "Occlusion" (Tandem/Omnipod) or "Insulin flow blocked" (Medtronic) alarm?
- Also document, approximately how old is the current infusion site?
- If removed, was the cannula kinked?

3. Assess insulin in pump reservoir/pod and replace if answers to any of the following are "yes"

- Was the pump reservoir/pod filled >3 days ago?
- Has the pump/pod been exposed to abnormally high or low temperatures (e.g. in the sun at the beach)?

4. Replace insulin in the pump using a NEW insulin vial if answers to any of the following are "yes"

- Has the vial been inconsistently refrigerated?
- Was the vial dropped or damaged?
- Has the vial expired? Expiration date ____

5. Assess tubing and connections (Medtronic & Tandem only), disconnect and "fill tubing" (Tandem) or "prime" tubing Medtronic if answers to any of the following are yes

- Are there air bubbles/visible spaces in the tubing?
- Is the reservoir or any connector loose?

**if possible, only *completed* entries remain in note

D. ACTION PLAN, SUMMARY, & RECOMMENDATIONS (APPEARS WITH ".PUMPACT")

On our call today we, (copy & paste to patient instructions) (select from all that apply multi-select drop down)

- Discussed recommendation to go to ER
- Contacted MD
- Gave a manual subcutaneous insulin injection: *** units
- Performed targeted pump troubleshooting, which resulted in the following actions: ***
- Performed a complete exchange of infusion site/pod, tubing, reservoir, and insulin
- Gave a correction dose with the insulin pump: *** units
- Reviewed that if blood sugar is ***not*** decreasing and you have moderate to high ketones, nausea, vomiting, difficulty breathing, or other worsening symptoms, you should go immediately to the EMERGENCY ROOM.

Please call back with any further questions: 650.721.1300

Call time: ***

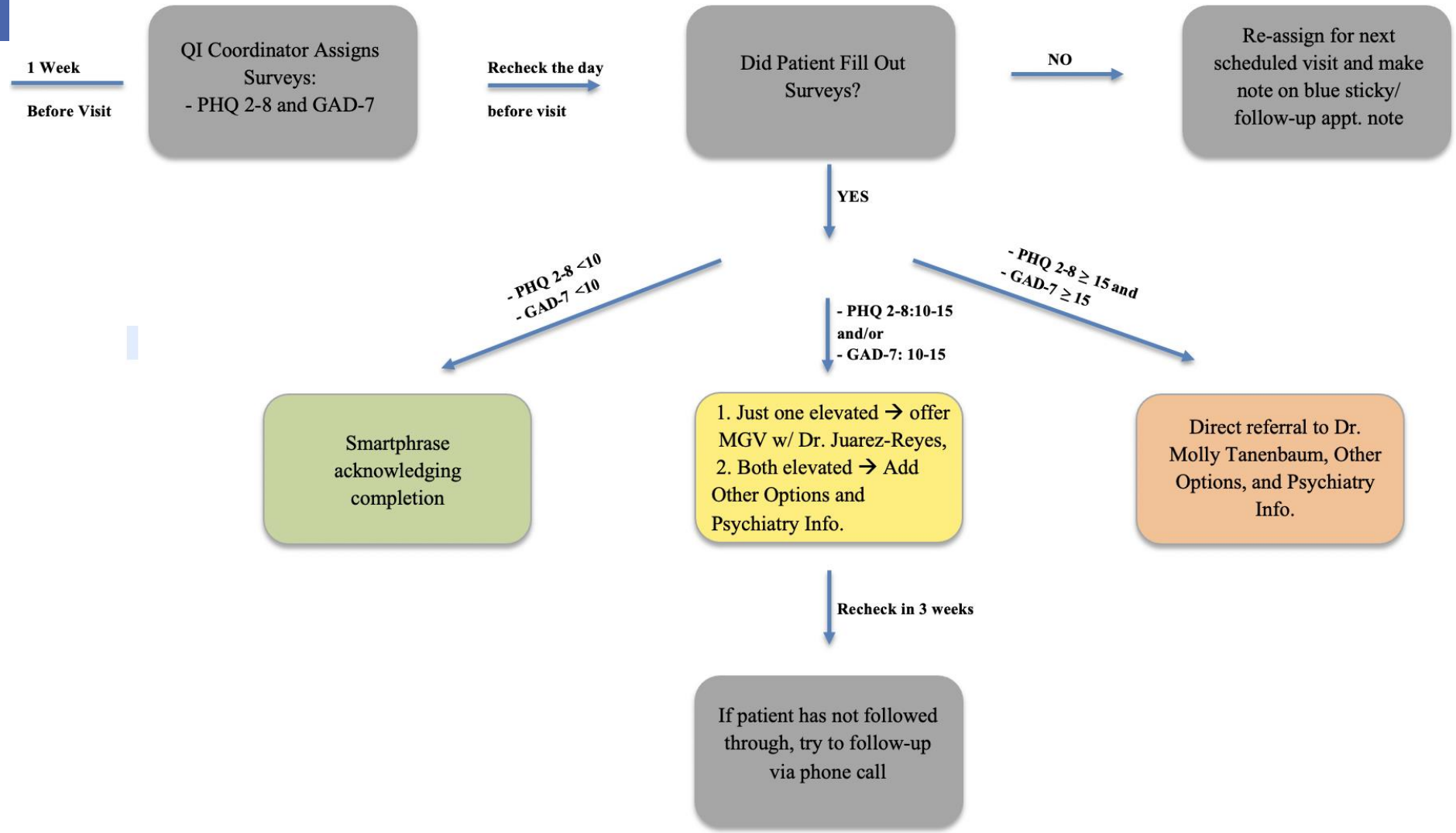
Patient verbally confirmed completion of the above actions and acknowledged understanding of the above recommendations.

FUTURE DIRECTIONS AND INTERVENTIONS

- Implement and track usage for 6 months
- In 6 months
  - Survey nursing staff: satisfaction with protocol, confidence with pump malfunction management and troubleshooting over the phone
  - Review encounters: Number of calls, Call time, MD calls, ED visits, Hospitalizations, Number of call backs, Causes of malfunction, Inadequate supplies (e.g. ketone meter)
- If successful, create integrated patient handout based on clinic protocol to facilitate self-management and education

OTHER CURRENTLY ONGOING PROJECTS

- Standardized note template for insulin pump/CGM/Closed loop reporting
- Implementation of universe psychological screening with PHQ2-8 and GAD7 in adult Endocrinology Clinic



LONG ACTING GLP-1 SAFETY AND EFFICACY IN T1D

PRESENTED AT ENDO SOCIETY AND ADA 2022 ANNUAL MEETINGS

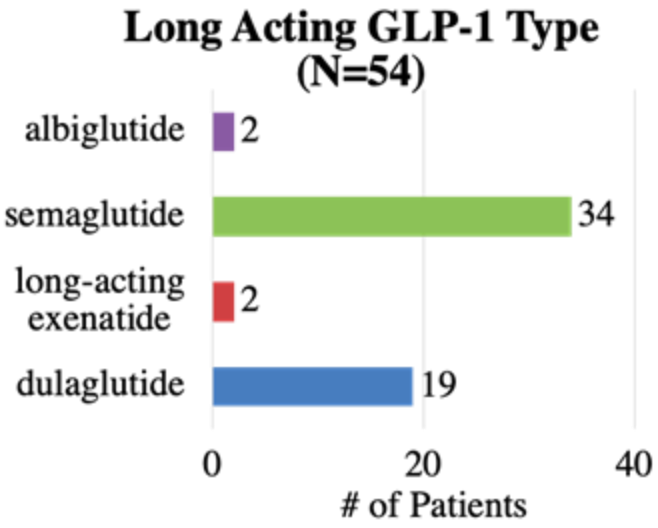
EVALUATING THE EFFICACY AND SAFETY OF LONG-ACTING GLP-1 RECEPTOR AGONIST IN T1DM PATIENTS

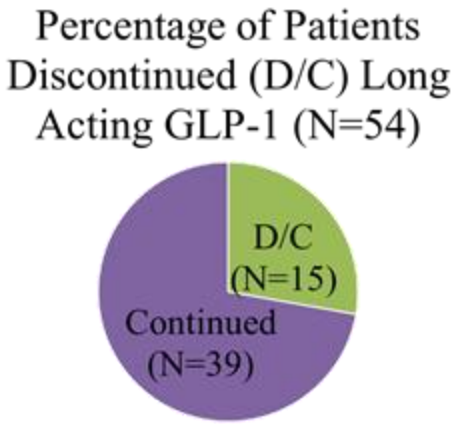
Deene Mohandas, BA; Catherine Gao, MS; Jamie Calma, BA; Marina Basina, MD
Division of Endocrinology, Gerontology and Metabolism, Department of Medicine, Stanford University School of Medicine, Stanford, California

- GLP-1 receptor agonist (RA) is a class of therapeutic agents that mimic the endogenous incretin hormone GLP-1. GLP-1 medications are not approved for T1DM patients due to concern of increased diabetic ketoacidosis (DKA) risk, but long-acting GLP-1 medications are commonly prescribed as adjunct therapies, off-label.
- Only one study assessing the impact of a long-acting GLP-1 in 11 T1DM patients showed no increased risk of DKA and no significant difference in time in range (Traina et al, *Can J Diabetes*. 2014;38(4):269-272. doi:10.1016/j.jcjd.2013.10.006)
- **In our study, we aim to evaluate the safety and efficacy of long-acting GLP-1 medications in a larger cohort of T1DM patients.**
- retrospective chart review using an Electronic Health Record system (EPIC)

METHODS

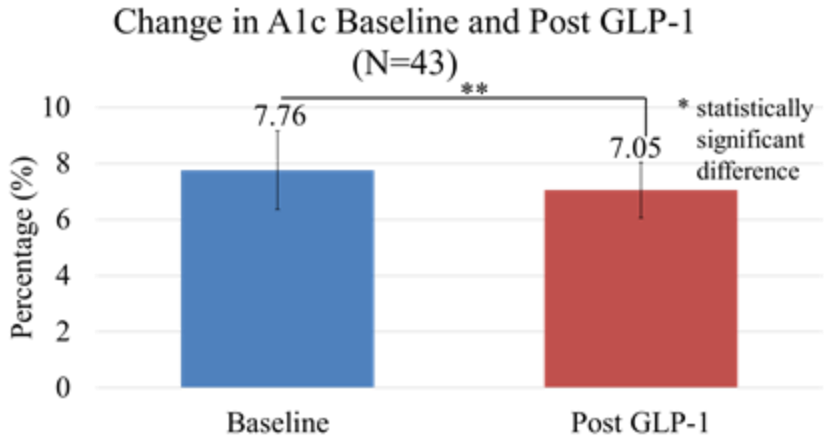
- Search parameters: ICD-10 code E10 for Type 1 diabetes mellitus, abnormal A1c, abnormal c-peptide, Diabetes Autoimmune Profile (includes ICA-512/IA-2 AB, GAD-65 AB and insulin AB), and celiac disease screen
- **Inclusion criteria**: adults diagnosed with T1DM, on a long-acting GLP-1 for ≥ 6 months
- **Exclusion crite**ria: pregnancy, concurrent steroid use
- 54 participants met the study criteria
- Average of 2-year data prior to initiation of GLP-1 compared with data on GLP-1
- **Statistical analysis** was conducted using paired t-tests on R and Excel to compare baseline and post GLP-1 values
- Mean participant age: 41.54 years ± 13.89
- Average time since T1DM diagnosis: 16.37 years ± 12.92
- **Mean duration on a long-acting GLP-1**: 23.85 months ± 15.46

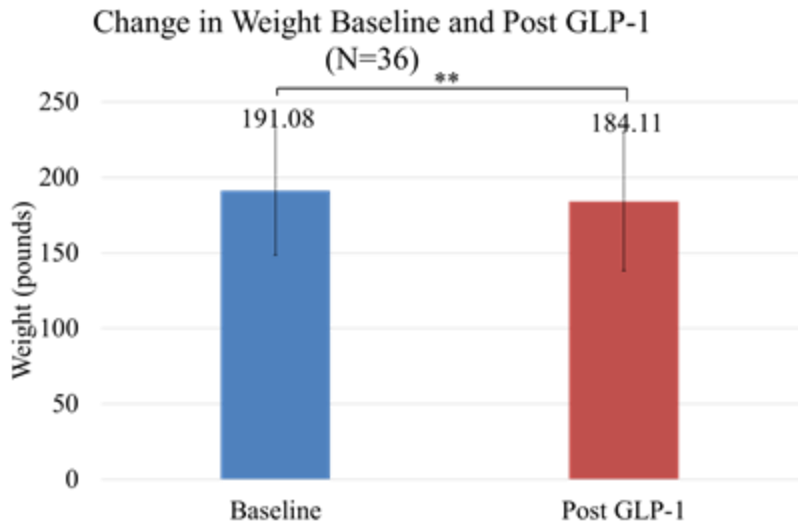




Reasons for discontinuation included:

- GI side effects
- Minimal or no impact on glycemic control
- Minimal or no impact on weight loss
- Lack of insurance coverage
- Unknown

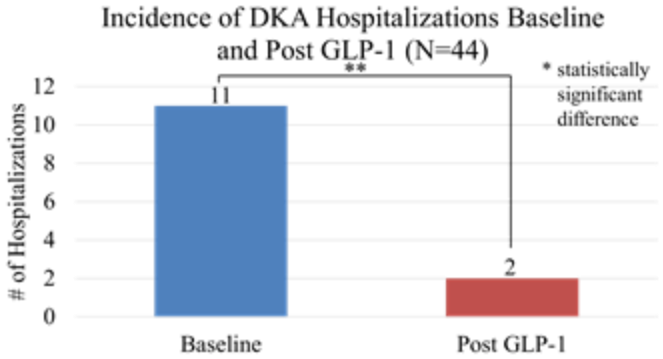


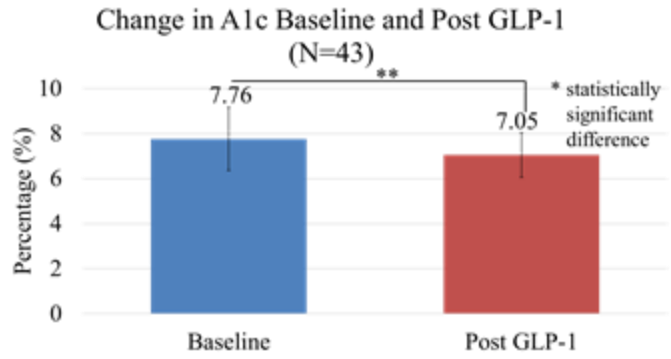


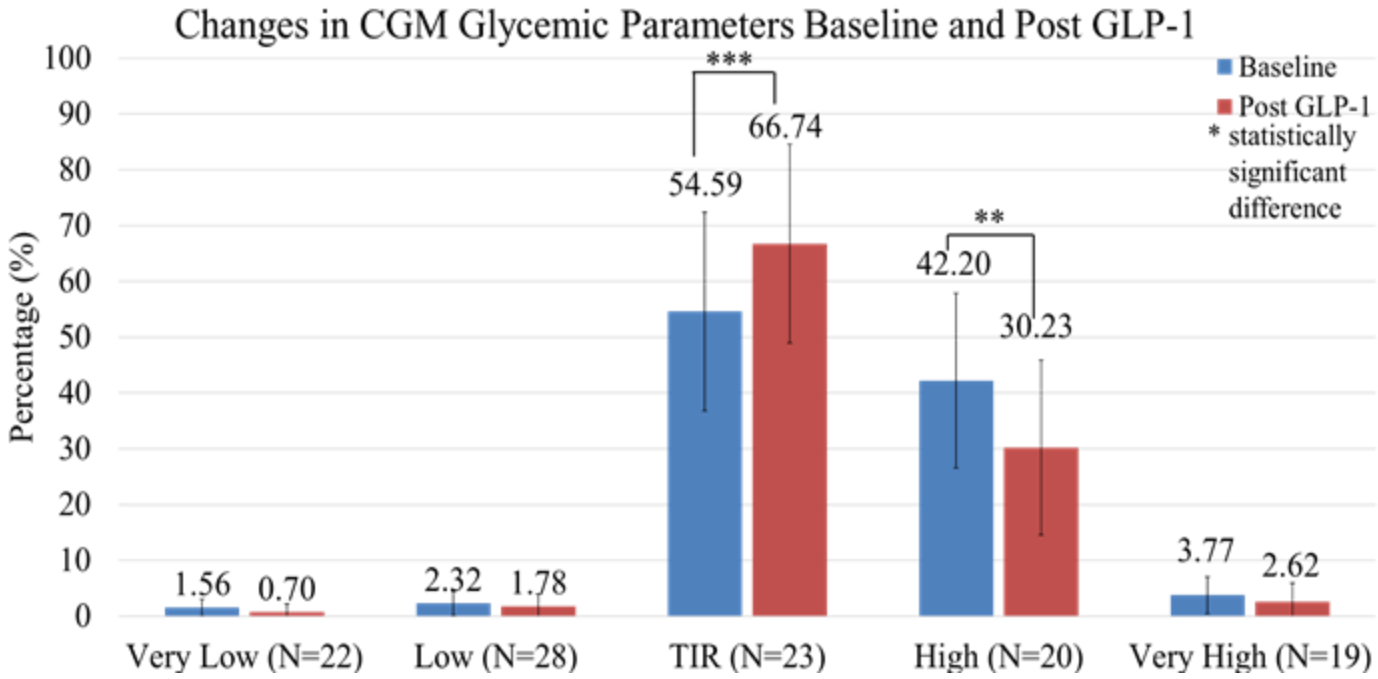
P = 0.05

RESULTS

Parameter	Mean Difference	p-value (α = 0.05)
A1c (N=43)	**-0.71%**	0.002
DKA (N=44)	**-9 incidents**	0.02
CGM TIR (N=23)	**+12.15%**	0.0009
CGM Highs (N=20)	**-11.97%**	0.006
14-Day Average BG (N=27)	**-19 mg/dL**	0.01
14-Day SD (N=17)	**-8.45 mg/dL**	0.007
Weight (N=36)	**-6.97 lbs**	0.007







CONCLUSION AND DISCUSSION

- There is an urgent need for strategies to improve glycemic control and reduce morbidity and mortality in T1DM.
- Our study is the first to demonstrate significant A1c reduction and TIR increase without increased hypoglycemia and DKA risk in 54 T1DM patients on long-acting GLP-1 receptor agonists treated for an average of almost 2 years.
- In addition to improved glycemic control and reduced glycemic variability, there was a significant decrease in weight.
- The study represents real-world experience.
- As more data emerges on cardiovascular and renal benefits of GLP-1 receptor agonists in type 2 diabetes, this class may represent a promising adjunct therapy to insulin in individuals with type 1 diabetes


THANK YOU

Clinical Presentation: Grady Memorial

Pre/Post learning

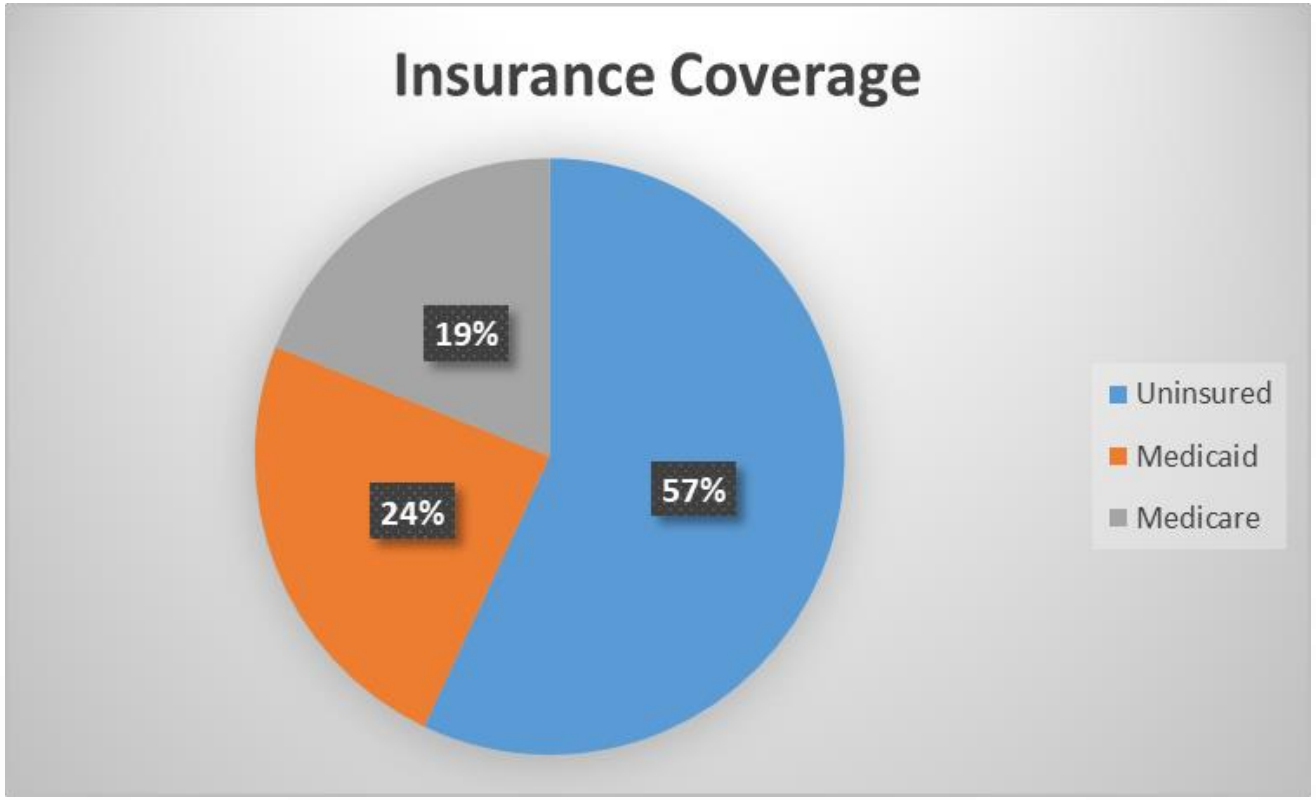
CGM Utilization

Alisha Virani, RD, CDCES
Grady Health Systems
T1Dx Project Coordinator

T1D Exchange

Grady Memorial Hospital, Atlanta GA

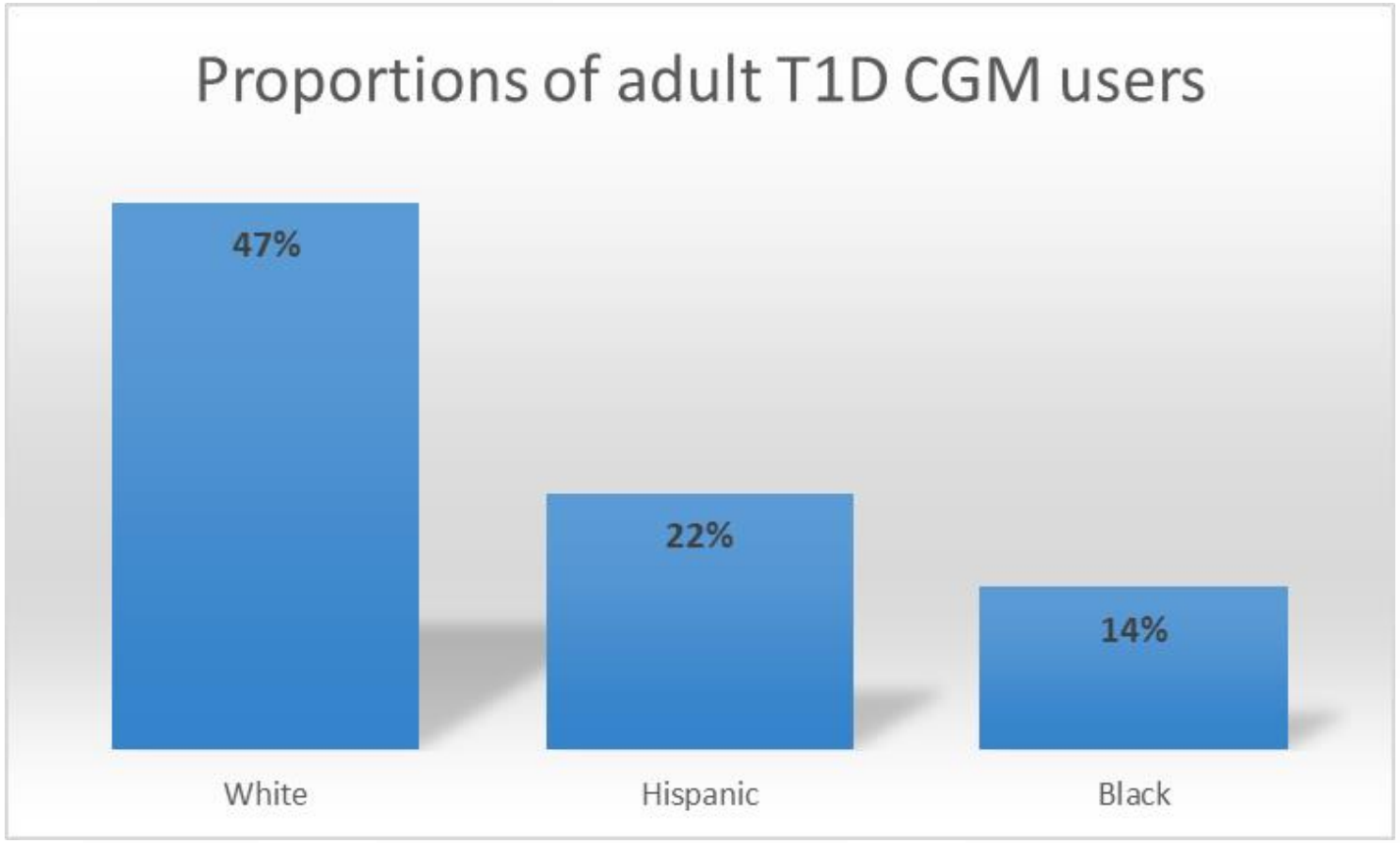
- Safety Net Hospital
- 85% Black American
- 800-900 established adult patients with T1D



Grady Diabetes Center

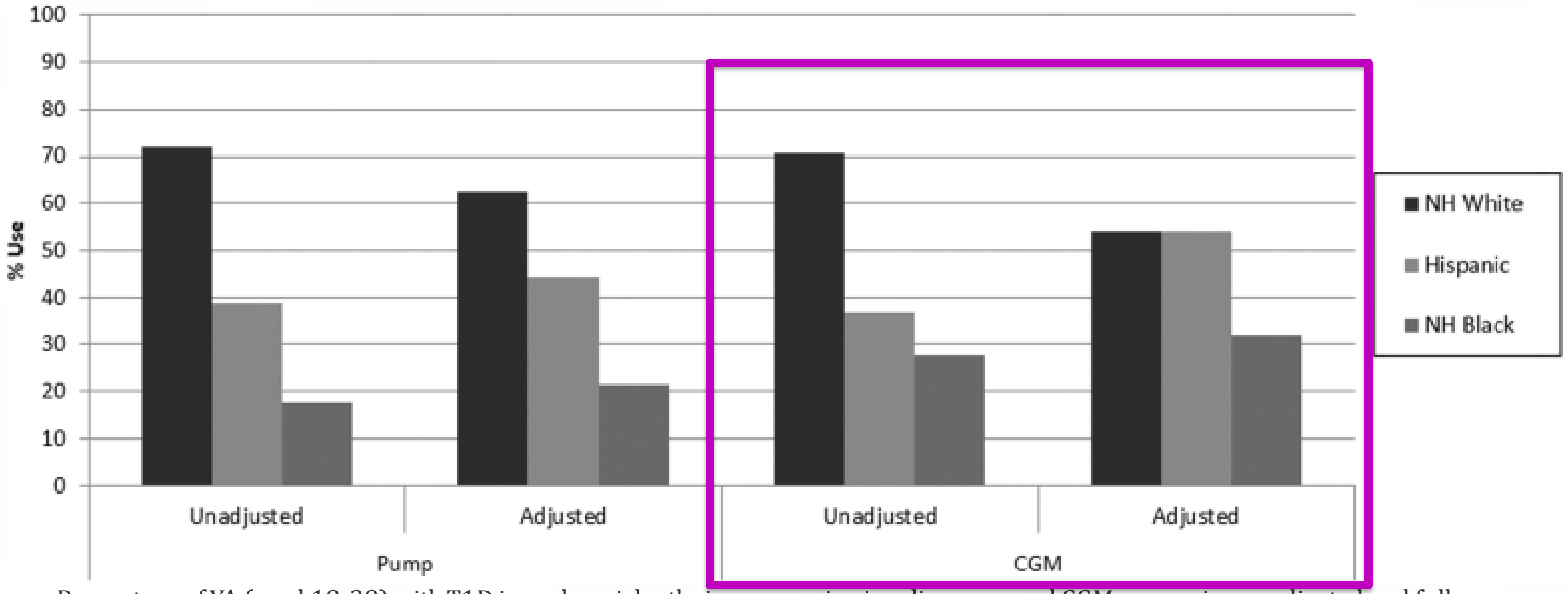
- 204 T1D patients
- Staffing
  - 8 physicians
  - 1 CDCES (RN), 2 CDCES (RD)
  - 2 Podiatrists, 1 Wound Care RN
  - 1 Clinical Pharmacist, CDCES
  - Social Worker, Behavioral Counselor
  - Ophthalmic technician
  - Medication Access Coordinator

Data on Disparities in CGM Use



Wirunsawanya K: Racial differences in technology use among type 1 diabetes in a safety-net hospital. J Endocr Soc 2020;4(Suppl 1):OR30-03

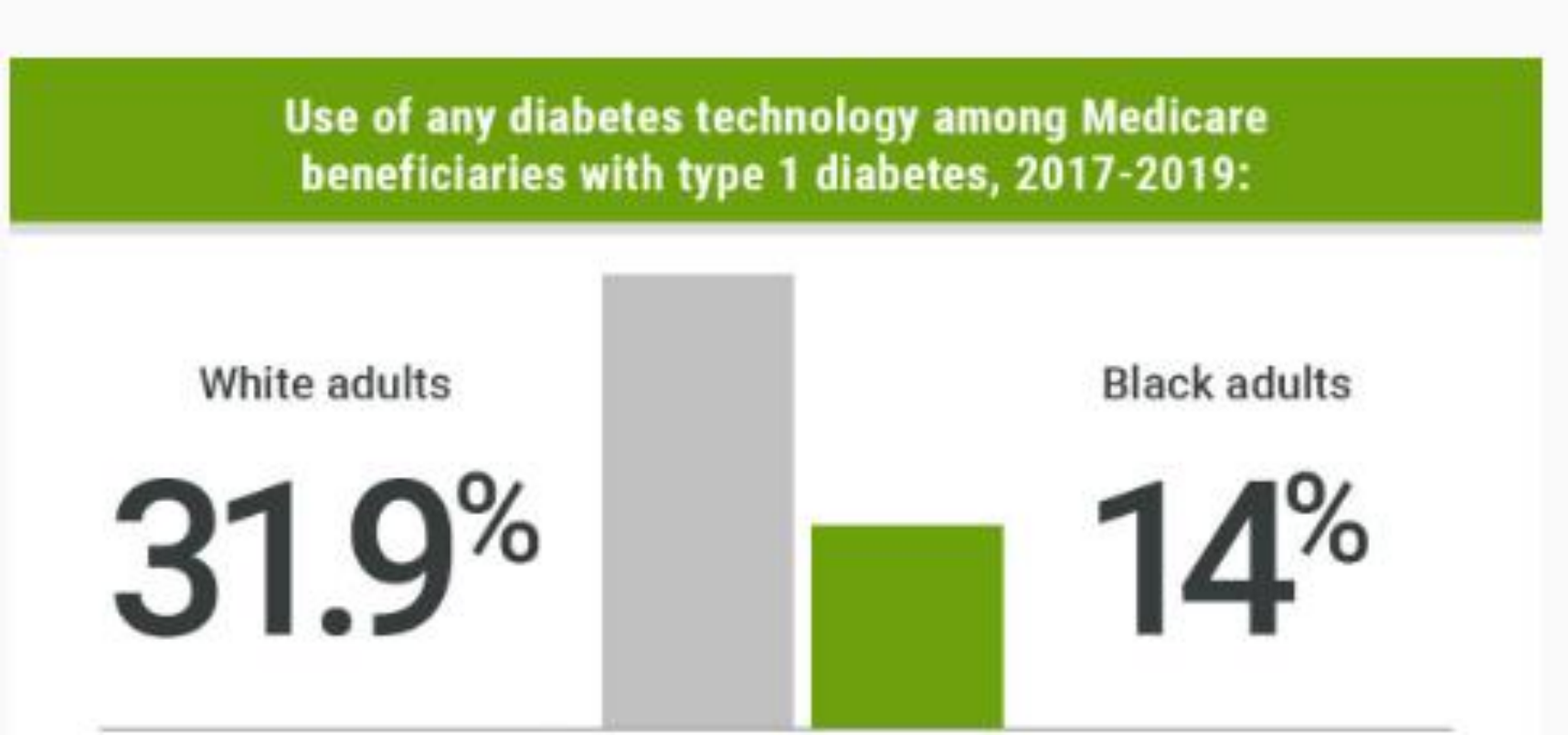
Data on Disparities in CGM Use



Percentage of YA (aged 18-28) with T1D in each racial–ethnic group using insulin pump and CGM comparing unadjusted and fully adjusted estimates. Adjustment included: demographic and clinical variables, SES, healthcare factors, and diabetes self-management. CGM, continuous glucose monitor; T1D, type 1 diabetes; YA, young adults.

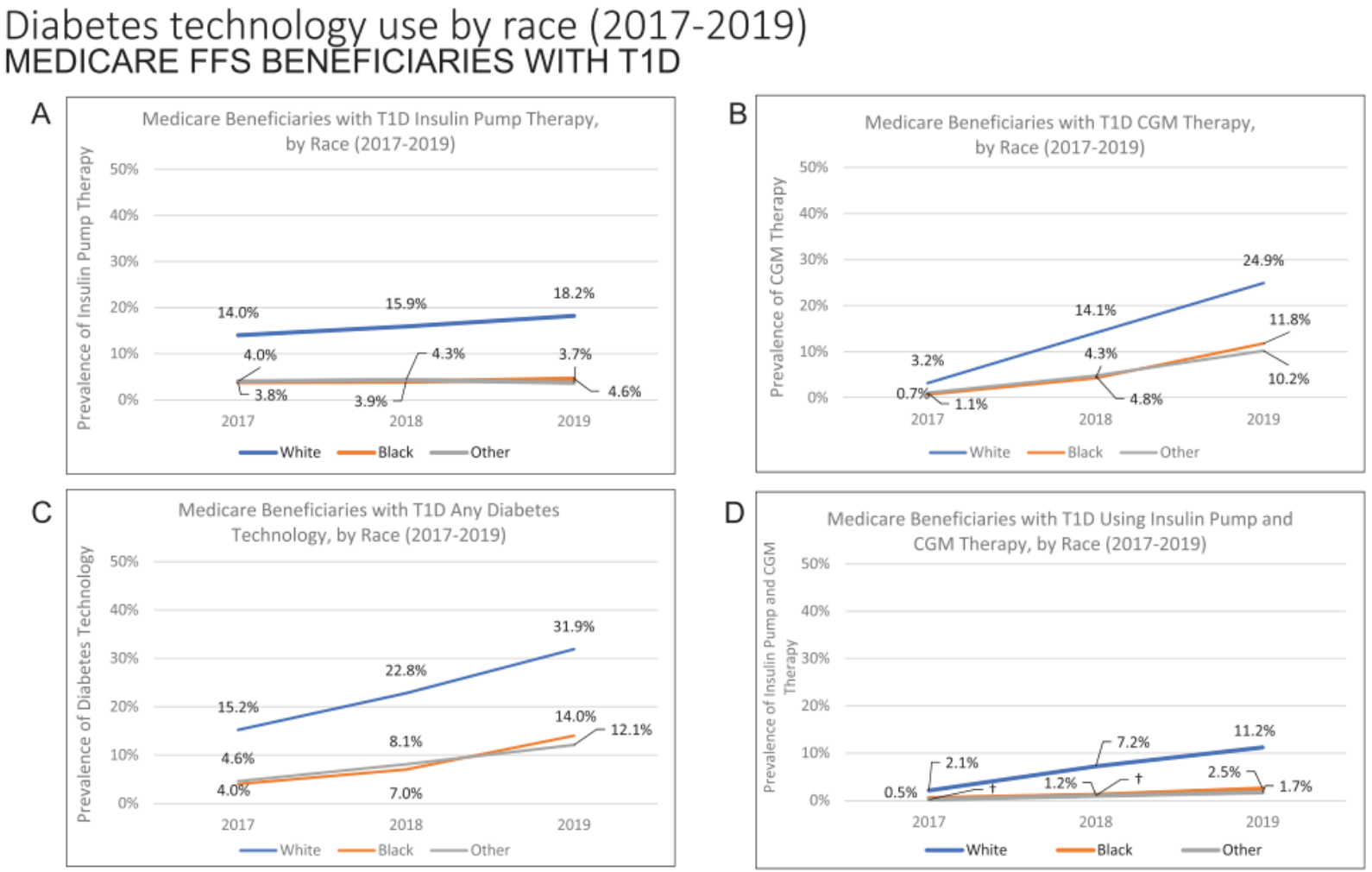
Agarwal, S, et al. Racial–Ethnic Disparities in Diabetes Technology use Among Young Adults with Type 1 Diabetes. Diabetes Technol Ther. April 2021; 23(4): 306–313. Published online 2021 Mar 22.

Data on Disparities in CGM Use Among Medicare Beneficiaries with T1D



Wherry K, et al. Wide Racial Gap for Diabetes Tech Use Among Medicare Patients. *J Clin Endocrinol Metab.* 2021

Disparities in CGM Use Among Medicare Beneficiaries with T1D



Wherry K, et al. Racial Disparities in Diabetes Technology Use and Outcomes in Type 1 Diabetes in a Safety-Net Hospital. *J Clin Endocrinol Metab.* 2021

T1D Exchange

Barries to CGM Use- What the Data Shows

- Insurance eligibility criteria
- Patient-provider factors
  - Patient preference
  - Implicit bias
  - Structural racism
  - Patient's behavior and knowledge
  - Provider behavior
  - Patient–provider interactions
- Organizational and institutional factors
  - Institutional eligibility and allocation of diabetes technologies
  - Clinics structure decision-making processes

Fantasia KL, Wirunsawanya K, Lee C, Rizo I. Racial Disparities in Diabetes Technology Use and Outcomes in Type 1 Diabetes in a Safety-Net Hospital. Journal of Diabetes Science and Technology. 2021 Sep;15(5):1010-1017.

Agarwal S, Schechter C, Gonzalez J, Long JA. Racial-Ethnic Disparities in Diabetes Technology use Among Young Adults with Type 1 Diabetes. Diabetes Technol Ther. 2021 Apr;23(4):306-313. doi: 10.1089/dia.2020.0338. Epub 2020 Dec 1.

Barries to CGM Use- What the Our Clinic Shows

- Not being able to meet the criteria for coverage
  - Finger sticks 3-4 times per day for a month- Medicaid
- Out of pocket cost
- Low level of understanding on use of device
- Keep falling off (Freestyle Libre 2)
- Excessive paperwork and follow up from provider level
- Time needed from providers to educate patients on CGM

Possible Interventions To Address Disparity Gap in CGM Use

- Remove strict eligibility of insurance coverage criteria
  - Provider advocate to insurance companies
- Evaluate:
  - Clinician decision making regarding the use of diabetes technology
  - Role of communication regarding diabetes technology with patients
  - Barriers patients face after prescribing diabetes technology should be evaluated

Agarwal S, Schechter C, Gonzalez J, Long JA. Racial-Ethnic Disparities in Diabetes Technology use Among Young Adults with Type 1 Diabetes. Diabetes Technol Ther. 2021 Apr;23(4):306-313.

Glycemic Optimization Clinic (GOC)

- Low technology use for patients in our clinic
  - <5% of patient come to us on technology
  - Barriers with affordability
  - Lack of proper support for those on pumps/CGMs (ie, time, resources to obtain supplies, etc)

- Development of GOC
  - Initiated as technology clinic, but evolved into clinic for people living with T1D
  - Goals:
    - Improve glycemic control and management for existing TID clinic patients
  - Patients to prioritize
    - Those with frequent admissions, particularly recurrent DKA, hypoglycemia
    - Those currently using diabetes technology (insulin pumps, continuous glucose monitors)
    - Those with significant social obstacles impacting adherence/care
  - Multidisciplinary management is key

Diabetes Clinic vs GOC Appointment Flow

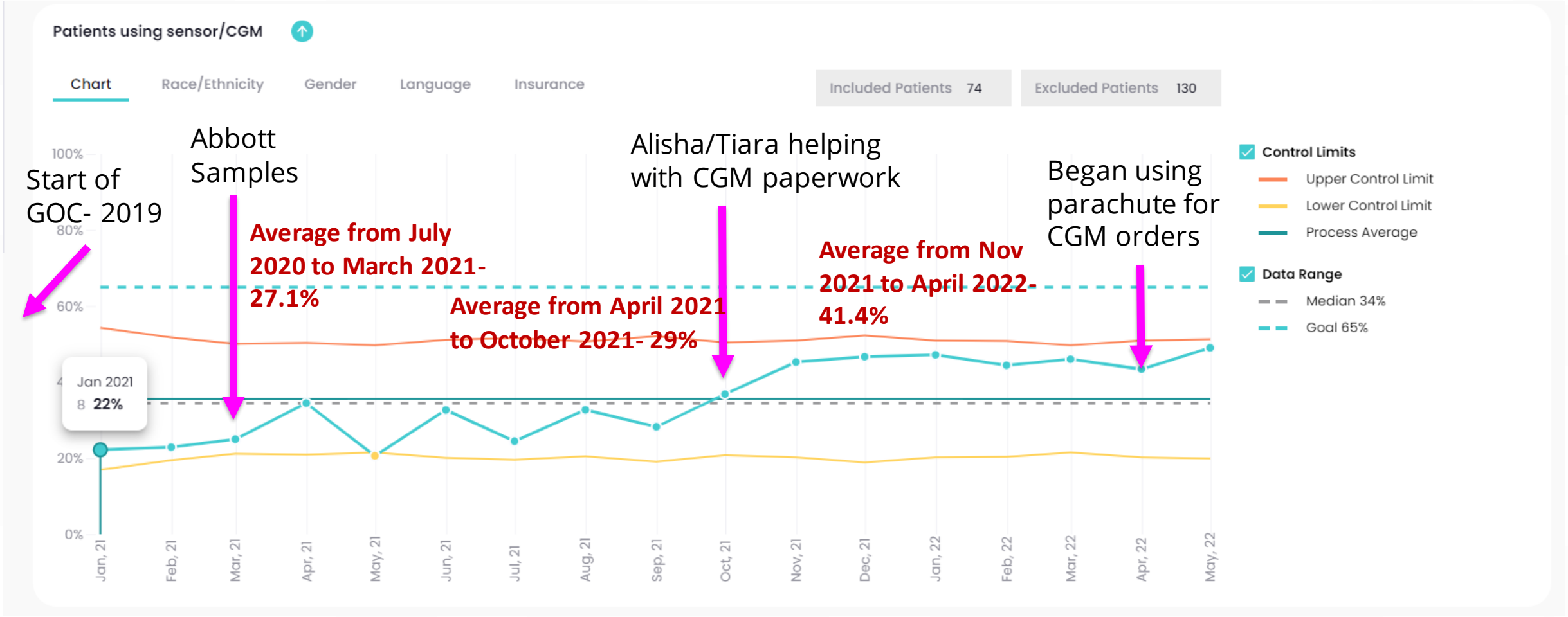
- **Diabetes Clinic**
  - Patients seen by MD for medical visit

    (30-minute appointments)
  - Discharged by RN to go over medication changes, medication teaching, and other relevant diabetes education
  - Patients assessed for other provider referrals. Usually do not see other providers on same day of their visit
  - Medication Access Coordinator

- **GOC**
  - Patient already established in diabetes center
  - See MD/PharmD/RD/CDCES/Social Worker/Medication Access Coordinator- interdisciplinary approach to care

    (60 to 90-minute appointments)
  - Follow up in GOC tailored to patient needs
    - Carb counting
    - Medication management
    - Insulin pump education/management
    - CGM education

CGM Use Over One Year



T1D Exchange

Population Analysis of Patients Using CGM

Race

Black/African Am.	183	89.7%
Other Race	10	4.9%
White	9	4.4%
Asian	1	0.5%
Unknown	1	0.5%

Ethnicity

NonHispanic or Latino	192	94.1%
Hispanic or Latino	10	4.9%
Unknown	2	1.0%

Age

31 - <50	89	41.6%
50 - <65	52	24.3%
18 - <26	35	16.4%
26 - <31	32	15.0%
≥65	6	2.8%

Insurance

Medicaid	98	45.6%
Medicare	41	19.1%
Private	34	15.8%
None, self pay	38	17.7%
Other	4	1.9%

Language

English	196	96.1%
Spanish	6	2.9%
Other	2	1.0%

Gender

Female	107	52.5%
Male	97	47.5%

T1D Exchange

Next Steps/Future Interventions

- CGM utilization vs CGM RX
  - Created flowsheet
- Method of implementation to capture correct data
- Continue to streamline process with parachute and having point person that will correspond with the various DME and insurance companies
- Continue to work towards offering CGM classes to promote continued CGM utilization with patients

Insulin Types and Doses

LONG ACTING INSULIN

Glargine (Lantus/Basalgar) | 70/30 N/R | NPH | Detemir (Levemir) | 70/30 N/Novolog | 75/25 N/Humalog | Degludec (Tresiba)

Long-acting insulin units at breakfast

Long-acting insulin units at lunch

Long-acting insulin units at supper

Long-acting insulin units H.S.

SHORT ACTING INSULIN

Aspart (Novolog) | Lispro (Humalog/Admelog) | Regular (Novolin or Hum... | Glulisine (Apidra) | U-500

Short-acting insulin units at breakfast

Short-acting insulin units at lunch

Short-acting insulin units at supper

Short-acting insulin units H.S.

Blood Glucose History

Tests/day (download)

Tests/day (self-report)

CGM

Yes | No

Before breakfast

Glucose range before breakfast

Hypoglycemia before breakfast

Yes | No

Post-Breakfast

Glucose range after breakfast

Hypoglycemia after breakfast

yes | no

Before lunch

Glucose range before lunch

Hypoglycemia before lunch

yes | no

Post lunch

Glucose range post lunch

Hypoglycemia after lunch

yes | no

Before dinner

Glucose range before dinner

Hypoglycemia before dinner

yes | no

After dinner

Glucose range after dinner

Hypoglycemia after dinner

yes | no

Bedtime

Glucose range at bedtime

Hypoglycemia at bedtime

yes | no

Since last visit

Last DM Clinic Appt

ER visits for diabetes

0 | 1 | 2 | 3 | 4 | 5 | >5

Hospitalizations for DKA or HHS

0 | 1 | 2 | 3 | 4 | 5 | >5

ED Visits or Hospitalizations for Hypoglycemia

0 | 1 | 2 | 3 | 4 | 5 | >5

Hypoglycemia requiring help:

LOC

0 | 1 | 2 | 3 | 4 | 5 | >5

Feel low when BG is <60?

Yes | No | Sometimes

Interval History Comments

Insulin Regimen

Date of Insulin Pump Start

Insulin Regimen

Pump + POC (Open Loop)	Sensor augment Pump (Open…	Hybrid Closed Loop
Low Glucose suspend	Predictive Low glucose Suspend	Other (free text)

Brand

Medtronic 530G	Medtronic 630G	Medtronic 770G	Omnipod Dash	Omnipod 5
T Slim X2 Basal IQ	Other (Comment)	None		

Carb Counting

Yes | No

I:C Ratio (e.g.1:10)

Boluses per day

Average Bolus units per day

Active Time

% of time in closed loop

Basal Rate:

From

To

Rate (Unit)

Total Daily Basal Insulin

Total Daily Basal Insulin (u/day)

T1DX-QI Publications Updates

Publications Policy

T1D Exchange Quality Improvement Collaborative (T1DX-QI) Publication Policy and Procedure

1. **Objectives**

   This policy describes the process for T1DX-QI publications and presentations.

2. **Definitions**

   T1DX-QI includes clinical centers participating in the collaborative that have signed data
   agreements with T1D Exchange and share data for quality improvement/population hea
   research.

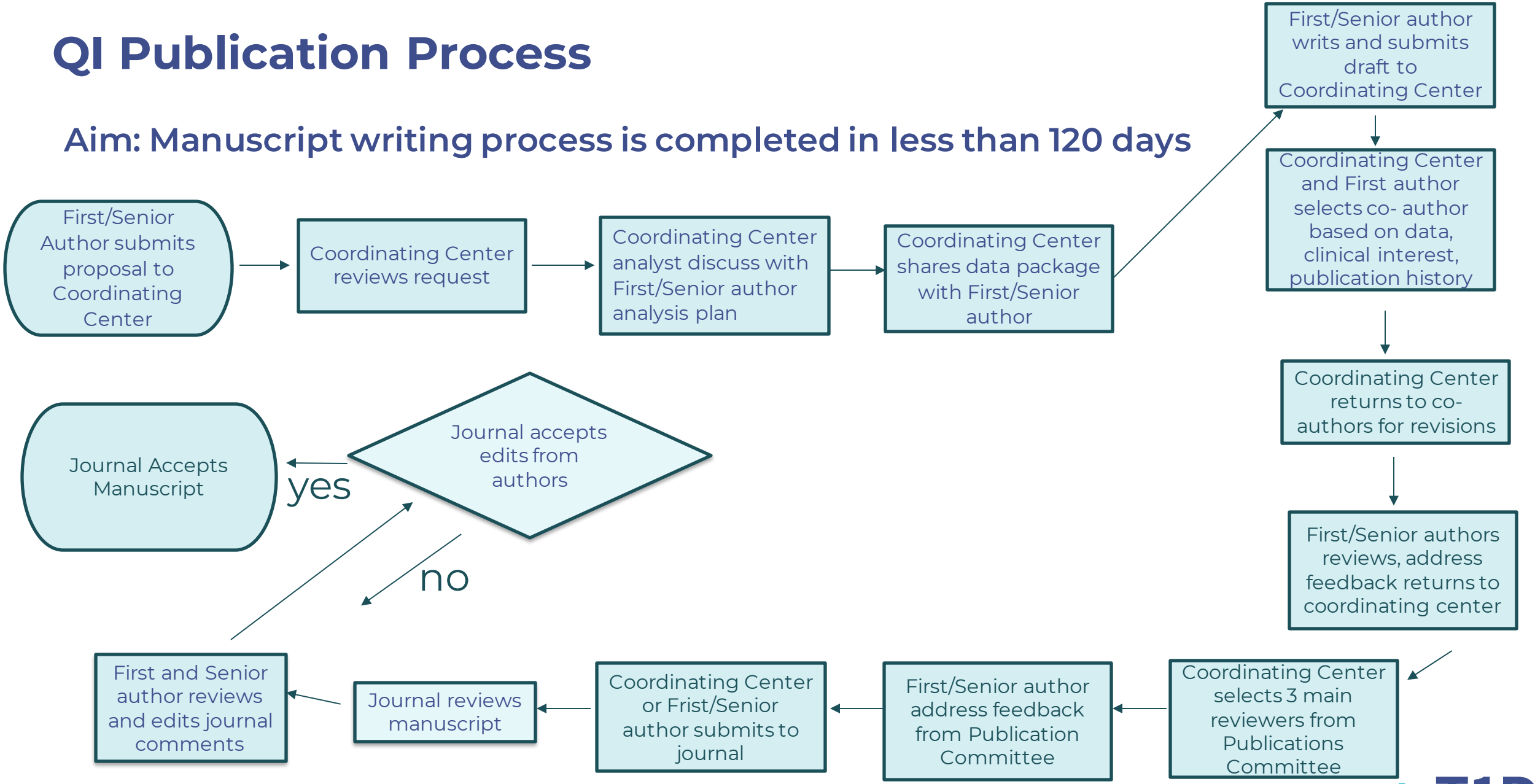
3. **Publications**

   A publication is any document submitted to a professional journal with regional or natio
   circulation. Approval of publications may be withheld until such time as deemed approp
   the Publication Committee. Prior publications and presentations can be found here.

   A. Projects can be proposed by completing the application form.
   B. Workflow process:
      i. First/Senior author submits proposal manuscript idea to Coordinating Cent

QI Publication Process

Aim: Manuscript writing process is completed in less than 120 days



Last revised 7/11/22

T1DX-QI HEALTH EQUITY STUDY IS ONE OF TOP TEN DISPARITIES ABSTRACT PRESENTED AT ADA 2022 SCIENTIFIC CONFERENCE

American Diabetes Association.
Connected for Life

June 1, 2022

Dear Dr. Osagie Ebekozien,

On behalf of the American Diabetes Association, we would like to extend our heartfelt congratulations to you on having been selected as a recipient of the National Health Disparities Committee's Top 10 Recommended Abstracts for the following abstract:

Abstract #4224
Inequities in Glycemic Outcomes for Patients with Type 1 Diabetes: Six-Year (2016–2021) Longitudinal Follow-Up by Race and Ethnicity of 36,390 Patients in the T1Dx-QI Collaborative

OSAGIE EBEKOZIEN, NUDRAT NOOR, MANMOHAN K. KAMBOJ, ORI ODUGBESAN, SHIDEH MAJIDI, RACHEL HOPKINS, EMILY L. DEWIT, ROBERTO IZQUIERDO, SHIVANI AGARWAL, ANASTASIA ALBANESE-O'NEILL, DAVID M. MAAHS, MARK A. CLEMENTS, T1DX-QI COLLABORATIVE

The Health Disparities Committee's Top 10 Recommended Abstracts recognizes health disparities related abstracts that have been accepted to the American Diabetes Association 82nd Scientific Sessions. These abstracts focus on health care disparities/inequities in diabetes outcomes. The ideal selections may detail research that helps us understand factors underlying diabetes disparities and inequities or demonstrates practical interventions that may contribute to eliminating them. For additional information please visit: professional.diabetes.org/HDCabstracts.

Once again, congratulations on this much-deserved recognition for your significant contributions to the diabetes community.

Sincerely,

Dr. A. Enrique Caballero
Harvard Medical School
Chair, National Health Disparities Committee

T1D Exchange

T1DX-QI PAPER IS THE CURRENT MOST CITED ARTICLE 2020-2022 IN THE JOURNAL OF DIABETES

Articles

Most Recent | **Most Cited** | Most Read

The most cited articles published in the last 2 years , according to crossref.

RESEARCH LETTER | Free Access

Increased DKA at presentation among newly diagnosed type 1 diabetes patients with or without COVID-19: Data from a multi-site surveillance registry

Kara Beliard, Osagie Ebekozien, Carla Demeterco-Berggren, Guy Todd Alonso, Mary Pat Gallagher, Mark Clements, Robert Rapaport

Journal of Diabetes | Pages: 270-272 | First Published: 7 December 2020

TABLE 1 Patient demographic and clinical indicators of newly diagnosed T1D and COVID-19 (April–August 2020)

	Category	Positive COVID-19 test (n = 24)	Negative COVID-19 test (n = 124)	*P* value
Mean age at diagnosis (SD)		15.64 (15.35)	10.84 (5. 43)	.14
Age categories	0-10 y/o	7 (29)	59 (48)	.11
	11-19 y/o	15 (63)	64 (52)	.37
	>19 y/o	2 (8)	1 (1)	.06
Gender	Female	13 (54)	59 (48)	.65
Race/ethnicity	NH White	3 (13)	75 (60)	<.001
	NH Black	7 (29)	0 (0)	<.001
	Hispanic	10 (42)	26 (21)	.03
	Other/unknown	4 (17)	23 (19)	1
Median HgA1C (IQR)		12.4 (2.9)	13.1 (2.7)	.55
Insurance*	Public	18 (75)	48 (39)	.001
	Private	6 (25)	71 (57)	.006
	Uninsured	0 (0)	5 (4)	1
DKA on presentation	Yes	16 (67)	77 (62)	.81
	No	8 (33)	47 (38)	.81

Note: Data are represented as mean, median (SD), and n (%).
Abbreviations: COVID-19, coronavirus disease 2019; DKA, diabetic ketoacidosis; HbA1c, glycosylated hemoglobin; IQR, interquartile range; NH, non-Hispanic; SD, standard deviation; T1D, type 1 diabetes.
*Public insurance is subsidized or paid for by government funds, while private insurance is paid for by the individual.

Highlights

- Our multicenter study reports a higher proportion of diabetic ketoacidosis presentation of over 60% in newly diagnosed patients with type 1 diabetes with or without confirmed coronavirus disease 2019 (COVID-19) at diagnosis.
- This finding is suggestive of delays in seeking care during the COVID-19 pandemic.

Abstract | Full text | PDF | References | Request permissions

T1D Exchange

T1DX-QI PAPER IS ONE OF TOP FIVE MOST READ ARTICLE 2020-2022 IN THE JOURNAL OF DIABETES

Articles

Most Recent | Most Cited | Most Read

The most read articles published in the last 2 years

Open Access

Prevalence and impact of diabetes in hospitalized COVID-19 patients: A systematic review and meta-analysis

Sian A. Bradley, Maciej Banach, Negman Alvarado, Ivica Smokovski, Sonu M. M. Bhaskar

Journal of Diabetes | Pages: 144-157 | First Published: 23 December 2021

Abstract | Full text | PDF | References | Request permissions

Open Access

Time-limited diets and the gut microbiota in cardiometabolic disease

Karina Ratiner, Hagit Shapiro, Kim Goldenberg, Eran Elinav

Journal of Diabetes | Pages: 377-393 | First Published: 13 June 2022

Abstract | Full text | PDF | References | Request permissions

Free Access

New-onset diabetes in "long COVID"

Thirunavukkarasu Sathish, Mary Chandrika Anton, Tharsan Sivakumar

Journal of Diabetes | Pages: 693-694 | First Published: 23 April 2021

Full text | PDF | References | Request permissions

Free Access

Diabetic ketoacidosis drives COVID-19 related hospitalizations in children with type 1 diabetes

Guy Todd Alonso, Osagie Ebekozien, Mary Pat Gallagher, Saketh Rompicherla, Sarah K. Lyons, Abha Choudhary, Shideh Majidi, Catherina T. Pinnaro, Sadana Balachandar, Mariam Gangat, Alissa Jeanne Curda Roberts, Brynn E. Marks, Ana Creo, Janine Sanchez, Tossaporn Seeherunvong, Jose Jimenez-Vega, Neha S. Patel, Jamie R. Wood, Liana Gabriel, Kathryn M. Sumpter, Meredith Wilkes, Robert Rapaport, Anna Cymbaluk, Jenise C. Wong, Srinath Sanda, Anastasia Albanese-O'neill

Journal of Diabetes | Pages: 681-687 | First Published: 14 April 2021

Abstract | Full text | PDF | References | Request permissions

T1D Exchange

T1DX-QI PAPER WAS ONE OF THE TOP TEN PERCENT CITED ARTICLE 2020-2022 IN THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

JCEM THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

Dear Drs. Grenye O'Malley; Osagie Ebekozien; Marisa Desimone; Catherina T Pinnaro; Alissa Roberts; Sarit Polsky; Nudrat Noor; Grazia Aleppo; Marina Basina; Michael Tansey; Devin Steenkamp; Francesco Vendrame; Ilona Lorincz; Priyanka Mathias; Shivani Agarwal; Lauren Golden; Irl B Hirsh; Carol J. Levy,

Congratulations! Your *The Journal of Clinical Endocrinology & Metabolism* paper "COVID-19 Hospitalization in Adults with Type 1 Diabetes: Results from the T1D Exchange Multi-Center Surveillance Study" was one of the top 10 percent of articles published in the journal in 2020-2021, as assessed by rate of citation.

As you consider where to publish forthcoming work, I hope you will consider submitting your research to the Endocrine Society's family of journals. By publishing with us, you will ensure that your work will reach a global audience of influential researchers. We are delighted with the peer recognition, visibility, and readership impact your paper has received, and we would welcome the opportunity to work with you again in the future.

Please feel free to contact me to discuss your research - I am interested in learning how we can collaborate on your upcoming projects. I look forward to hearing from you, and once again, congratulations!

Tim Bearley

T1D Exchange

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JCEM THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

Dear Drs. Osagie Ebekozien; Shivani Agarwal; Nudrat Noor; Anastasia Albanese O Neil; Jenise C. Wong; Tossaporn Seeherunvong; Janine Sanchez; Daniel DeSalvo; Sarah K. Lyons; Shideh Majidi; Jamie R. Wood; Runa Acharya; Grazia Aleppo; Kathryn M. Sumpter; Anna Cymbaluk; Nirali A. Shah; Michelle Van Name; Lisa Cruz-Aviles; Guy Todd Alonso; Mary Pat Gallagher; Srinath Sanda; Alexis Jamie Feuer; Kristina Cossen; Nicole Rioles; Nana-Hawa Yayah Jones; Manmohan K. Kamboj; Irl B Hirsch,

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Please feel free to contact me to discuss your research - I am interested in learning how we can collaborate on your upcoming projects. I look forward to hearing from you, and once again, congratulations!

Tim Bearday

T1D Exchange

QI Portal Updates

QI Portal – April – July 2022 updates

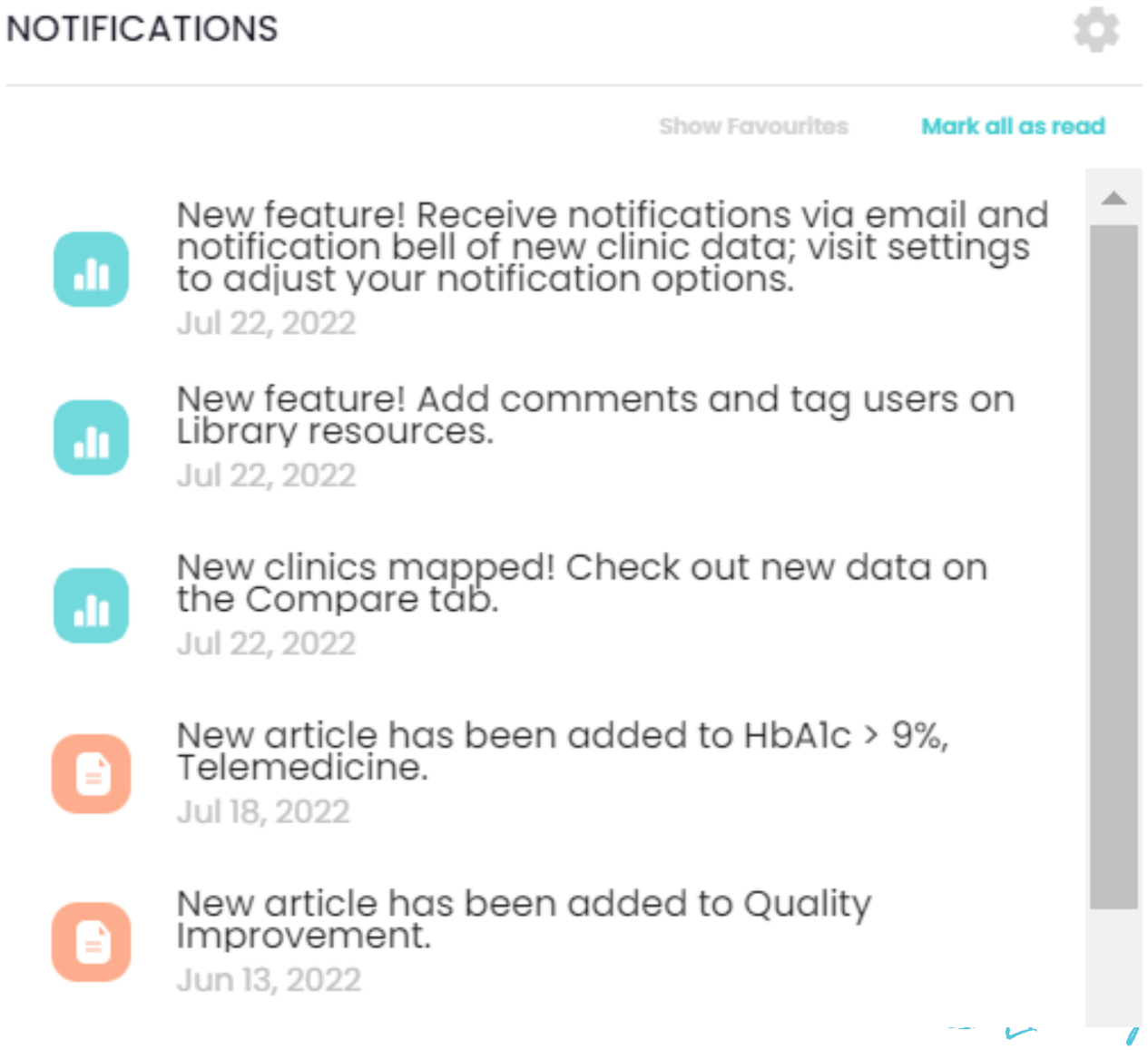
Expanded Health Equity features!

QI Portal – April – July 2022 updates

New notification bell!

- Notifications for new:
  - QI Portal features
  - Clinic data
  - Library article

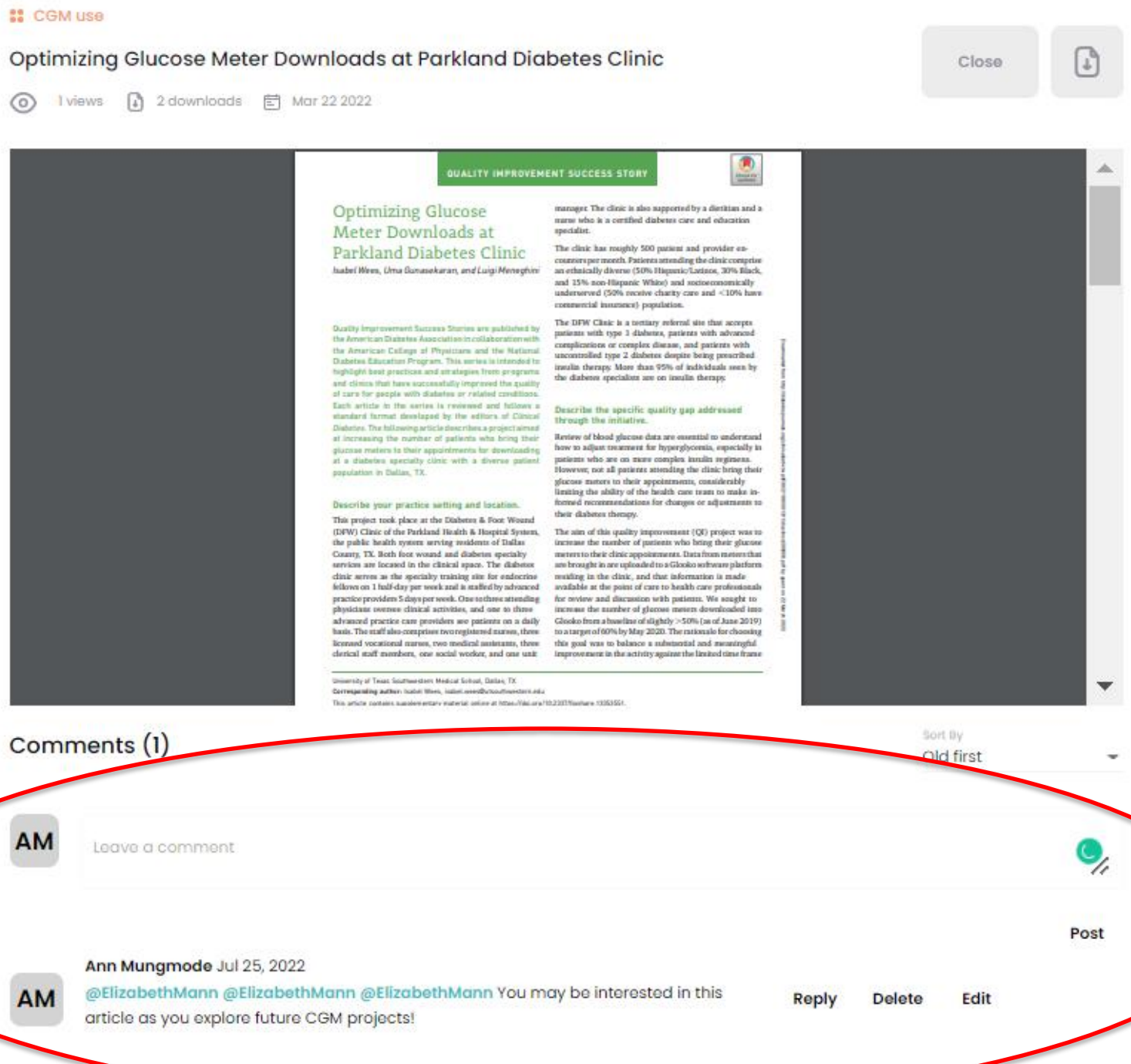
- Change notification type in Settings



QI Portal – April – July 2022 updates

New metrics! Time in Range and Social Determinants of Health

New library comments!



Seize the Data! Contest – September 2022

Explore the QI Portal and win a prize!

From 9-1 through 9/30, T1DX-QI will host a Seize the Data! Contest!

Weekly awards will be given for:

- Highest # of logins
- Each login = one chance to win
- Bonus chances to win if access all four QI Portal tabs