T1D Exchange

QI Collaborative Call, Adults

1/25/22

Welcome & introductions

Agenda

- Welcome & introductions
- Updates from the Collaborative
  - New staff!
  - Welcome to the Cleveland Clinic!
  - Plans for May Leadership/PI Session
  - Website updates
  - Committee Chair opportunities
- Albert Einstein Presentation, Drs. Agarwal and Mathias
- Mount Sinai, Dr. Levy
- Quarterly data results & QI Portal, Ann Mungmode

T1D Exchange Updates

29 pediatric clinics – caring for 38,500+ patients with T1D

14 adult clinics – caring for 19,500+ patients with T1D

Welcome to the Cleveland Clinic!

Adult PI: Pratibha PR Rao, MD, MPH

Pediatric PI: Andrea Mucci, MD, MASc

Welcome!

New team member at T1DX-QI!

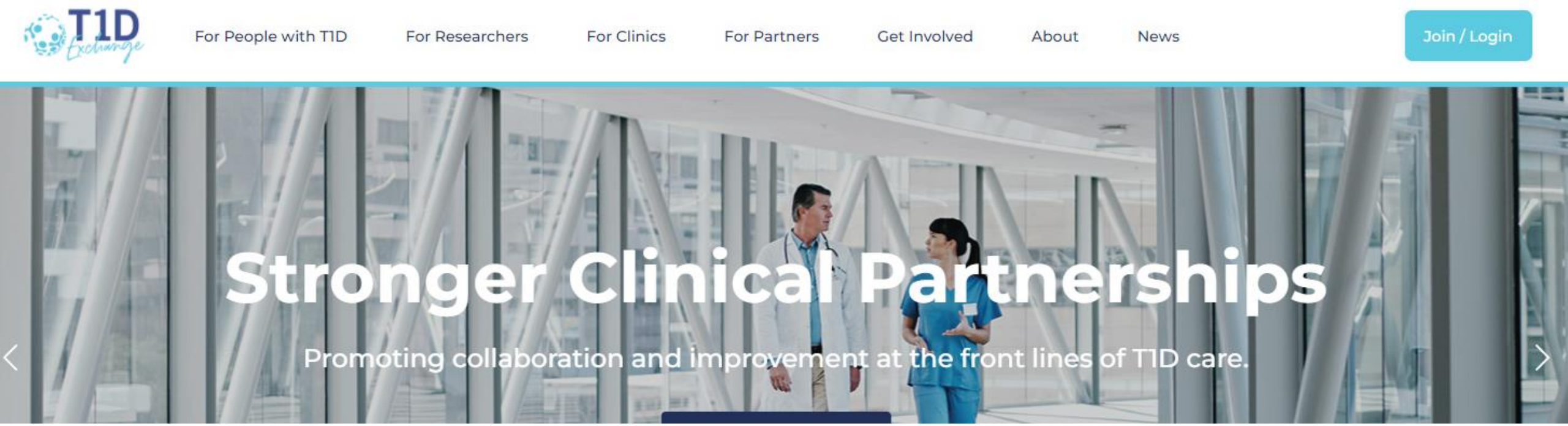
QI Coordinator,
Holly Hardison, BS

Holly Hardison joined the Collaborative on 1/10 as our coordinator. She came from Baptist Health Research Institute in Jacksonville, FL where she held the position of Clinical Research Assistant, working on cardiology, covid and neurology research studies. Holly previously held the position of Camp Director for the American Diabetes Association in Jacksonville, FL Holly brings strong organization skills, event planning and problem-solving skills, and a lot of enthusiasm! She graduated from Jacksonville University with a BS in Biology.

Holly can be reached at hhardison@t1dexchange.org or X7210

PI/Clinical Leadership Planning Session May 16-17 will be virtual, 11am-4pm EST

T1D Exchange Website will have a password protected space for Collaborative, beginning 3/1/22



We will 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

T1DX-QI Committee Chair Roles

T1DX-QI Is looking for new committee chairs

We are looking for new Co-Chairs to help us lead the committees.

Terms last for twenty-four (24 months) and the new term will begin 6/1/2022.

Each committee has two co-chairs from a pediatric and adult clinic.

Expectations* of Committee Chairs:

- Facilitate quarterly committee meetings
- Create the vision for the future direction of the committee and its impact on the QI Collaborative's future
- Participate in one planning meeting with their co-chair and with the T1DX-QI coordinating center staff for 30 or 60 minutes
- Facilitate or co-facilitate committee meetings
- Participate in the development of content related to the committees.
- *In addition to these tasks, Publications Committee Co-Chairs also review and edit abstracts and manuscripts that are written by the Collaborative.

T1DX-QI Is looking for new committee chairs

T1DX-QI Chair terms are ending in June 2022.

Please use this form to nominate yourself for a T1DX-QI Committee Chair position for the 2022-2024 period or share with a colleague who you think would be a good match.

If you are interested in applying for one of the committee roles, please complete the Nomination Form before Monday February 28th.

To learn more about the committees, please visit these Trello pages:
Clinical Leadership: https://trello.com/b/4F3ABcug/clinical-leadership-committee
Publications: https://trello.com/b/K5EUYxbf/updated-publications-committee
Data Science: https://trello.com/b/YmmgugBB/data-science-committee

Clinical Presentation: Albert Einstein

Learning Objectives

1. Understand the various challenges that young adults with type 1 diabetes face that interfere with diabetes self-management and attainment of glycemic goals

2. Learn about innovative clinical models that can address racial-ethnic disparities in outcomes among young adults with type 1 diabetes

Supporting Emerging Adults with Type 1 Diabetes

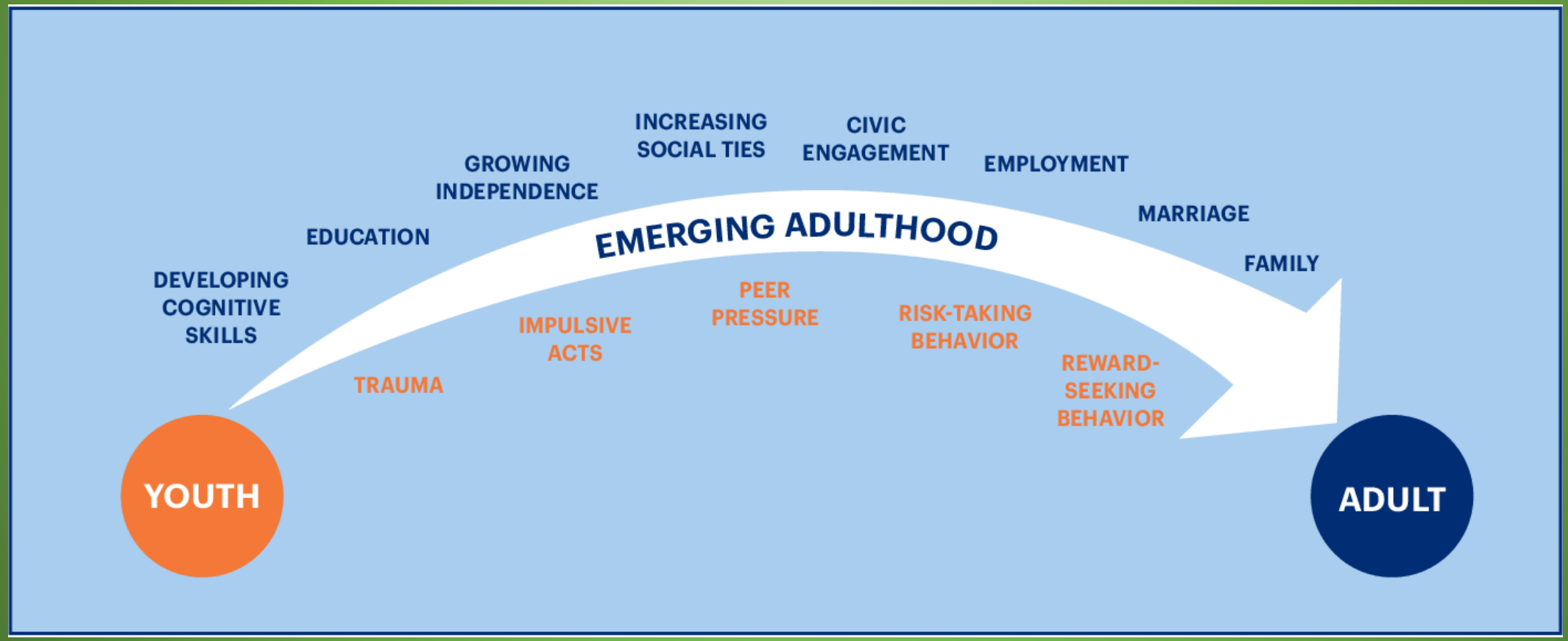
The SEAD program

Shivani Agarwal MD, MPH

Assistant Professor of Medicine-Endocrinology
Albert Einstein College of Medicine-Montefiore Medical Center
Bronx, NY

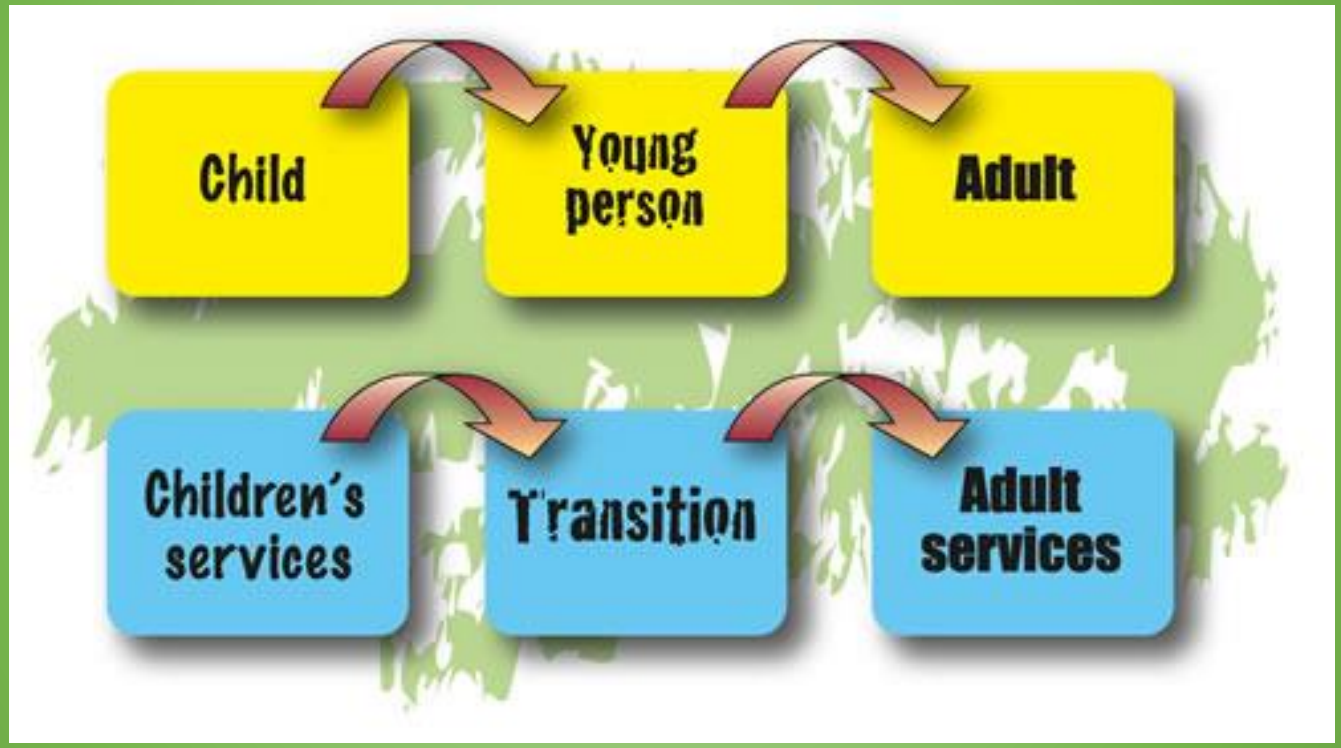
Challenge #1: Development from Child to Adult

Emerging adulthood is proposed as a new conception of development for the period from the late teens through the twenties, with a focus on ages 18–25. A theoretical back-



Arnett. Emerging Adulthood. 2000

Challenge #2: Healthcare Transition



Lyons et al. JCEM 2015

Challenge #3: Racial-Ethnic Disparities

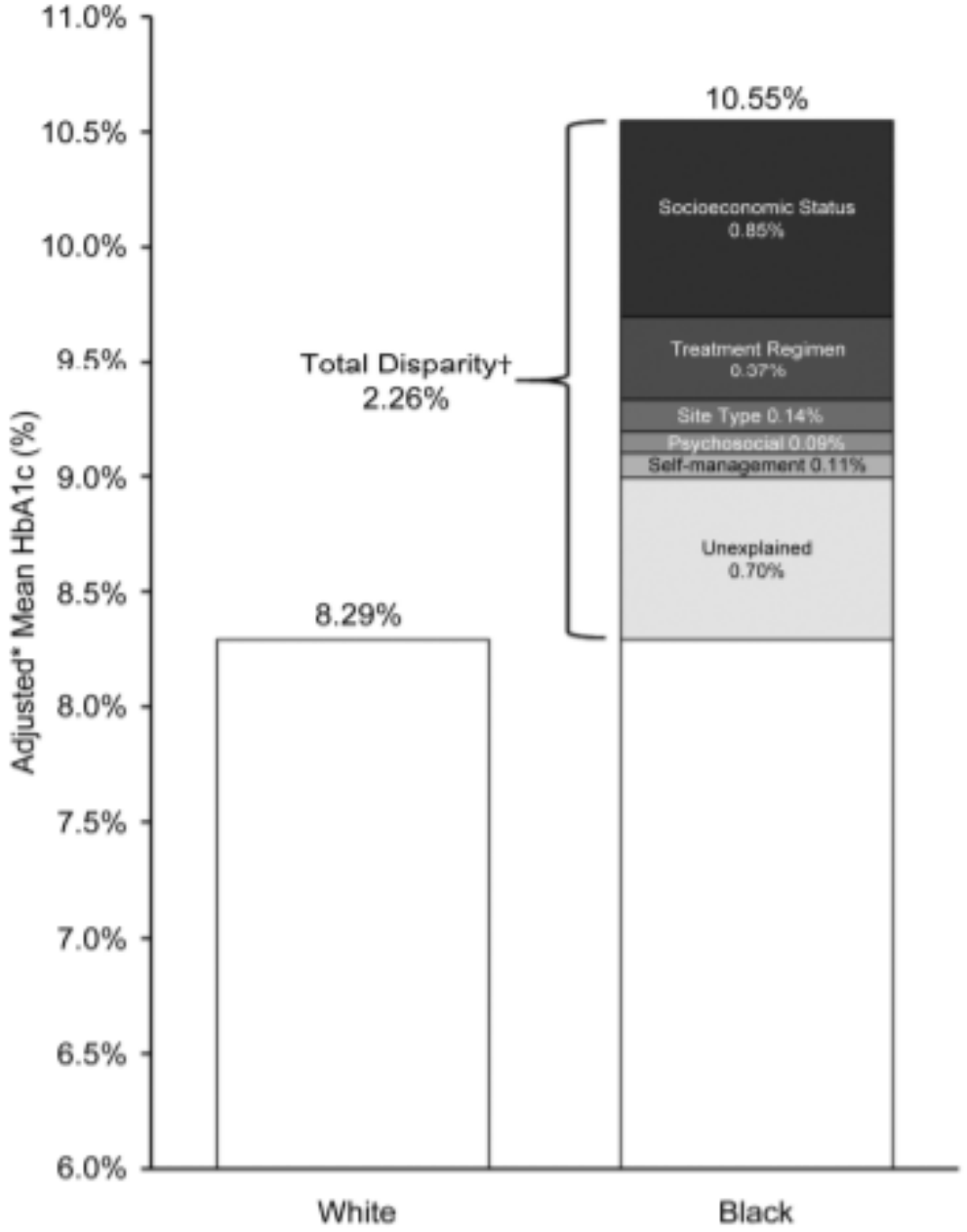


Figure 1. Portion of the total HbA1c disparity between Black and White participants that is explained by each variable group.

Agarwal et. al, JCEM, 2020

DIABETES TECHNOLOGY & THERAPEUTICS
Volume 23, Number 4, 2021

DOI: 10.1089/dia.2020.0338

DTT

ORIGINAL ARTICLE

Racial–Ethnic Disparities in Diabetes Technology Use Among Young Adults with Type 1 Diabetes

Shivani Agarwal, MD, MPH,[1] Clyde Schechter, MD,[2]
Jeffrey Gonzalez, PhD,[1,3] and Judith A. Long, MD[4,5]

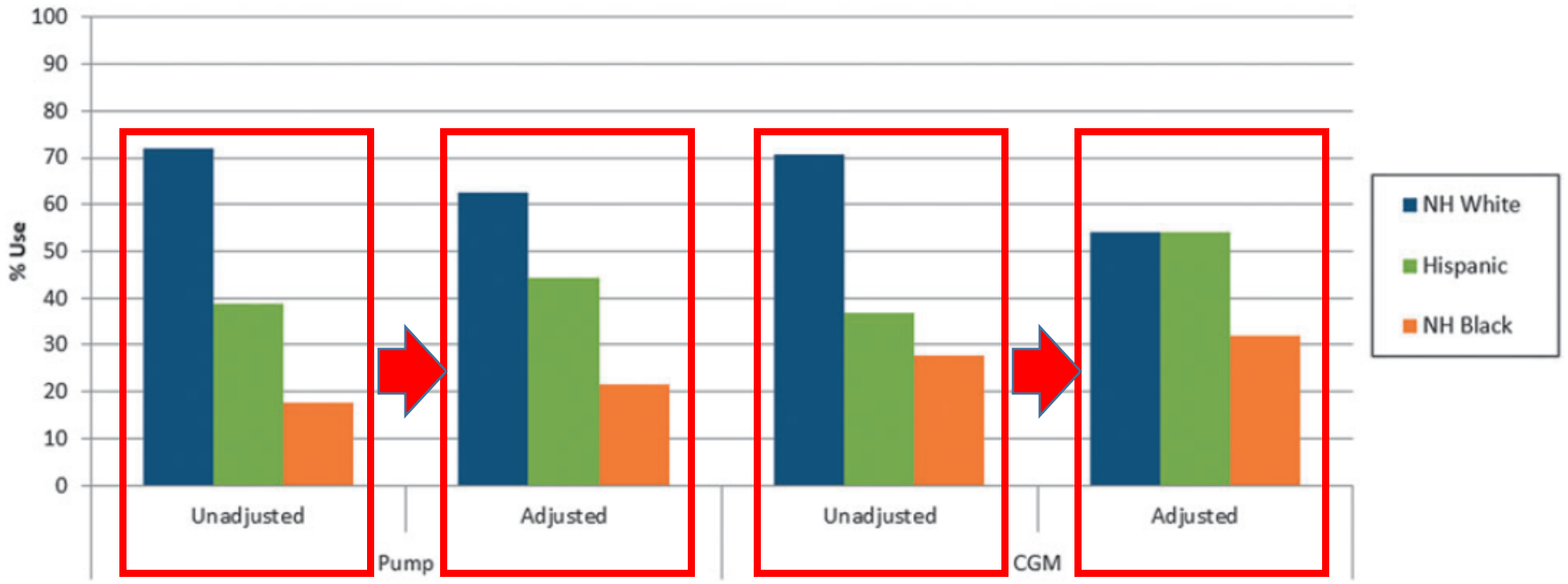


FIG. 1. Percentage of YA with T1D in each racial–ethnic group using insulin pump and CGM comparing unadjusted and fully adjusted estimates. CGM, continuous glucose monitor; T1D, type 1 diabetes; YA, young adults.

Agarwal, DTT, 2020

Result of Challenges:

VERY Poor Medical and Psychological Outcomes


ADVICE FOR
Transitoin Groops
'cos it's not
all a bed
of roses

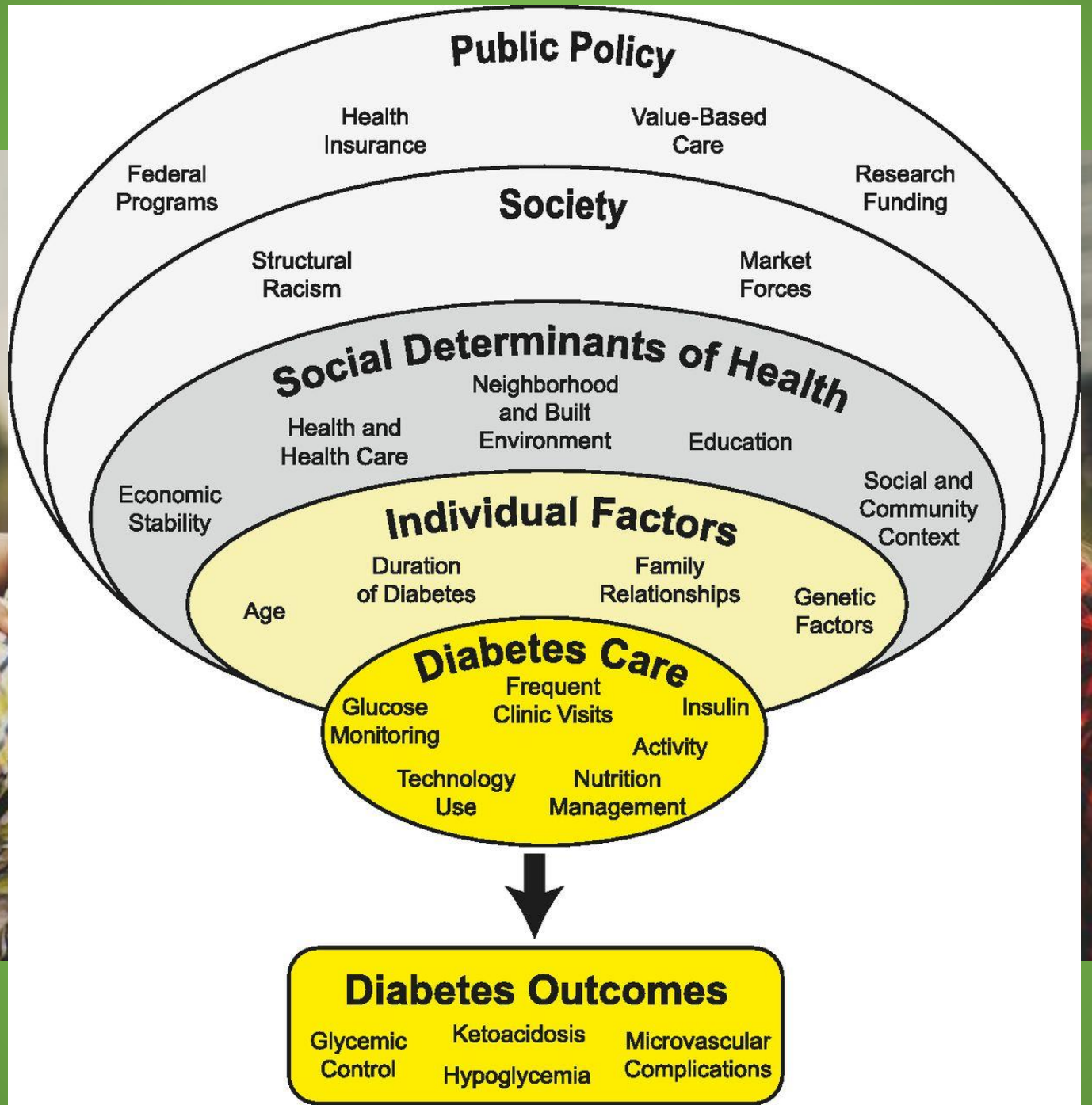
The Supporting Emerging Adults with Diabetes (SEAD) Program

SEAD

Supporting Emerging Adults with Diabetes

FLEISCHER INSTITUTE for Diabetes & Metabolism

Montefiore EINSTEIN



Lipman and Hawkes, Diabetes Care, 2021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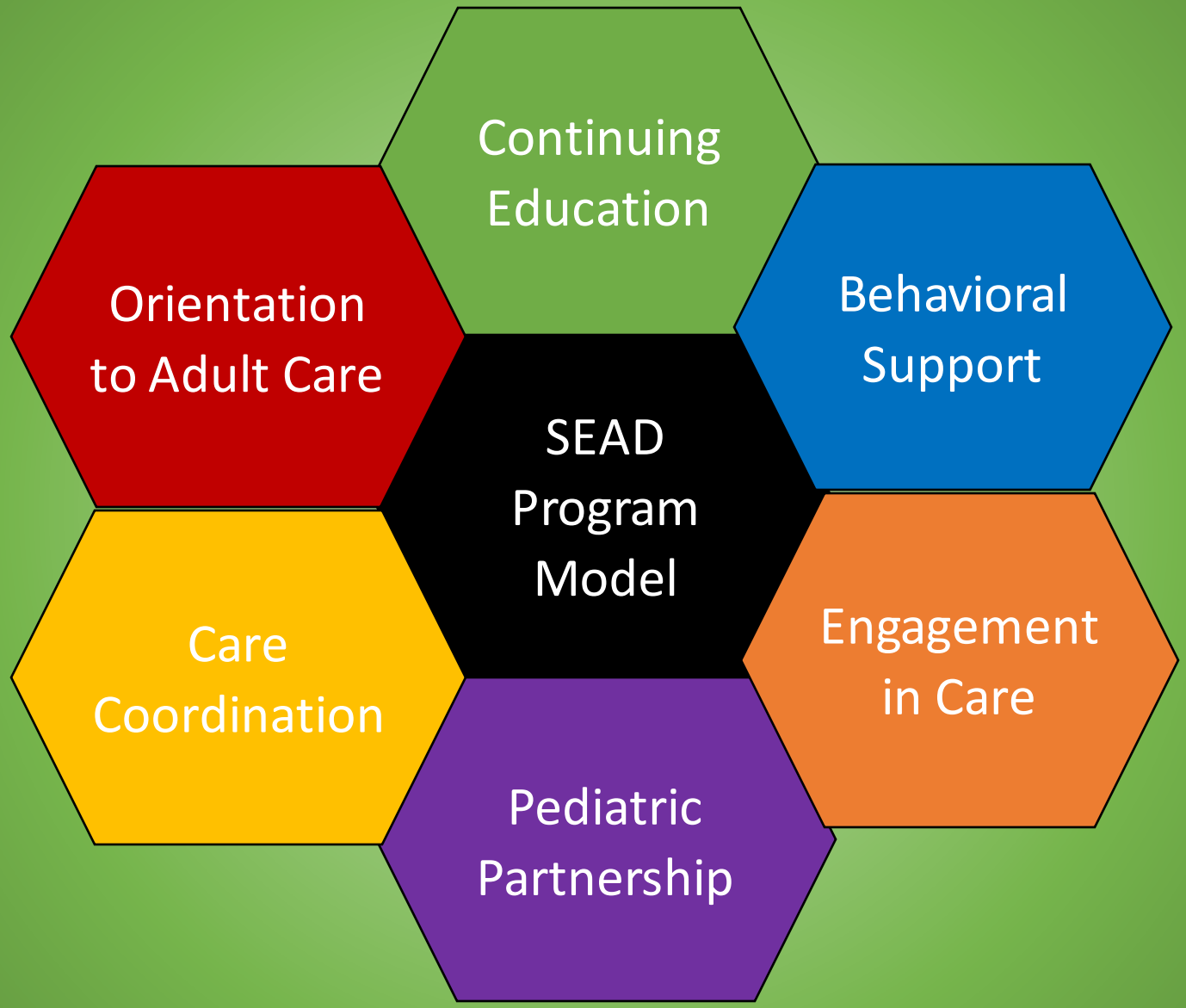

Agarwal et al. Diabetes Educator 2016

Evolution of SEAD

Shivani Agarwal MD, MPH

Priyanka Mathias MD

Michael Greenberg NP

SEAD

Supporting Emerging Adults with Diabetes

Young Adults

Trainees

Sharon Movsas, RD Dietician

Molly Finnan Program Manager

Lourdes Lebron Social Needs Coordinator and Tech Specialist

Stephanie Leung, PhD Psychologist

- Talk to patients
- Equity focus
- Manage expectations
- Build people up, emphasize positives
- Manage negatives
- Avoid doomsday talk

Multi-Specialty Visits

- Multi-Specialty Visits
- YA Programming
- Weekly Complex Case Review
- Patient Advisory Board

You are invited to the

2019 Young Adult Diabetes Day

At the Bronx Zoo!

Ages 16-30

- **Please join us for an afternoon of conversations about the challenges of being a young adult with type 1 diabetes.**
- **Get a chance to meet the Young Adult Diabetes Care Team at Einstein/Montefiore.**

When: Tuesday, August 6th, 2019, from 1-4:30pm

- 12:30 pm Doors open, please arrive on time.
- 1:00 - 1:30 pm Speakers Dr. Shivani Agarwal and NP Michael Greenberg
- 1:45 - 2:45 pm Breakout Session 1
- 3:00 – 4:00 pm Breakout Session 2
- 4:00 – 4:30 pm Closing Remarks

Where: the Bronx Zoo

- You must enter at Southern Boulevard for check in (see page 2).

RSVP: By July 17th, 2019

- Please call: **347-498-2445** and speak to a member of our staff.
- RSVP MUST INCLUDE: Name and age of person with diabetes, contact phone number, name of guest (1 guest allowed).
- Patient must attend.
- If you arrive after 1:10 pm, you will not be able to enter.
- Space is limited. Only those who RSVP will be allowed entrance.
- Rain or shine.

EINSTEIN
Albert Einstein College of Medicine

Montefiore
Fleischer Institute for Diabetes and Metabolism

FLEISCHER INSTITUTE for Diabetes & Metabolism

SEAD Supporting Emerging Adults with Diabetes

SCAN ME

Type 1 Diabetes Virtual Meet-Ups

FREE 1-Hour Zoom Sessions

Two Available Sessions Per Month

Interact with other young adults with T1D + SEAD Staff

Drop-In Style: you choose which group you want to attend and when

Learn and Share Ideas on Various T1D Topics

- Stress Management
- Social Support
- Let's Be Friends: Improving Communication with Parents & Friends
- Let's Get Physical: Exercise Tips
- Squashing Stigma
- Coping with COVID-19
- Cooling Down from Diabetes Burnout
- Sex, Drugs, and Rock & Roll
- Tech-Talks: Diabetes Technology Tips
- Recipes & Carb Counting

FLEISCHER INSTITUTE for Diabetes & Metabolism

SEAD Supporting Emerging Adults with Diabetes

SCAN ME

Life as a Young Adult with Type 1 Diabetes

Come join our July Virtual Meet-Up!

Thursday, July 15 5-6 pm

Live Zoom Session with SEAD Providers

Scan the QR code or enter through the Zoom Link

Zoom Link: *https://einsteinmed.zoom.us/j/96249462932*

Preliminary Philly SEAD Outcomes

An Adult Health Care–Based Pediatric to Adult Transition Program for Emerging Adults With Type 1 Diabetes

Shivani Agarwal, MD, MPH
Jennifer K. Raymond, MD, MCR
Mark H. Schutta, MD
Serena Cardillo, MD
Victoria A. Miller, PhD
Judith A. Long, MD

Purpose

The purpose of the study was to evaluate an adult health care program model for emerging adults with type 1 diabetes transitioning from pediatric to adult care.

Methods

Comparison of Outcomes at Baseline and 6 Months After Intervention[a]

	Baseline	6 mo	Δ	*t*	*P* Value
A1C					
%	9.7 ± 2.38	9.0 ± 1.88	−0.7	9.72	<.001
mmol/mol	83	75	8		
BGMF, checks/d	2.5 ± 1.94	3.5 ± 1.62	+1.0	13.16	<.001

Abbreviations: BGMF, blood glucose monitoring frequency.
[a]Adjusted for baseline A1C or BGMF, sex, diabetes duration, race, and insulin regimen (N = 72).

Agarwal et al. Diabetes Educator 2016

Open-ended Responses from Emerging Adults and Pediatric and Adult Providers

Participants	Responses
Emerging adults	
Developmentally appropriate reactions	Focused on my specific needs.
	More specific for my age group and helping me with my transition into adulthood with diabetes.
Increased motivation	I feel very motivated and I'm getting the help that I have needed with my diabetes.
	I felt really informed and comfortable.
Logistics	It was very difficult getting to the medical center and finding parking.
	I always worry about being late because of the traffic situation.
Pediatric providers	
Strengths	Adult team really cares about patients at a difficult time in their lives.
	Organized and easy transfer process.
	Benefits patients in a unique way.
Ideas for improvement	Collaborative in-person conferences between the pediatric and adult care teams.
	Utilization of a pediatric liaison to meet with the adult team.
	Adult team should notify the pediatric team of issues contacting patients.
Adult providers	
Strengths	Expertise and commitment of adult providers, compassion mixed with skills and knowledge.
	The ability to communicate with the young transitioning adult which makes them feel as through the process does not hinder their care.
	Program helps keep the patient engaged in his/her care at a time in life when BG [blood glucose] control may be poor.
Ideas for improvement	More frequent visits.
	Accommodating clinic slots during afternoon or evening hours that align with patients' school schedules.

Preliminary Bronx SEAD Outcomes

Variable Mean ± SD or % (n) (N=79)	Before SEAD	1 Year of SEAD	P-Value
HbA1c (%)	9.2 ± 2.2	8.9 ± 2.3	0.10
HbA1c ≥9%	43 (34)	35 (28)	0.000
Visit attendance	2.5± 1.3	2.3±2.3	0.36
DM technology	38 (30)	56 (44)	0.000


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2021-2022 SEAD Research Lab

Gladys Crespo-Ramos, PhD

Stephanie Leung, PhD

Molly Finnan, BA

Priyanka Mathias, MD

Priyanka Mahali, MD

Rabail Sadiq, MD

Gladys Crespo-Ramos, PhD

Provider Factors and Young Adult T1D Outcomes

Molly Finnan, BA

Racial-Ethnic Differences in Barriers to Self-Care

Rabail Sadiq, MD

Racial-Ethnic Differences in Diabetes Self-Care and Contributing Factors

Priyanka Mahali, MD

Young Adult Type 1 Diabetes Self-Management App

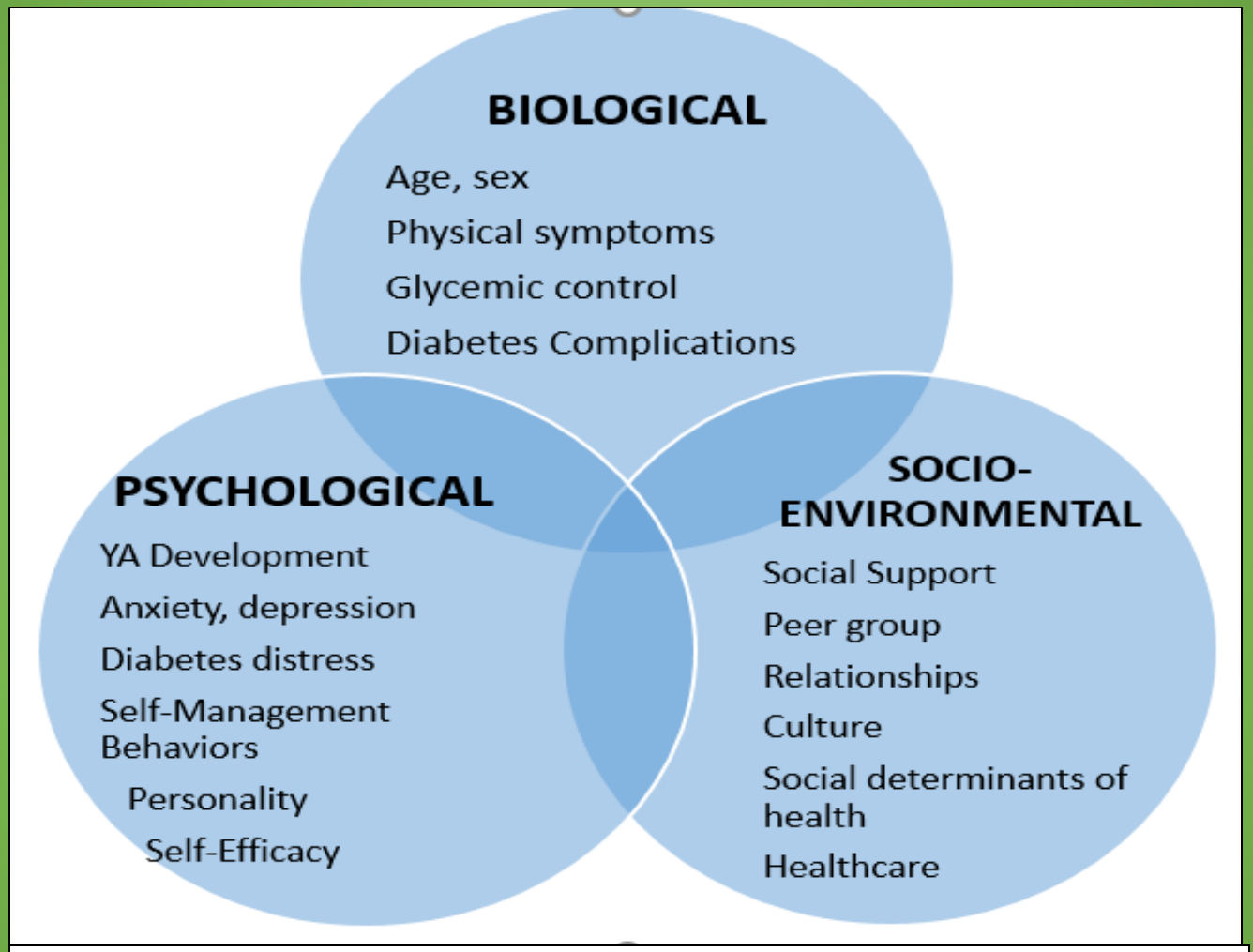

Figure 1. Biopsychosocial Model of Health in Underrepresented Young Adults with Diabetes

Finnan and Agarwal, Diabetes Spectrum 2021


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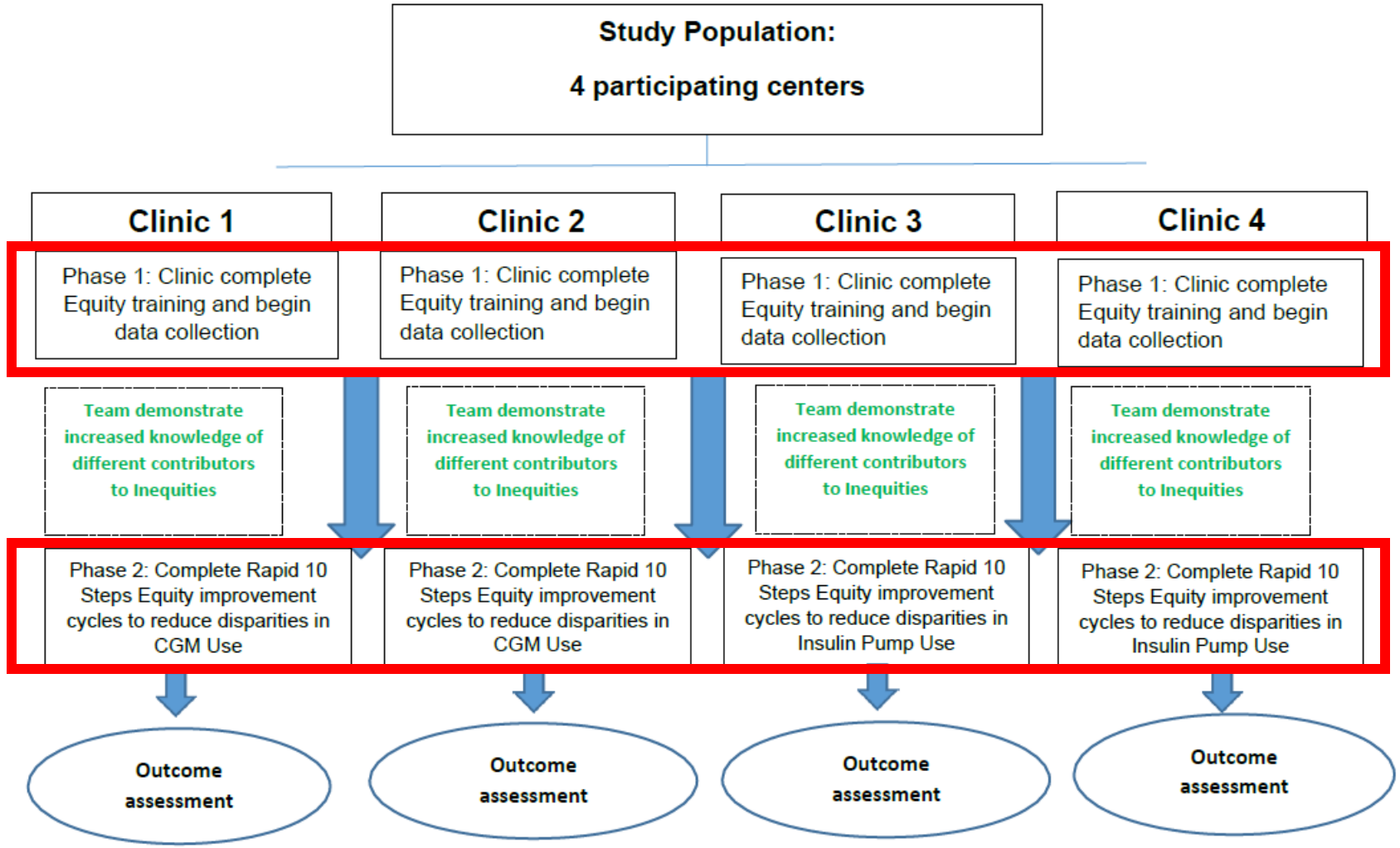
Priyanka Mathias, MD

New T1D Equity Framework Partnership with Medtronic Inc.

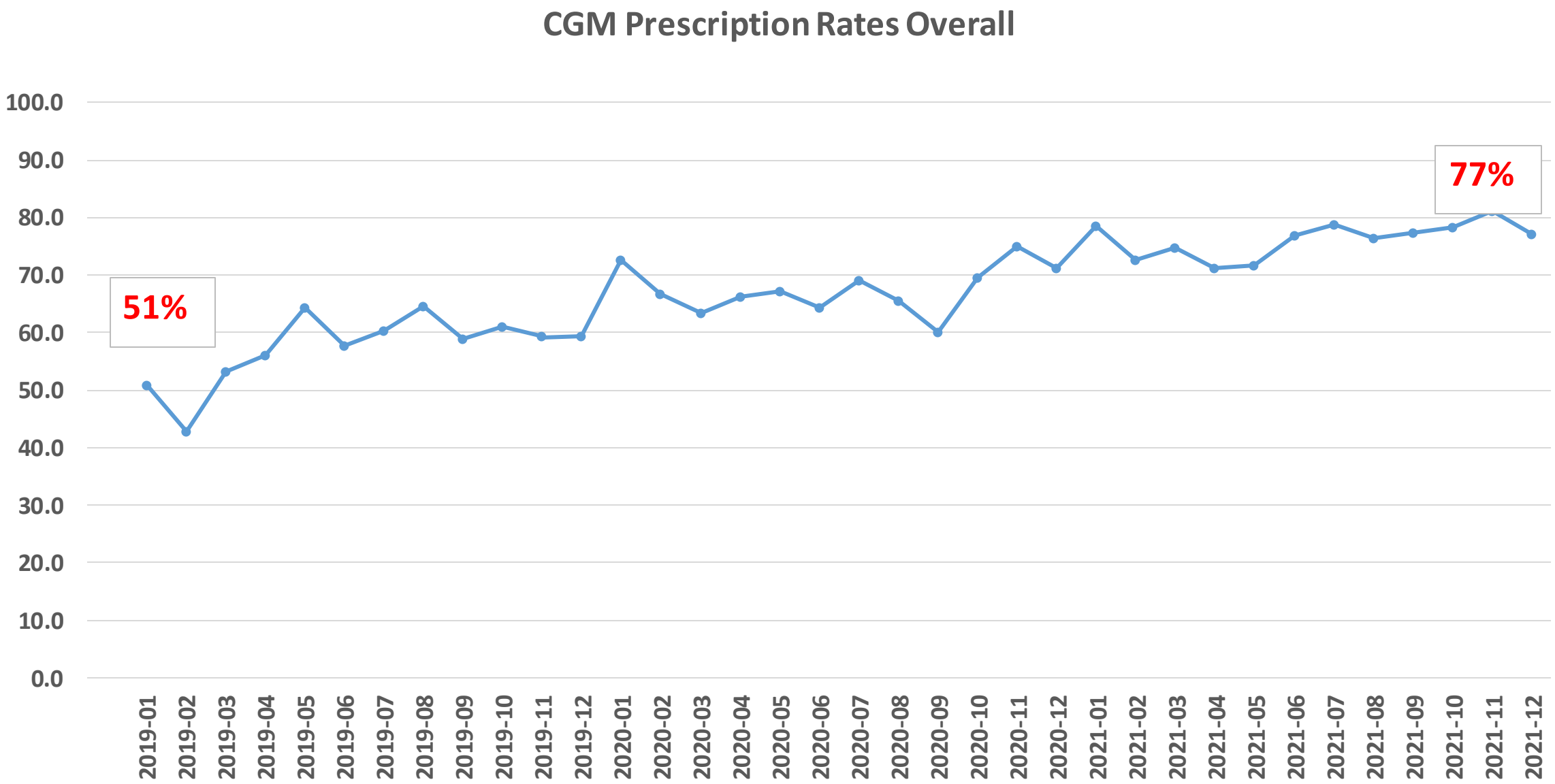
T1D Exchange

Figure 1: Project Flow Chart



Patient Characteristics

All young adults from endo (18-35 years) January 2019-November 2021	
Age	27.4 (SD 4.7)
Sex	51% Female 49% Male
Insurance • Private • Public	 18% 79%


CGM Prescription Rates Overall
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
51%
77%
2019-01
2019-02
2019-03
2019-04
2019-05
2019-06
2019-07
2019-08
2019-09
2019-10
2019-11
2019-12
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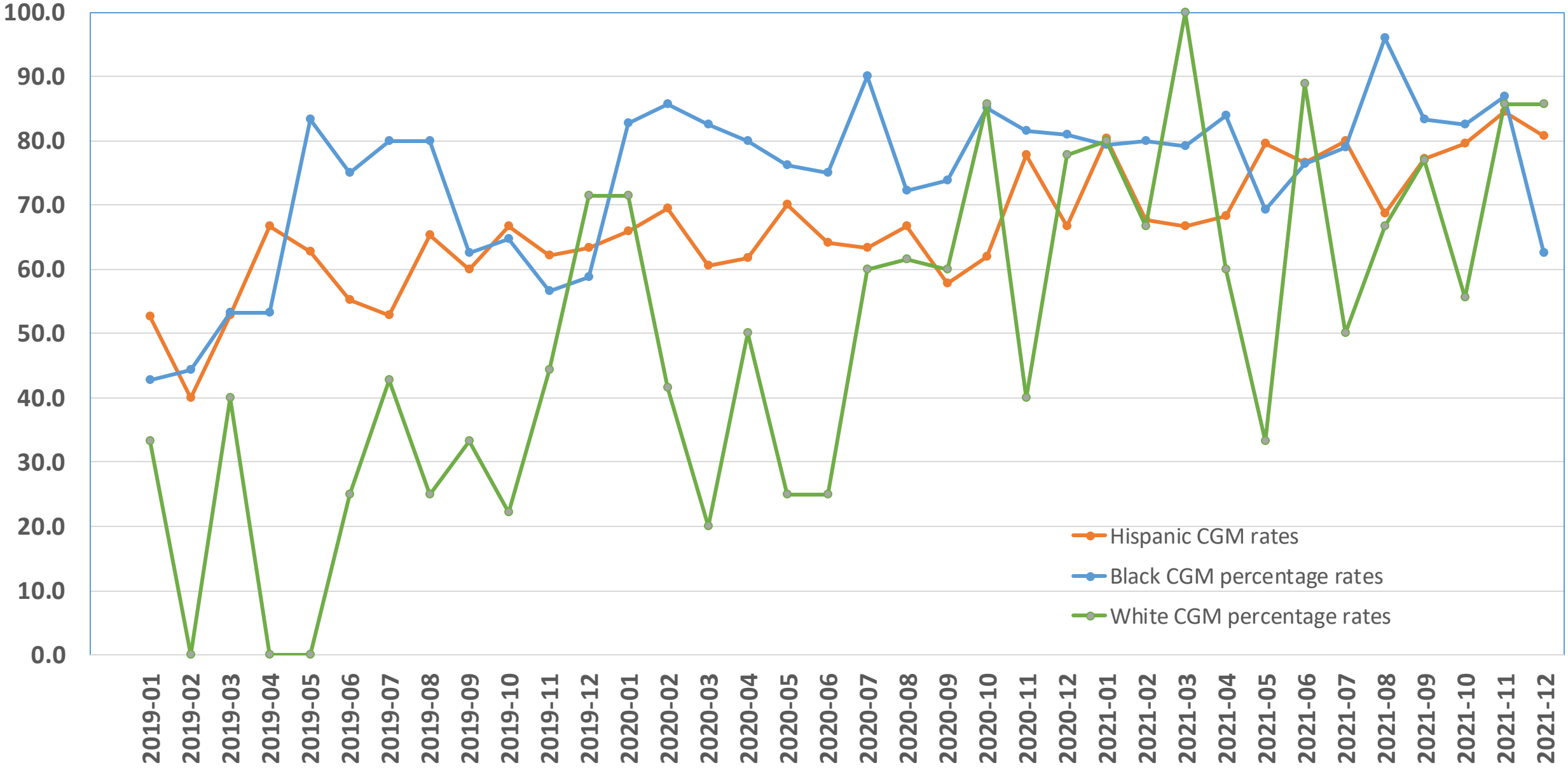
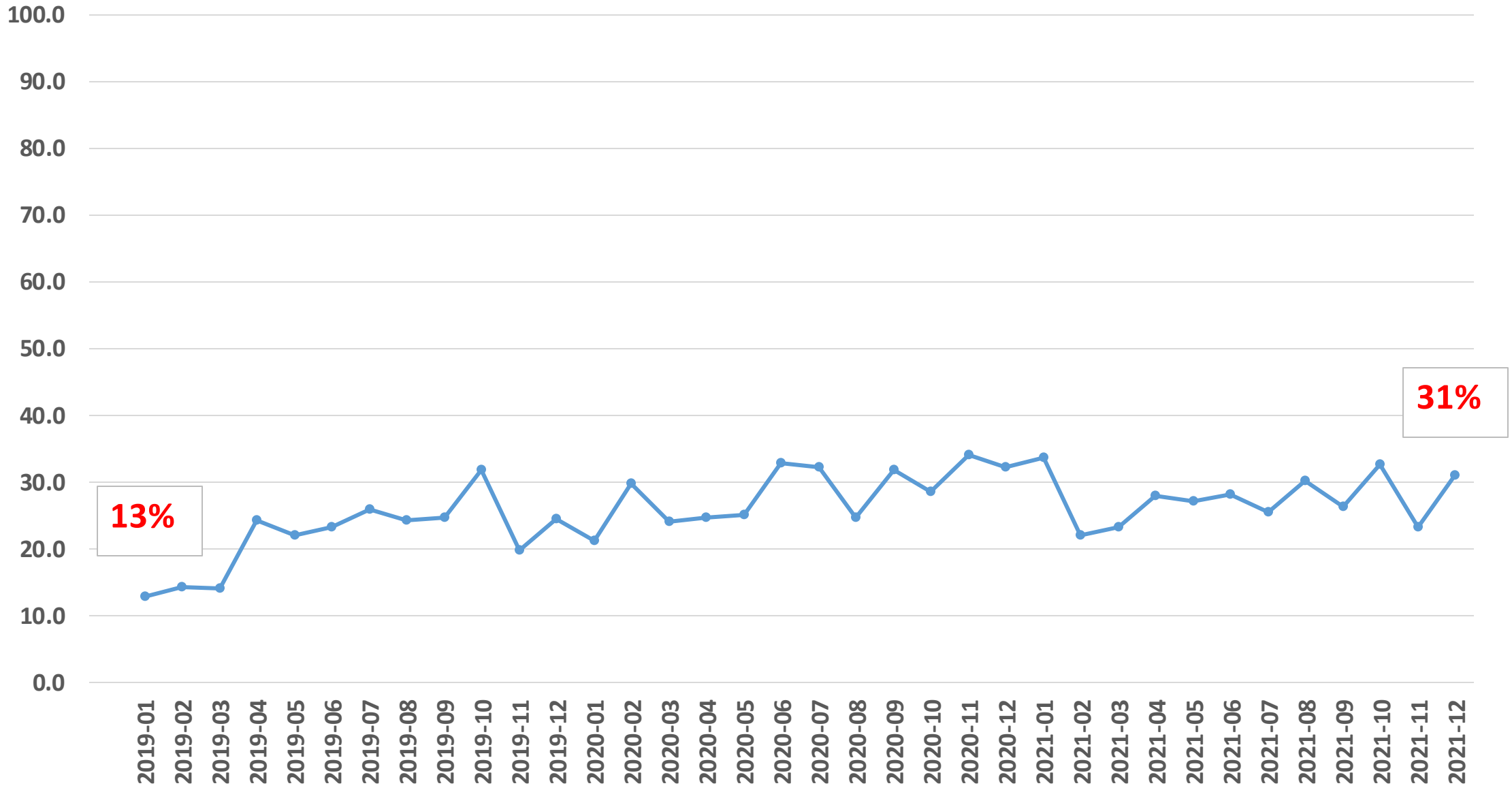
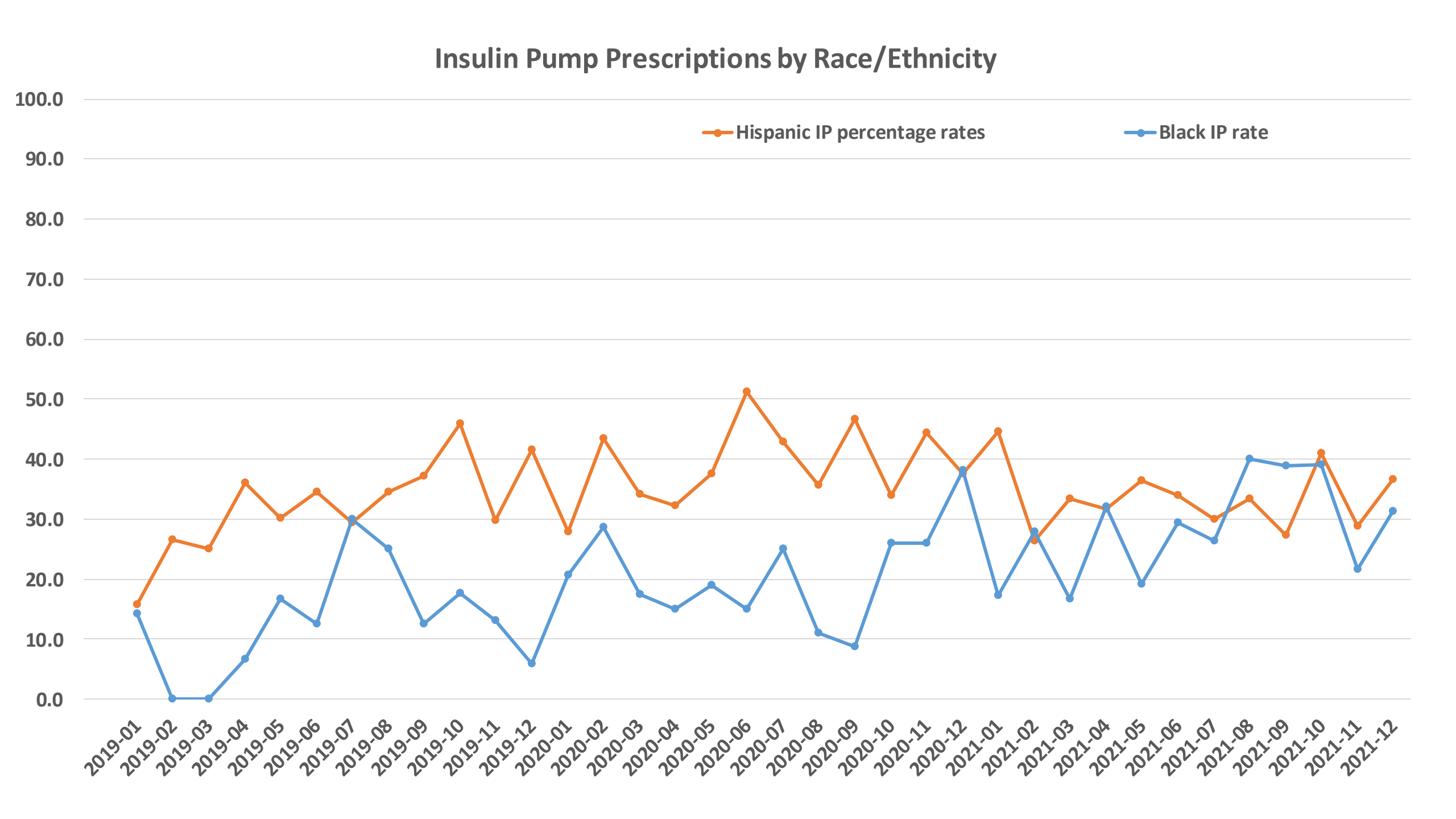
2020-12
2021-01
2021-02
2021-03
2021-04
2021-05
2021-06
2021-07
2021-08
2021-09
2021-10
2021-11
2021-12

CGM Prescription Rates by Race/Ethnicity



Insulin Pump Prescription Rates Overall




Insulin Pump Prescriptions by Race/Ethnicity
Hispanic IP percentage rates
Black IP rate
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2019-01
2019-02
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2019-04
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2021-12

Jeffrey Gonzalez, PhD

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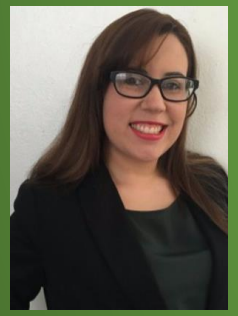
Cuiling Wang, PhD



Gladys Crespo-Ramos, PhD

Stephanie Leung, PhD

Molly Finnan, BA

Claire Hoogendoorn, PhD

JDRF Awards New Grant to Explore Cognitive Behavioral Therapy to Reduce Diabetes Distress

New York, NY, September 30, 2021—JDRF, the leading global nonprofit funder of type 1 diabetes (T1D) research, announces a new grant awarded to Albert Einstein College of Medicine and Montefiore Health System. Led by endocrinologist Shivani Agarwal, M.D., M.P.H., and by psychologist Jeffrey Gonzalez, Ph.D., the study will utilize telemedicine to deliver cognitive behavioral therapy to young adults with T1D to reduce diabetes-related distress.

Shivani Agarwal MD, MPH

Clyde Schechter, MD

Judith Long, MD

Ashby Walker, PhD

Kevin Fiori, MD

NIH NIDDK

T1DTechCHW

Enhancing the Community Health Worker Model to Promote Diabetes Technology Use in Young Adults from Underrepresented Minority Groups with Type 1 Diabetes

R01DK132302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Acknowledgements

SEAD Clinical Program

- Michael Greenberg, NP
- Priyanka Mathias, MD
- Sharon Movsas, RD
- Stephanie Leung, PhD
- Molly Finnan, BA
- Lourdes Lebron, LPN
- Practice Managers and staff
- Yani Munoz
- CHAM Pediatric Endo
- Trainees
- Patients and Families

SEAD Research Program

Einstein-Montefiore

- Yaron Tomer, MD PhD
- Jill Crandall, MD
- Jeff Gonzalez, PhD
- Elizabeth Walker, PhD
- Clyde Schechter, MD
- Vafa Tabatabaie, MD

Penn/CHOP

- Judith Long, MD
- Victoria Miller, PhD
- Anne Cappola, MD MSc
- Susan Mandel, MD
- Michael Rickels, MD

Funding/Disclosures:

- NIH-NIDDK #K23DK115896-04 (PI: Agarwal)
- JDRF 4-SRA-2021-1071-M-B (mPI: Agarwal)
- T1D Exchange/Helmsley Charitable Trust (Site PI: Agarwal)
- NY-Regional Center for Diabetes Translational Research #P30DK111022

Email: Shivani.Agarwal@einsteinmed.org

Website: Montefiore.org/sead

Clinical Presentation: Mt Siani

Learning Objectives

1. The management of hyperglycemia for patients with COVID 19 can be challenging in the inpatient setting. The use of formalized algorithms may reduce glycemic variability.
2. Pregnancies in women with diabetes pose increased risks to the fetus. Implementation of preconception counseling strategies in women of child bearing age, may help to improve outcomes.

Icahn School of Medicine at Mount Sinai

T1D exchange

Clinic Profile

Mount Sinai East Adult Diabetes Center	**Staffing**	**Volume**	**Contact Names**
Main campus: 100th and Madison Avenue, NYC	10 Endocrinologists with a diabetes focus (total division 16 providers) 4 NPs (2 CDCES) 2 RNs (1 CDCES) 2 RDs (1 CDCES) 1 Project lead 1 RC 1 Endo fellow 1 Endocrine Research fellow	1100 ± 20 per year T1D visits New onset T1D : ~15 per year (+ patients misdiagnosed as T2D)	Site PI: Carol Levy Other team members: -David Lam, MD -Grenye O'Malley, MD -Nirali Shah, MD Site project manager: Selassie Ogyaadu, MD, MPH
Other Healthcare system NYC sites: Sinai West, East and Morningside			

Active Projects

- From 2020
  - Revision of DKA Protocol – In progress
  - Inpatient hyperglycemia for COVID patients protocol – In progress
- New 2021
  - Pre-conception counseling for women with diabetes (PREPP'D) – In progress

DKA Protocol Revision

- DKA (Diabetic Ketoacidosis) Protocol Revision
- *COVID-19 specific DKA Protocol created* (Emergency Department, Endocrine, Hospital Medicine, Institute of Critical Care medicine)
  - Decreased IVF
  - Early introduction of basal insulin to decrease IV insulin gtt
  - Subcutaneous protocol for mild DKA

Diabetes in Pregnancy

- Pregnant women with diabetes require tight glycemic targets to reduce adverse health risks (fetal and maternal complications)[1-3]

Fetal Complications
• Macrosomia • Large babies • Higher incidences of cesarean section • Shoulder dystocia • Maternal increased risk of preeclampsia • Fetal death

Risks can be minimized by getting glucose levels to target before getting pregnant

1. Beck RW, et al. *Lancet*. 2019; 394: 1265-1273,
2. Voormolen DN, et al. *Diabetes Obes Metab*. 2018; 20:1894-1902;
3. Feig DS, et al. *Lancet*. 2017;390:2349-2359.

Pregnancy in Women with T1D is Associated with Even Higher Fetal Sequelae:

- **Severe complications 1 in 13**
  - Congenital malformations
  - Stillbirth or neonatal death about 4 - 7 X's that of women without diabetes
  - Preterm birth
  - Pre-eclampsia
  - LGA rates 40 – 70%
  - NICU admissions and Neonatal hypoglycemia 1 in 4

- **Complications**
  - Costly emotionally and financially
  - Potentially preventable by improving glycemic control

Background

- Unplanned pregnancy is a major public health issue*.
- Diabetes affects ~10% of pregnancies.
- Each HbA1c point above 7 in women with diabetes incrementally increase the risk of adverse pregnancy outcomes.
- Pregnancy without preparation in women with diabetes is associated with:
  - High public cost (2010 estimated to be $21 billion per year)[2].
  - At times delays in initiating prenatal care.
  - Maternal complications.
  - Fetal complications
  - At Mount Sinai Health System, since 2009 there have been over **6,000 pregnancies affected by diabetes** with approximately 8,000 deliveries per year.

* Finer LB, Zolna MR. Declines in Unintended Pregnancy in the United States, 2008-2011. N Engl J Med. 2016 Mar 3;374(9):843-52. doi: 10.1056/NEJMsa1506575. PMID: 26962904; PMCID: PMC4861155.

At Mount Sinai

- To date on chart reviews of eligible patients (~430 patients) with diabetes:
  - Historically, on random chart review, less than 50% of patients' notes contain documentation of a discussion of the importance of pregnancy planning and the risks of unplanned pregnancies to the mother and offspring.
  - On average, one out of three pregnant women present with HbA1c great than 7.5% in the prenatal clinic per month (goal A1c should be less than 7.0% prior to pregnancy) and some are using meds that are teratogenic.

QI Project Aims

- To improve patient's knowledge diabetes and pregnancy and increase use of contraception and number of scheduled gynecology visits.
- To increase providers' implementation of preconception counseling through the establishment of a uniform clinic protocol.
- To implement protocols using smart phrases and educational handouts in diabetes clinic at FPA and 17 E 102nd.
- To improve rates of pre-pregnancy counseling with a longer term goal to impact rate of unplanned pregnancies.

PPREP'D Design/Methodology

Eligible patients: 189 patients at 17 E 102nd diabetes clinic and 250 patients at 5 E 98th FPA practice (n=439).

Patients and their providers will receive surveys to assess baseline knowledge and awareness of preconception counseling and diabetes*.

At initial visit, we are collect data including demographics, diabetes treatment, use of contraception and most recent hemoglobin A1C.

Providers will be given education (smartphrases) to incorporate into their visit note.

Patients are provided educational guidance (smartphrases) upon visit completion in their visit summary.

At 3-6 months, we will conduct post-intervention surveys over the phone or via redcap and we will chart check for number of scheduled GYN visits.

Survey questions will be derived from validated surveys specifically: "MDRTC diabetes knowledge test", "RHAB", and "Health Belief Model" and will include questions such as current contraception use and current diabetes knowledge.

Eligible Patients

- Women between the age of 18-40
- Previous diagnosis of either type I or type II diabetes
- Seen at 5 E 98 th street FPA practice and17 E 102nd street diabetes clinic*

Methodology

- **Data**

  Source: EPIC

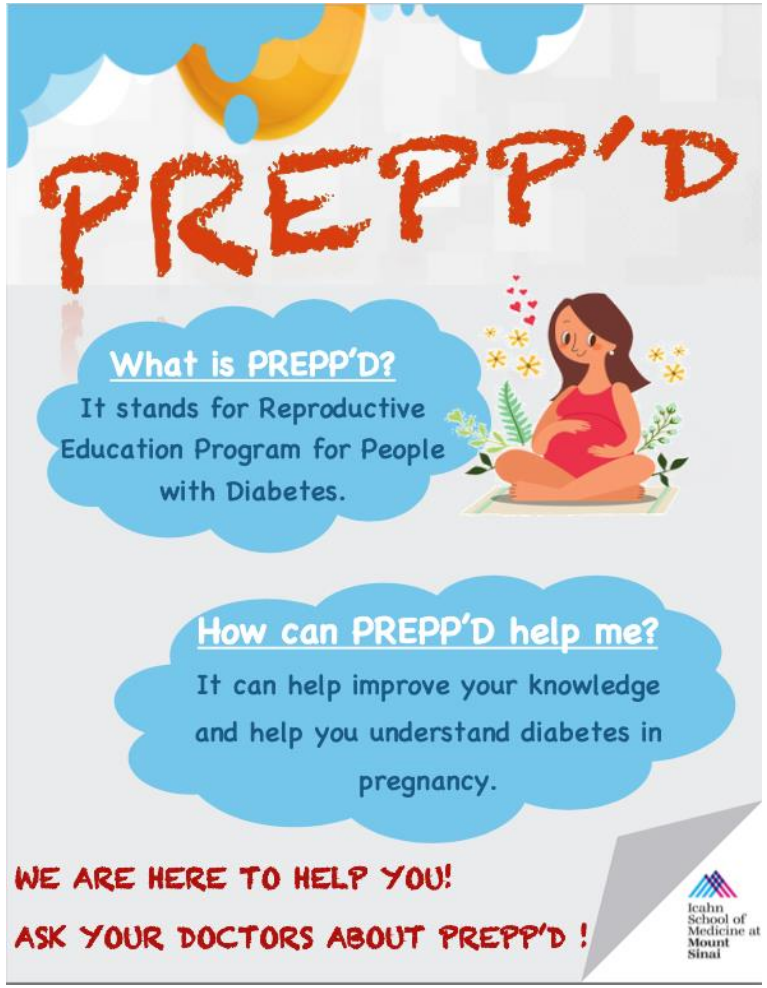
  Data: HbA1C, demographics, current diabetes treatment, use of contraception

- **Metrics that we will be evaluating:**

  1. **Patient knowledge:** the scores on pre-intervention and post-intervention questionnaires for patients.
  2. **Contraception Use**: the number of gynecologist visits and the percent change of contraception use before and after intervention.
  3. **Provider awareness**: the scores on pre-intervention and post-intervention questionnaires for providers and the percent change of documentation in regards to pregnancy planning.
  4. **Longer term follow up:** HbA1c results at first antenatal diabetes visit compared to baseline HbA1c.

PREPP'D (Pregnancy Reproductive Education Program for People with Diabetes)

- Ally Wang MD (PGY5, Endocrine fellow), Madeleine Rouviere RD CDE, Camilla Levister NP CDCES, Grenye O'Malley MD, Selassie Ogyaadu MD MPH, Carol Levy MD CDCES
- Education initiative to patients and providers focusing on pre-conception counseling on diabetes goals in pregnancy
- Surveys distributed to patients and assessment of provider counseling (captured in smart phrase)
- To date : 29 patients completed survey
- Expansion to Mount Sinai Downtown Union Square, Mount Sinai Morningside/West in process



Quality Improvement Initiative: Hyperglycemia Treatment Algorithms for COVID-19 Patients on Glucocorticoids

Alexander Karol MS4
Natalia Viera MD PGY3
Danielle Brooks MD (Graduated 2021)
Carol Levy MD
David Lam MD
Amanda Leiter MD
Grenye O'Malley MD
Selassie Ogyaadu MD, MPH
Nirali Shah MD

Background

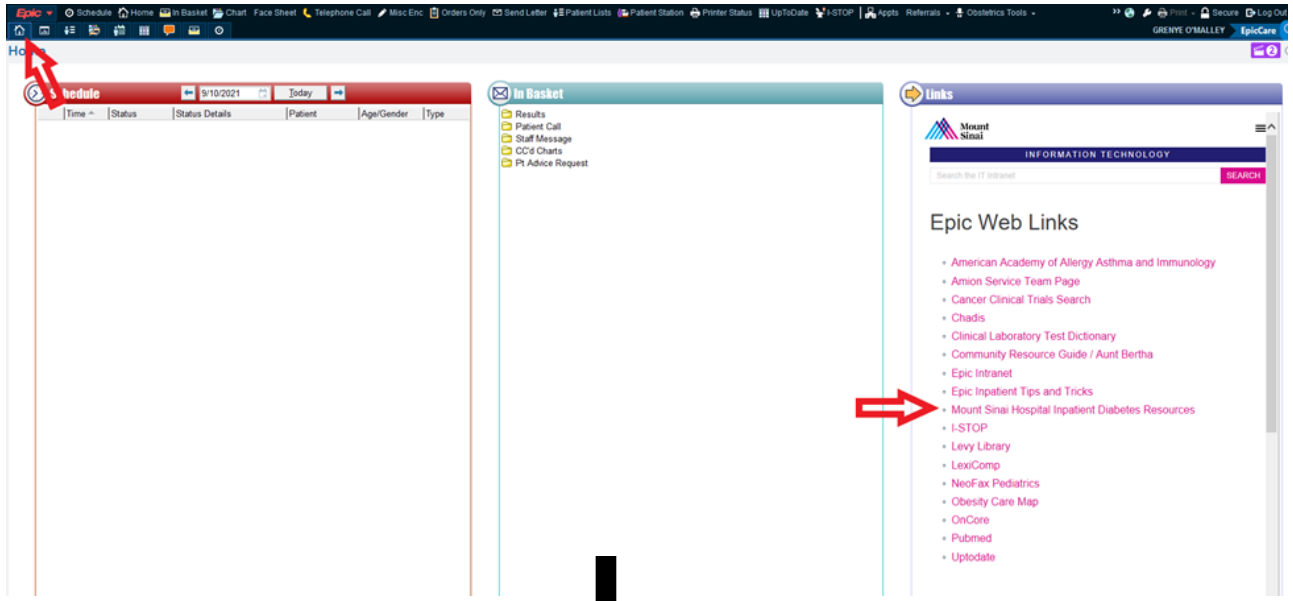
- Corticosteroids (dexamethasone, methylprednisolone, prednisone) have become an essential component of care in patients hospitalized with COVID-19 who require oxygen supplementation.
- Hyperglycemia, regardless of diabetes history, is associated with increased mortality in COVID-19 patients.
- Glucocorticoids increase the risk of hyperglycemia, yet there are no clear guidelines on optimal management.

RECOVERY Collaborative Group, Horby P, Lim WS, et al. Dexamethasone in Hospitalized Patients with Covid-19. *N Engl J Med*. 2021;384(8):693-704.
Bode, Bruce et al. "Glycemic Characteristics and Clinical Outcomes of COVID-19 Patients Hospitalized in the United States." *Journal of diabetes science and technology* vol. 14,4 (2020): 813-821.

Methods

- Created treatment algorithm for glucose management specifically for patients with COVID-19 treated with steroids
  - Based on standard of care for hospitalized patients with hyperglycemia
  - Adjustments made considering added hyperglycemic effect of steroids
- Engaged with primary stakeholders to inform providers and distribute algorithm
- Made treatment algorithm available through EPIC
- Reached out to primary services via EPIC chat and e-mail

Algorithm Access



Department of Medicine

Division of Endocrinology Diabetes and Bone Disease

TREATMENT ALGORITHMS FOR HYPERGLYCEMIA RELATED TO STEROID USE FOR COVID-19 PATIENTS

Description: The COVID-19 hyperglycemia treatment algorithm is meant to guide clinical management of hyperglycemia related to steroid use for COVID-19 patients. Based on patient specific clinical information, insulin initiation, titration, and discharge recommendations are provided. The information needed to use this algorithm are:

- Patient's history of diabetes
- HbA1C within the last month
- Diabetes medication history including , if applicable total daily dose of insulin
- eGFR
- Weight in kilograms

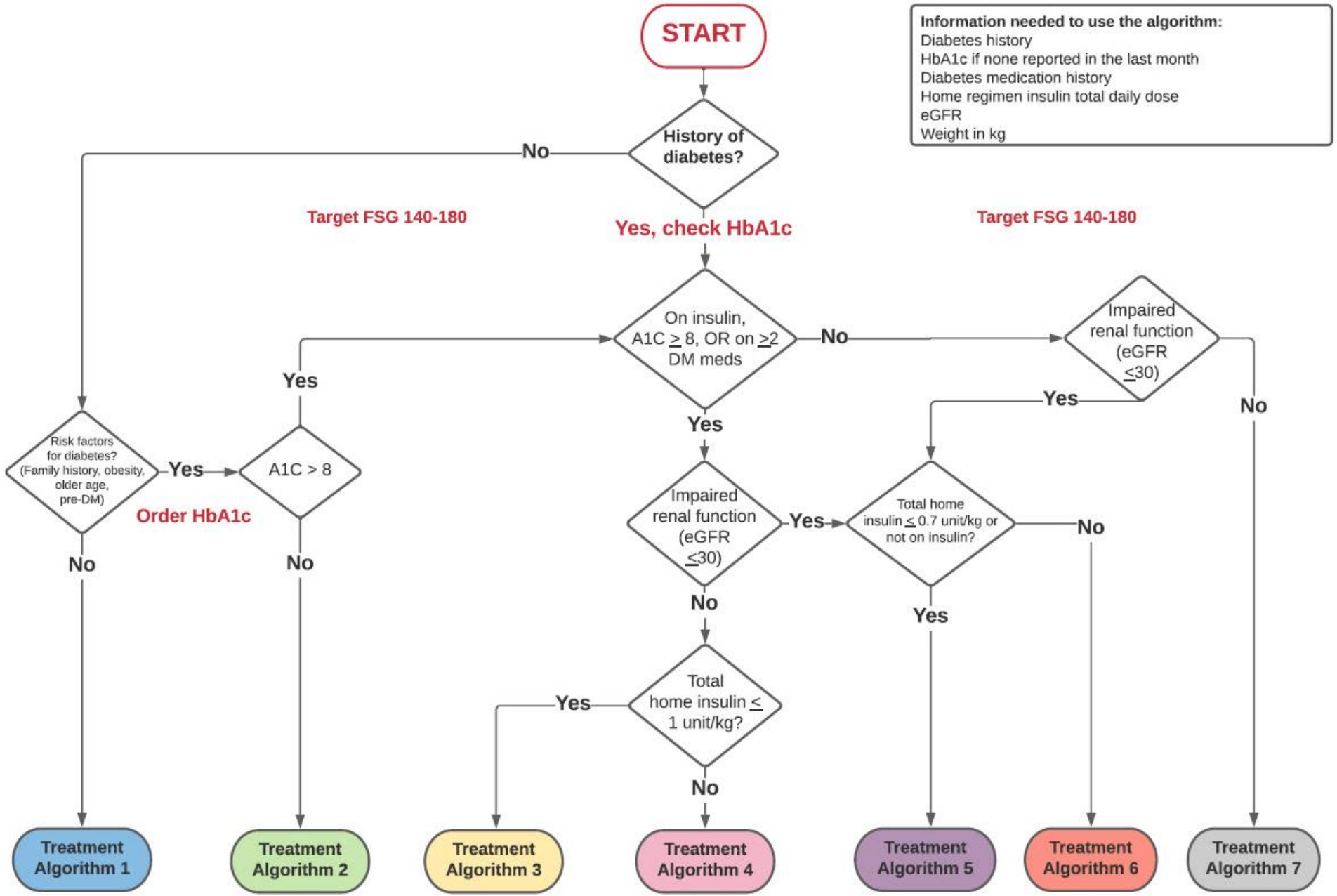
Disclaimer: These COVID-19 hyperglycemia treatment algorithms have not been validated in clinical trials and are based on expert opinion. Clinicians should use clinical judgment and individualize care when managing patients with COVID-19 on high doses of steroids.

Click Here to start using the algorithm

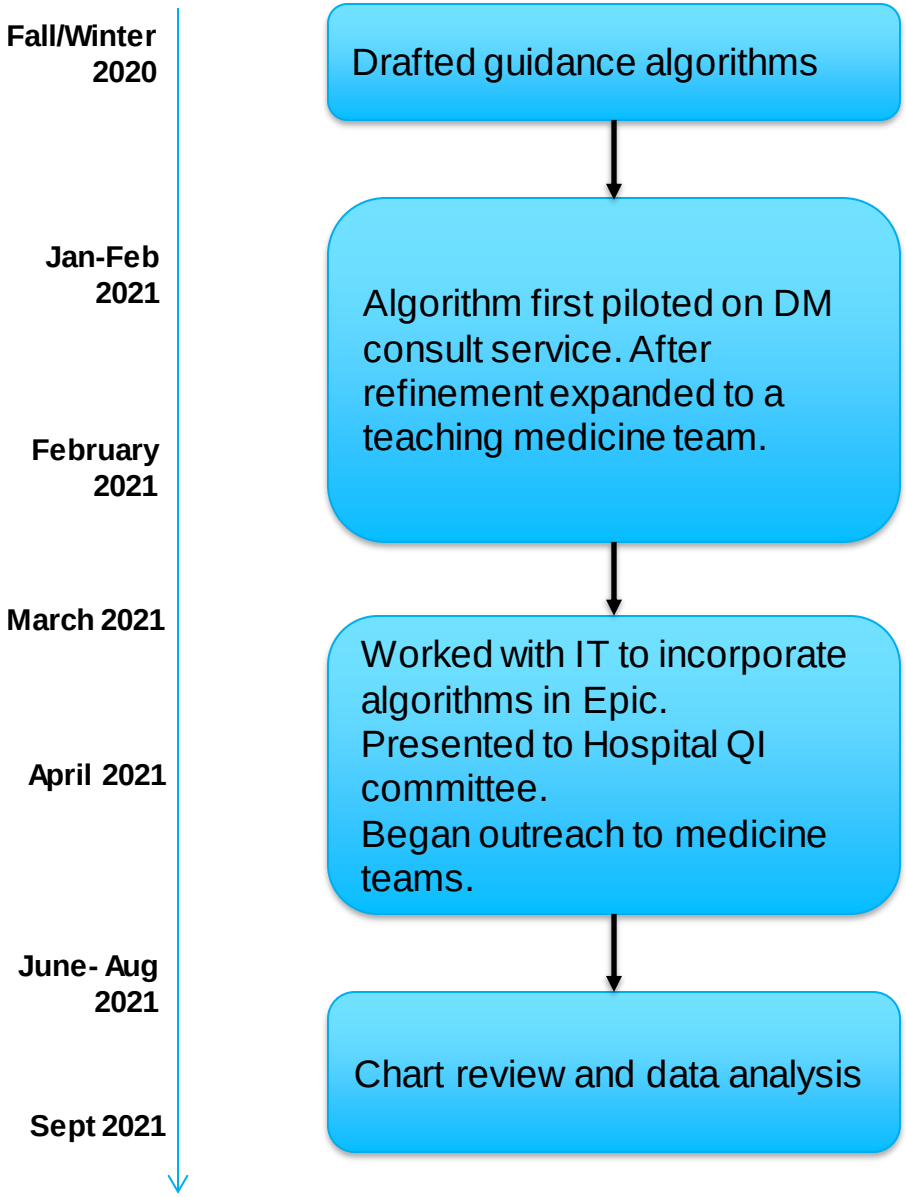
DISCHARGE DIABETES TREATMENT

Click here to view the discharge planning algorithm for patients with a history of diabetes AND/OR HbA1c ≥ 8

Click here to view the discharge planning algorithm for patients with no prior history of diabetes AND HbA1c < 8


START
Information needed to use the algorithm:
Diabetes history
HbA1c if none reported in the last month
Diabetes medication history
Home regimen insulin total daily dose
eGFR
Weight in kg
History of diabetes?
No
Target FSG 140-180
Yes, check HbA1c
Target FSG 140-180
On insulin, A1C ≥ 8, OR on ≥2 DM meds
No
Impaired renal function (eGFR ≤30)
Yes
No
Yes
Risk factors for diabetes? (Family history, obesity, older age, pre-DM)
Yes
A1C > 8
Order HbA1c
Impaired renal function (eGFR ≤30)
Yes
Total home insulin ≤ 0.7 unit/kg or not on insulin?
No
No
No
Yes
Total home insulin ≤ 1 unit/kg?
Yes
No
Treatment Algorithm 1
Treatment Algorithm 2
Treatment Algorithm 3
Treatment Algorithm 4
Treatment Algorithm 5
Treatment Algorithm 6
Treatment Algorithm 7

Timeline/Methods:



Timeline/Methods:

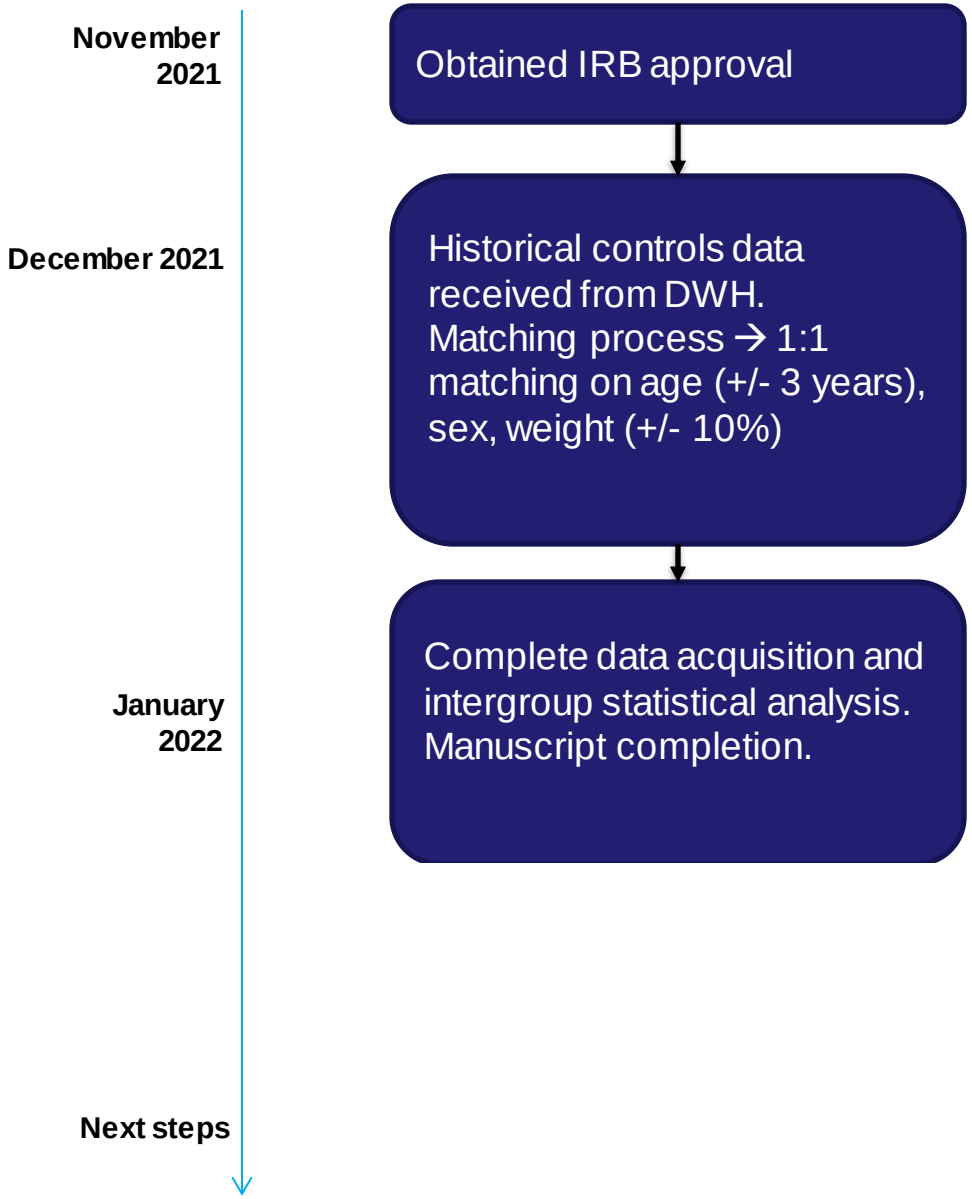


Chart review:

- HbA1c, glucose values, insulin regimens
- Demographics, weight, creatinine, comorbidities
- Steroid dosing, other COVID treatments, length of stay

Metrics:

- % glucose <180 mg/dL
- % glucose >250 mg/dL
- Hypoglycemic events (<70 mg/dL)
- LOS, mortality

Table 1	Variable	Pre-Protocol	Post-Protocol
	Number	53	65
	Patient admission dates	04/2020-03/2021	04/2021-12/2021
Demographics	Median age (IQR)	73 (57-80)	70 (57-79)
	Male sex (%)	28 (52.3)	35 (53.8)
	Median BMI (IQR)	27.18 (24.5-32.3)	29.3 (24.1-32.6)
	Hx of Diabetes (%)	43 (81.1)	54 (83)
	Median A1c % (IQR)	7.8 (6.6-9.3)	7.4 (6.3-8.9)
	Insulin users (%)	17 (32.1)	15 (23)
	Median weight (IQR)	77.6 (66.2-92.9)	78.4 (66.6-94.8)
	Median admission Creatinine	1.2 (0.7-1.9)	0.9 (0.7-1.2)
	Steroids administered (%)	53 (100)	65 (100)
Insurance	Medicaid (%)	11 (20.8)	10 (15.4)
	Medicare (%)	25 (47.2)	36 (55.4)
	Commercial (%)	12 (22.6)	16 (24.6)
	Unknown (%)	5 (9.4)	3 (4.6)
Race	African American (%)	10 (18.9)	26 (40)
	White (%)	17 (32.1)	10 (15.4)
	Hispanic (%)	17 (32.1)	20 (30.8)
	Other (%)	9 (17)	9 (13.8)

Pre protocol patient data analysis still ongoing

Clinical Metrics

Table 2	Pre Protocol	Post Protocol
Overall Median POC Glucose per group (mg/dl) (IQR)	215.9 (181-250.7)	212.7 (169.1-255.9)
Overall Mean POC Glucose Euglycemic <=180 mg/dl (%)	12 (22.6)	25 (38.5)
Overall Mean POC Glucose >180 mg/dl and <= 250 mg/dl (%)	27 (50.9)	22 (33.8)
Overall Mean POC Glucose Hyperglycemic>250 mg/dl (%)	14 (26.4)	18 (27.7)
Total number of hypoglycemic (<70mg/dl) events	15.0	7.0
Patients with Hypoglycemic Events <70mg/dl (%)	7 (13.2)	7 (10.8)
Median LOS (IQR)	12 (5-24)	10.5 (6-17.5)
Mortality (%)	14 (26.4)	11 (16.9)

Timeline/Methods:

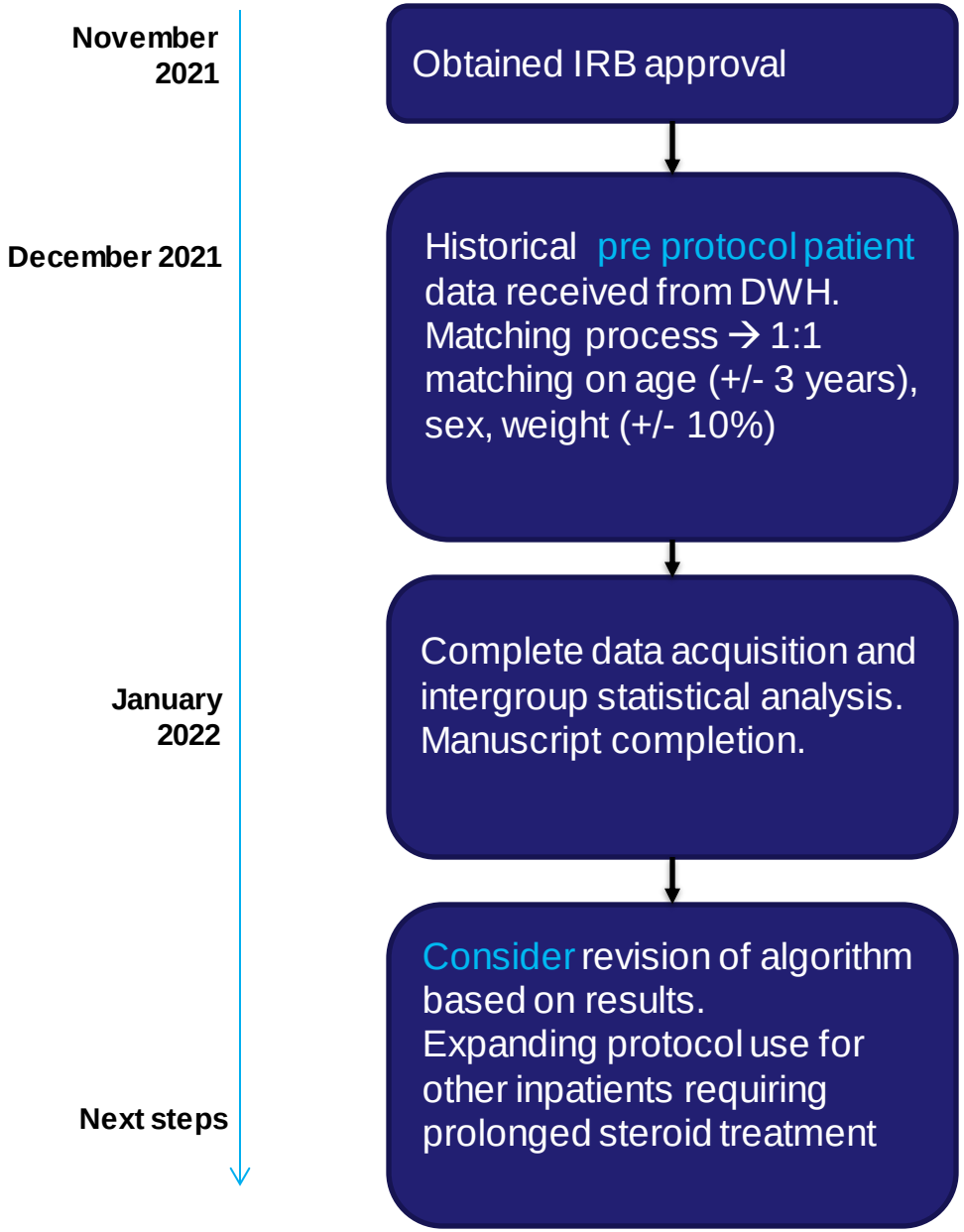


Chart review:

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Metrics:

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- % glucose >250 mg/dL
- Hypoglycemic events (<70 mg/dL)
- LOS, mortality

QI Adult Centers Network Performance

Monthly Collaborative Call
1/25/22

14 adult clinics – caring for 19,500+ patients with T1D

Adult T1D Glycemia Targets KDD

Aim

Among people with T1D,* increase proportion of patients achieving glycemic targets:

- At least 25% with A1c <8%, OR
- Increase proportion of patients <8% by 5%, OR
- Increase TIR among CGM users by 5%

from baseline in 2 years

*Duration > 1 year, ages 18-75, with at least one in-person or telemedicine visit in the last year

Primary Drivers

- Health Literacy/ Education and Support
- Use of Data
- Social Determinant of Health
- Diabetes comorbidities and complications
- Medication management and device use
- Access to care
- Psychosocial Support

Change Ideas

- Patient Education on diet, exercise and device use
- Support "emerging adults" (18-26) with continued "transition" education for disease management
- Education to reduce DKA events/admission,
- 4X glucose check education
- **Set small patient- and provider-selected goals with clear action step**
- **Peer support groups, new onset classes, technology literacy**

- Use data registries to support population health
- Use EMR templates
- Incorporate QI measures or flow sheets

- Culturally Competent Care (offering education/materials in appropriate languages, etc.
- Catalogue of community resources, Train staff about SDOH
- Documenting barriers to care (housing, transportation, food etc.)

- Case management, follow up for patients not reaching target goals for BG, LDL, BP
- Self-management
- Health education for diabetes complications
- Screening for diabetes complications and comorbidities and referring to subspecialists/care as appropriate

- Insulin monitoring/nutrition interactions
- Coach >4 checks/day (for non CGM patients)
- Test new workflows to improve device use/device documentation
- Device data reviews, staff troubleshoot device
- Advertise CGM in waiting rooms, etc.
- Provide contact information for device reps/patient support

- Follow up with LTFU patients (not seen for > 180 days); regular follow up (phone/email/text/televisit)
- Improve scheduling process
- Preparing patients for telehealth visits ("pre-visit visit")

- **Conduct mental health screening and referrals (i.e. depression, FOH, diabetes distress)**
- Improve psychosocial support
- MyChart message for questionnaires, PROs, high-risk patients
- Create workflow for positive patients who needs referral
- Screen for QOL (compare control of people using CGM vs no CGM)

Data and T1D Exchange

Data and the T1D Exchange

Data Mapping

- Typically led by IT team, process to map against T1Dx data specifications resulting in access to the full QI portal and contribution to population health research.

Smartsheets

- Temporary data sharing solution (prior to site completing data mapping) where site shares aggregate data to produce dashboards; allows sites the benefit of benchmarking and identifying shifts and trends over time.

Special Initiatives

Modify/use an existing data collection tool to support a temporary project (i.e. COVID-19 or telemedicine)

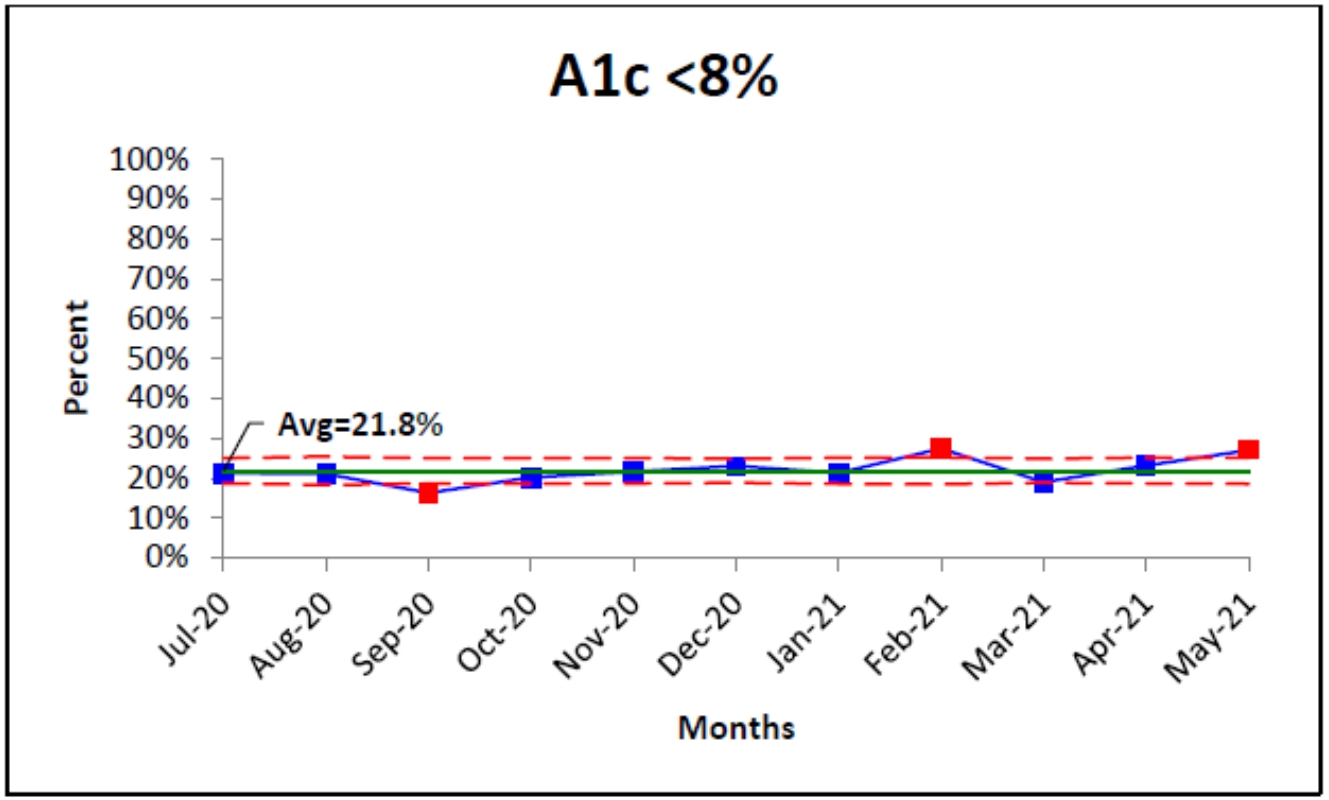
Smartsheets

Primary Column	July 2020	Aug 2020	Sept 2020	Oct 2020	Nov 2020	Dec 2020
All Denominators (A): The number of patients with T1D (all ages) at your center with a minimum duration of diabetes ≥ 12 months with 1 or more HbA1c values in the preceding 12 months, of which the last visit (either in-person or telehealth visit) was from the reporting month.						
Phase 1 (Priority Measures to be completely reported by December 2020)						
(1) The number of patients in (Denominator - A) with HbA1c <8(Most recent A1C)						
(2) Median A1c of all patients from (A): of the unique type 1 diabetes patients ages 1-85, what was the median of the most recent hemoglobin A1c value from all patients in this reported month						
(3) The number of patients in (A) who reported using a sensor/CGM during the month being reported on						
(4) Number of patients in (A), excluding CGM users, who check their FSBG > or = to 4x/day						
(5) The number of patients in (A) who are active pump users						
(6a) Number of patients in (A), ages 12 and older, who met eligibility criteria* for depression screening for reporting month						
(6b) Number of patients in 6a that were screened						
Phase 2 (Measure reporting due before March 2021)						
(7a) The number of patients in (3) who wear CGM at minimum 14 days OR 70% of wear in reporting month.						
(7b) The number of patients in (7a) who reported using a CGM during the month reported with Time in Range (70-180) > 50%						
(7c) The number of patients in (7a) who reported using a CGM during the month reported with time in hypoglycemia (<70)						
(7d) The number of patients in (7a) who reported using a CGM during the month reported in time in severe hypoglycemia (<54)						
(8) The number of patients in (A) with a diagnosis of hypertension and BP < 140/90mm Hg who are prescribed ACE-I or ARBs in the measurement year						
(9) The number of DKA events that occurred during the reporting month among all patients in (A)						
(10) The number of patients in (A) with a diagnosis of hyperlipidemia or an LDL > 130 mg/Dl who is prescribed a statin for cholesterol.						
(11) The number of patients in (A) who have SDOH documented in their chart (related to food security, transportation needs, education, housing security, or employment status.)						
Phase 3 (Measure reporting due before June 2021)						

Clinic-specific Dashboards

Example T1Dx Dashboard

(Higher rankings indicate desired direction; e.g. 1st of 10 indicates your sites is performing most ideally compared to other T1Dx QIC adult sites)



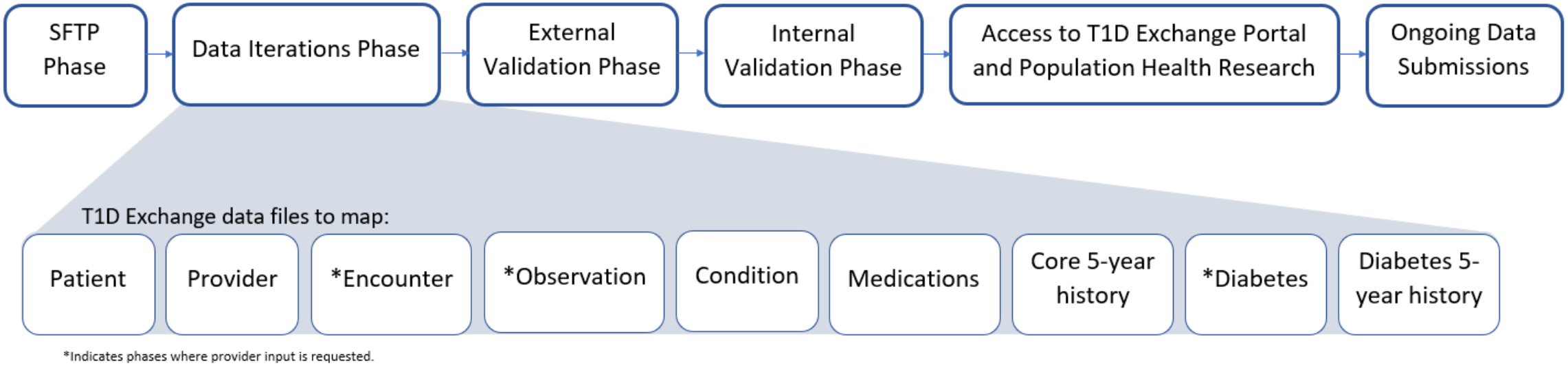
Desired Direction

P-chart

Jul-20	Aug-20	Sept-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21
212	166	209	213	204	234	197	186	237	199	196
45	35	34	43	44	54	42	51	45	46	53

ABC clinic is ranked 4th among 8 T1Dx QIC adult clinics on A1c <8%. The T1Dx QIC goal is 50%.

Data Mapping Process



*Indicates phases where provider input is requested.

Data Mapping Progress – adult clinics as of 1/18/22

Site	Data Mapping Orientation	SFTP Established	Patient File	Provider File	Encounter File	Observation File	Condition File	Medication File	Diabetes File	5-Year History	External Validation	Internal Validation	Post Data Mapping/ Ongoing Validation
BDC													
SUNY													
Grady													
U of Miami													
NYU Langone													
Mt. Sinai													
Albert Einstein													
UCSF													
Penn													
Stanford													
Northwestern													
Wayne													
BMC													

Key	
	Completed
	In Progress

2020-2021 Data Overview

Core QI Measures – Adult clinics

July 2020 – June 2022

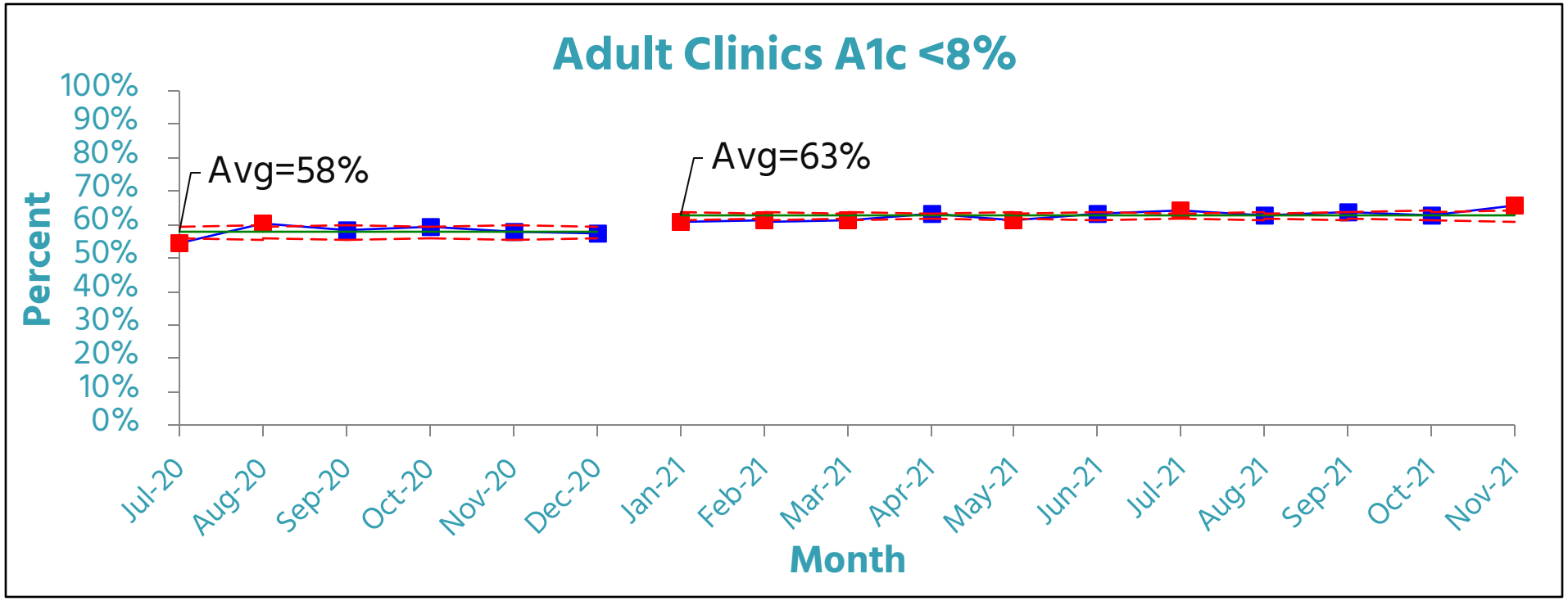
Measures reported as of Nov 2021	Measure	# of adult clinics reporting
Outcome Measures	HbA1c < 8%	**7** (53.8%)
	Median A1c	**6** (46.2%)
Process Measures	CGM use	**7** (53.8%)
	Pump use	**6** (46.2%)
	Depression screening	**3** (23.1%)
	DKA events	**4** (30.8%)
	Time in Range	**1** (7.1%)
	Social Determinants of Health screening	**3** (23.1%)

T1D Exchange

Adult Clinics Improvement Scorecard January 2022 (data from Jul 2020 - Nov 2021)					
Metric	**A1c < 8%**	**CGM use**	**Pump use**	**Dep Scrn**	**SDOH**
QIC Goal	Greater than 50%	Greater than 70%	Greater than 65%	Greater than 80%	Greater than 65%
QIC Status	**63% [5% increase]**	**61% [10% increase]**	**51%**	**69% [15% increase]**	**42% [38% increase]**
1	BDC - 72%	Penn - 84%	Penn - 59%	SUNY - 88% [+19%]	SUNY - 50%
2	SUNY - 54%	BMC - 68%	Wayne State - 37%	Grady - 25%	BMC - 36%
3	BMC - 47%	SUNY - 67% [+36%]	Stanford - 48%	BMC - 0%	Grady - 28%
4	Wayne State - 39% [+23%]	BDC - 58%	BDC - 47%		
5	Penn - 35%	Stanford - 48%	SUNY - 43%		
6	Stanford - 21%	Wayne - 37% [+19%]	BMC - 18%		
7	Grady - 19%	Grady - 26%			

Legend	Favorable Change and/or Above QIC Goal	No Change and/or Below QIC Goal

Adult Clinics - HbA1c < 8%



Lahey-P chart favorable direction

	2020						2021										
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
T1D Population	899	834	815	892	730	721	577	582	580	703	712	688	723	681	637	602	527
A1c >8%	525	545	522	577	459	457	386	394	390	482	472	461	497	428	407	379	346

Adult Clinics - HbA1c < 8% Summary

QI Collaborative Goal: 50%
QI Collaborative Average: 63%

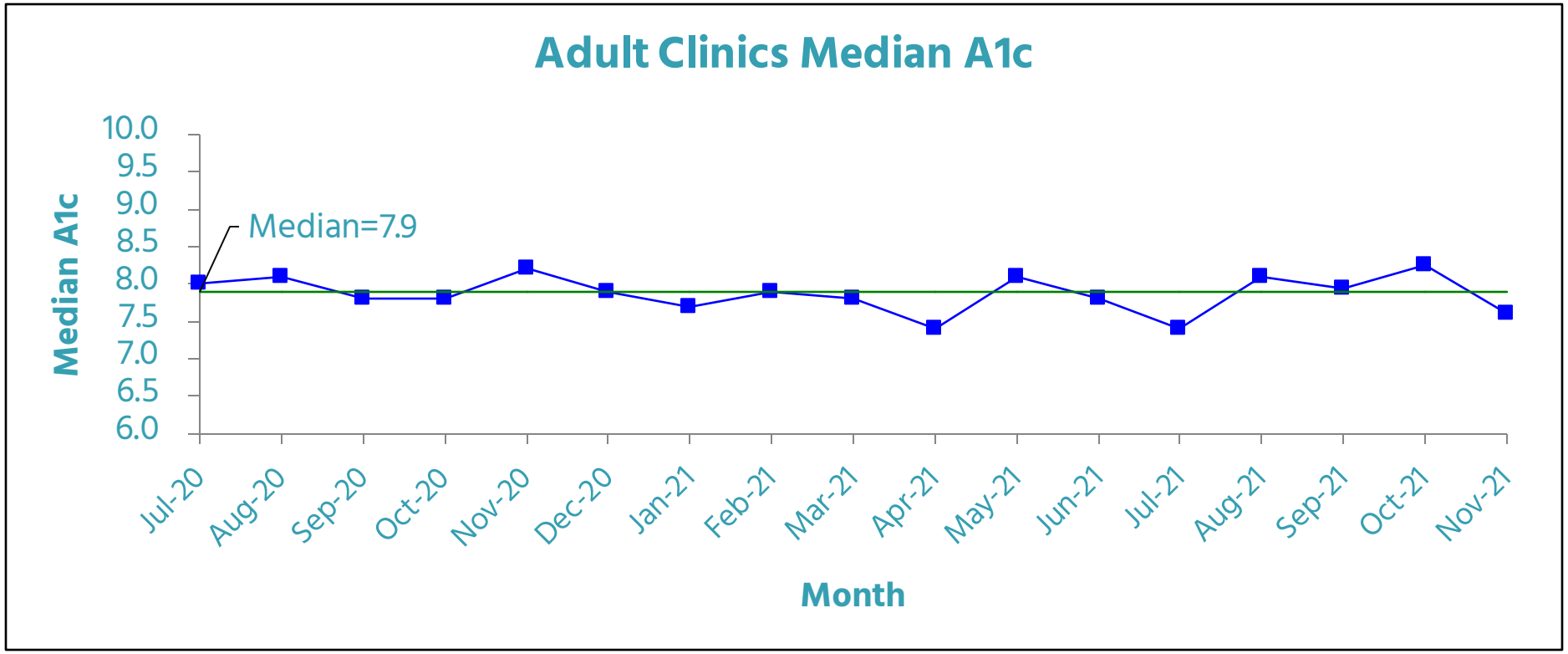
Sites that meet goal: 2/7
Top performers:
(1) BDC, 72%;
(2) SUNY, 54%

Improvement Range: 23%

Available data	No data
BDC	Albert Einstein
BMC	Mt. Sinai
Grady	Northwestern
Penn	NYU
Stanford	UCSF
SUNY	U of Miami
Wayne	

T1D Exchange

Adult Clinics - Median A1c



Run chart favorable direction

	2020						2021										
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Average median A1c	7.7	7.7	7.6	7.5	7.6	7.5	7.4	7.4	7.5	7.3	7.5	7.5	7.3	8.1	8.0	8.3	7.6

Adult Clinics - Median A1c Summary

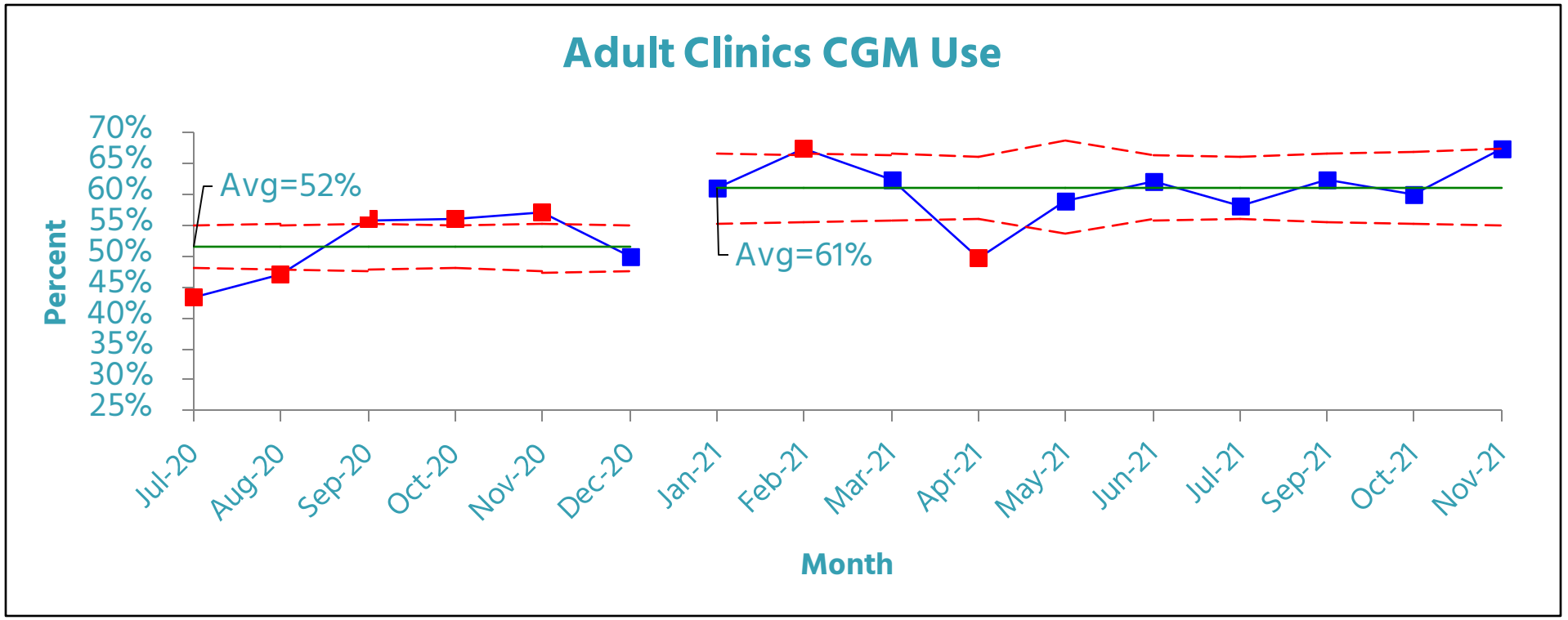
QI Collaborative Goal: 8.0%
QI Collaborative Average: 7.9%

Sites that meet goal: 4/6
Top performers:
(1) BDC, 7.2%;
(2) Penn State, 7.5%

Available data	No data
BDC	Albert Einstein
BMC	Mt. Sinai
Grady	Northwestern
Penn	NYU
SUNY	Stanford
Wayne	UCSF
	U of Miami

T1D Exchange

Adult Clinics - CGM Use



Lahey-P chart favorable direction

	2020						2021										
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
T1D Population	1012	935	925	1006	817	826	649	669	682	800	357	768	806	681	637	602	527
CGM users	439	441	519	565	467	413	397	451	426	397	211	478	469	443	398	362	356

Adult Clinics – CGM Use Summary

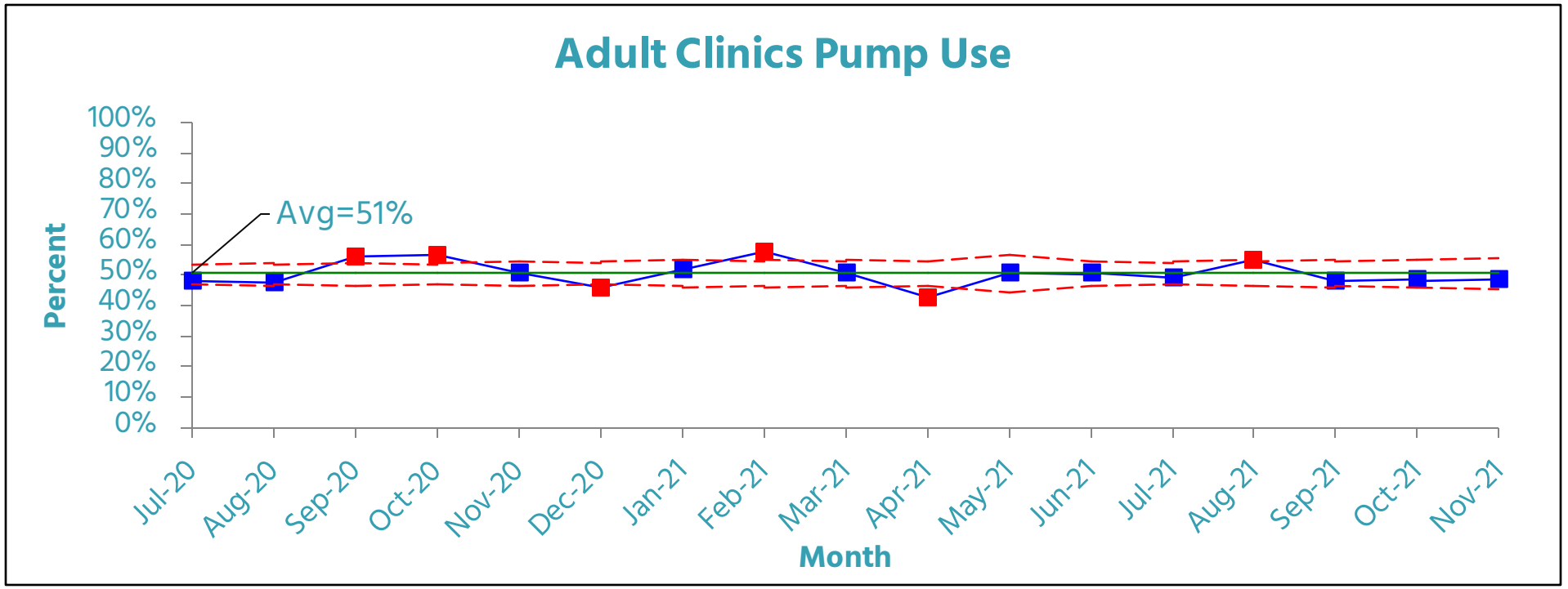
QI Collaborative Goal: 70%
QI Collaborative Average: 61%

Sites that meet goal: 1/7
Top performers:
(1) Penn State, 83%;
(2) BMC, 68%;
(3) SUNY, 67%

Improvement Range: 19%-36%

Available data	No data
BDC	Albert Einstein
BMC	Mt. Sinai
Grady	Northwestern
Penn	NYU
Stanford	UCSF
SUNY	U of Miami
Wayne	

Adult Clinics - Pump Use



Lahey-P chart favorable direction

	2020						2021										
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
T1D Population	969	883	878	965	776	779	612	619	621	741	294	713	755	624	590	544	473
Pump users	465	419	494	546	393	359	318	356	313	316	149	361	370	344	283	263	230

Adult Clinics – Pump Use Summary

QI Collaborative Goal: 65%

QI Collaborative Average: 45%

Sites that meet goal: 0/6

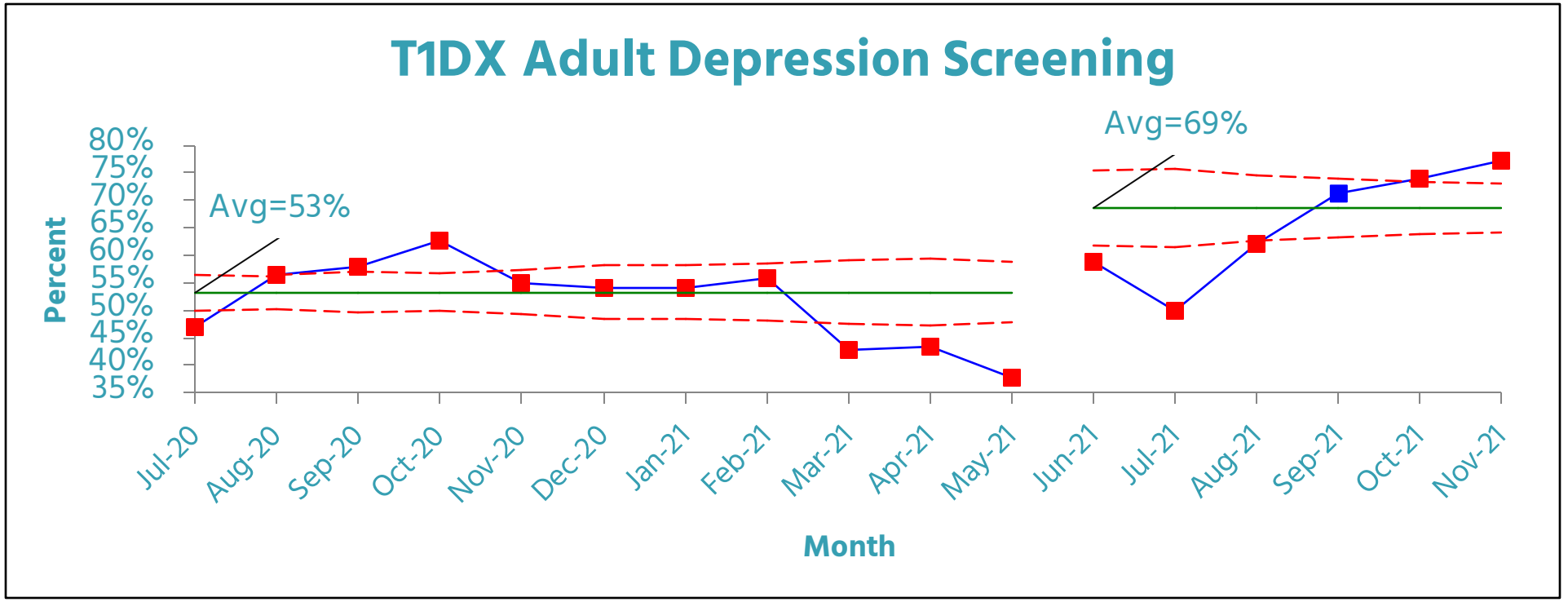
Top performers:

(1) Penn State, 59%;

(2) Wayne, 56%;

Available data	No data
BDC	Albert Einstein
BMC	Grady
Penn	Mt. Sinai
Stanford	Northwestern
SUNY	NYU
Wayne	UCSF
	U of Miami

Adult Clinics – Depression Screening



Lahey-P chart favorable direction

	2020						2021										
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Eligible for screening	111	117	83	99	71	48	48	43	35	30	37	34	30	111	117	83	99
Received screening	52	66	48	62	39	26	26	24	15	13	14	20	15	52	66	48	62

Adult Clinics – Depression Screening Summary

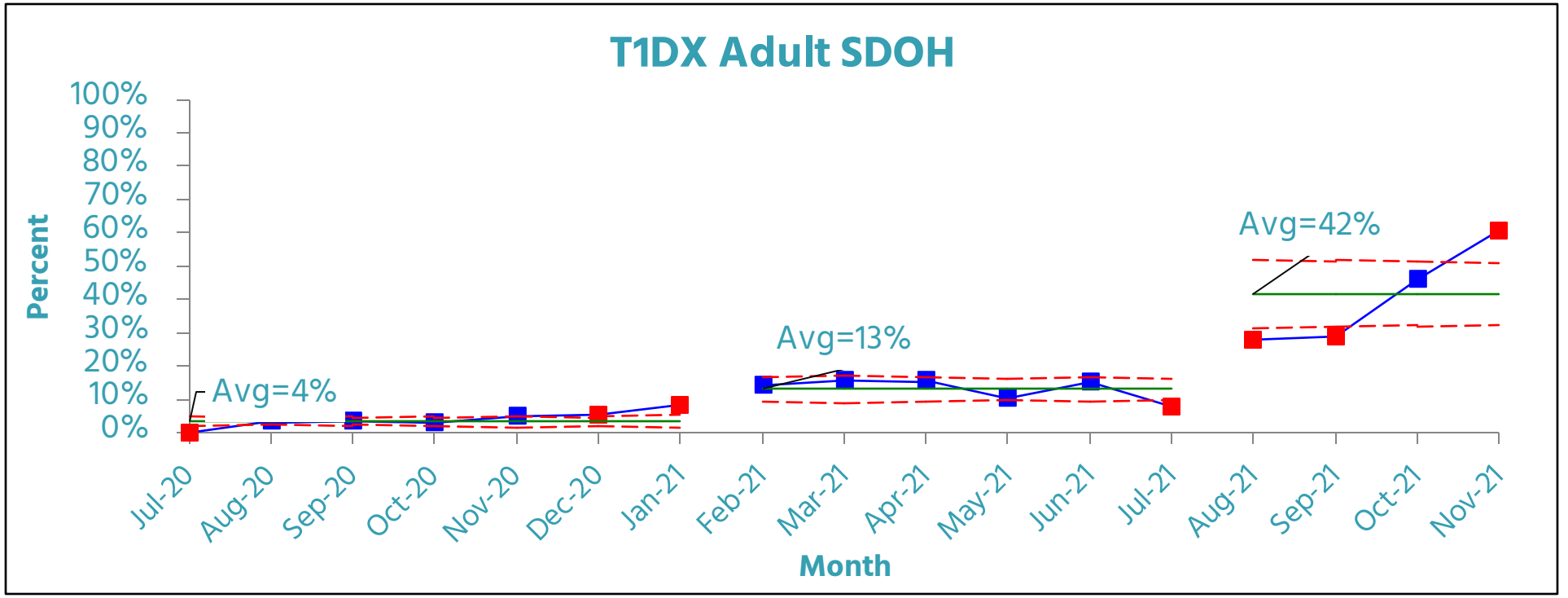
QI Collaborative Goal: 80%
QI Collaborative Average: 69%

Sites that meet goal: 1/4
Top performers:
(1) SUNY, 88%

Improvement Range: 19%

Available data	No data
BMC	Albert Einstein
Grady	BDC
SUNY	Mt. Sinai
	Northwestern
	NYU
	Penn
	Stanford
	UCSF
	U of Miami
	Wayne

Adult Clinics – SDOH Screening



Lahey-P chart favorable direction

	2020						2021										
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
T1D Population	346	348	312	298	241	253	178	132	114	146	158	146	153	180	194	209	217
Received screening	0	11	11	8	12	13	15	19	18	23	16	22	12	50	56	96	132

Adult Clinics – SDOH Screening Summary

QI Collaborative Goal: 10%
QI Collaborative Average: 42%

Sites that meet goal: 3/3
Top performers:
(1) SUNY, 50%;
(2) BMC, 36%;
(3) Grady, 28%

Improvement Range: 50%

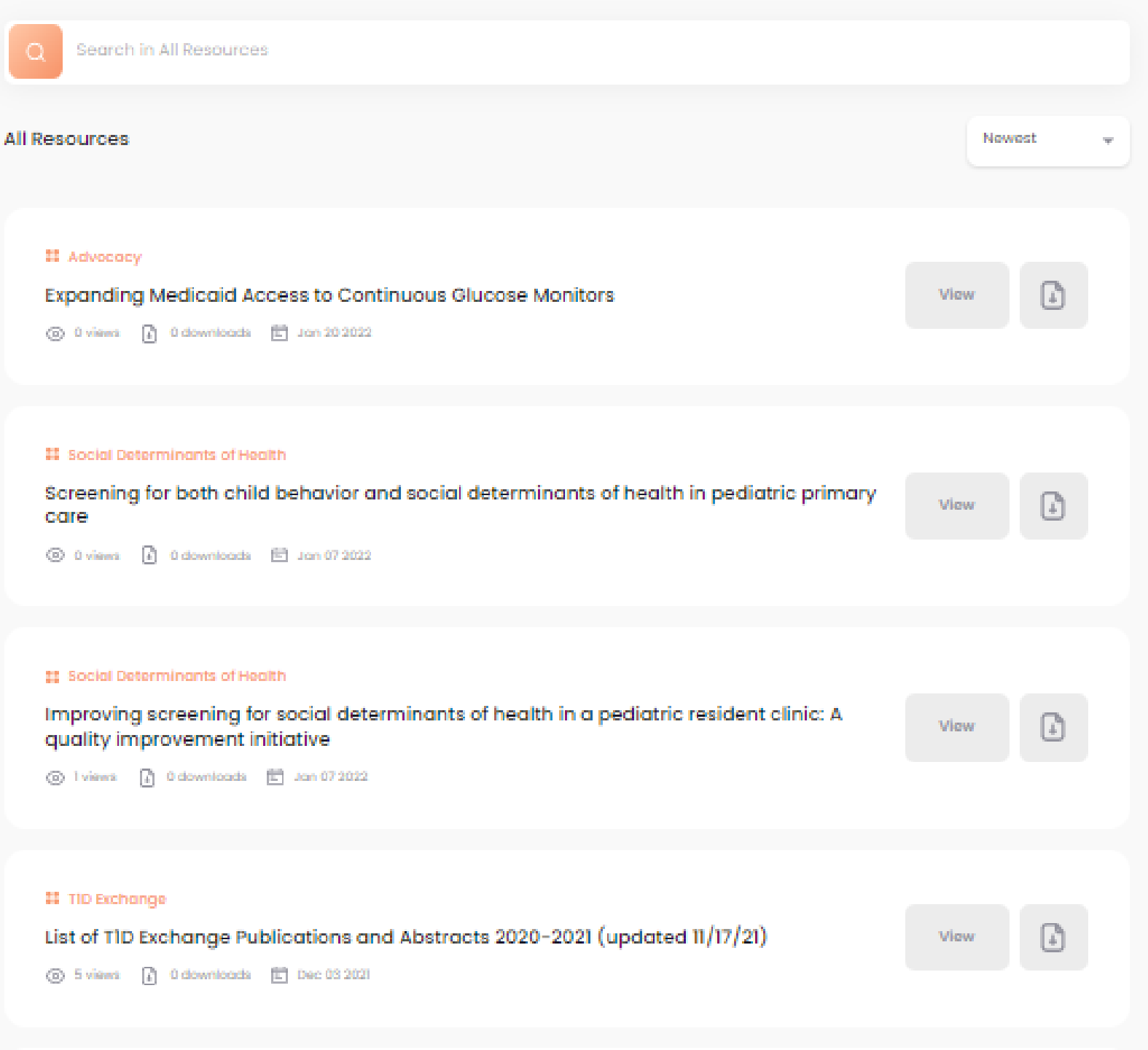
Available data	No data
BMC	Albert Einstein
Grady	BDC
SUNY	Mt. Sinai
	Northwestern
	NYU
	Penn
	Stanford
	UCSF
	U of Miami
	Wayne

Utilizing Data

QI Portal

Available for ALL clinics

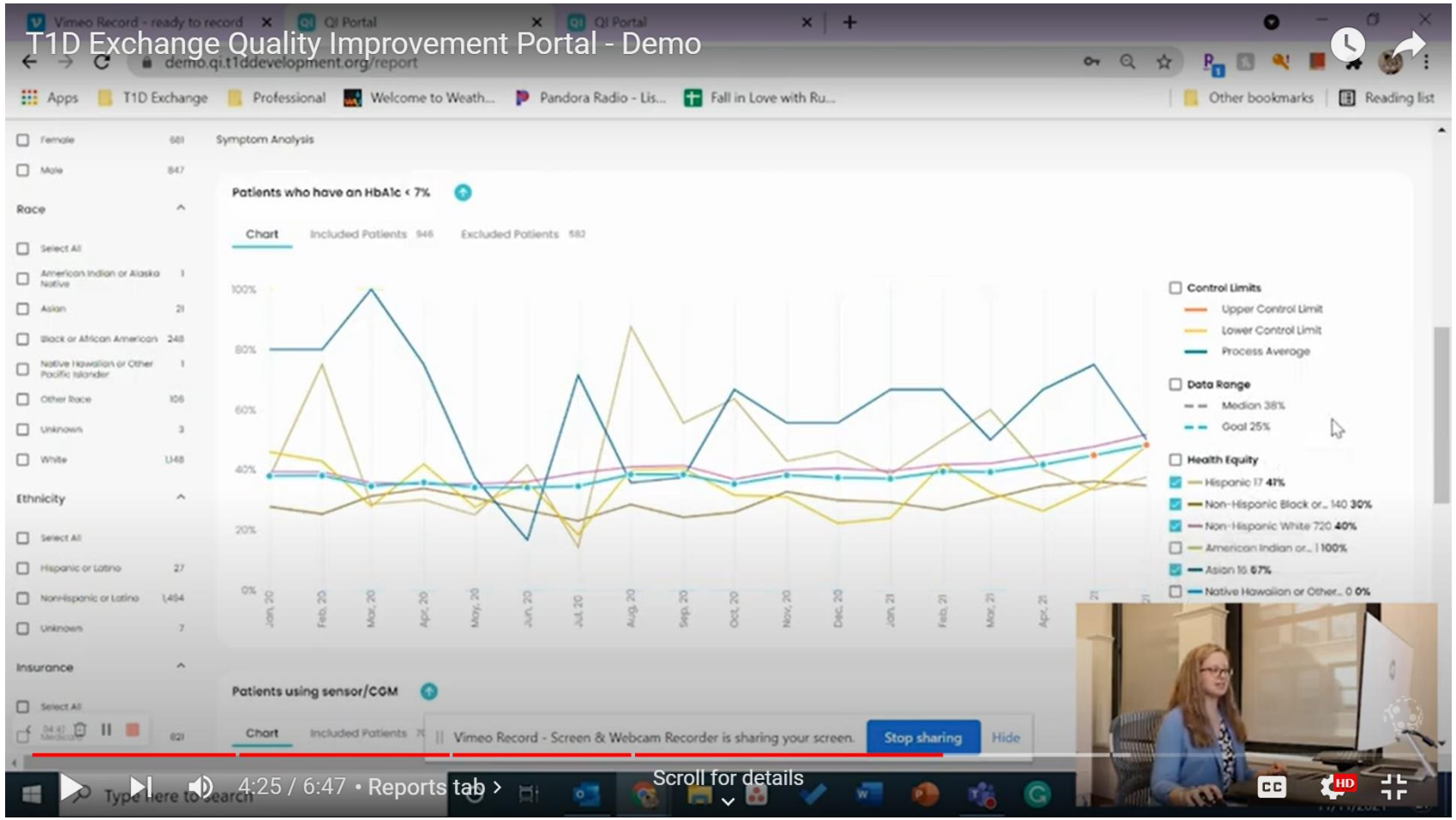
QI Portal offers benchmarking, charting, and library resources



QI Portal Demo Video

- Five-minute overview of all four Portal tabs. Or, select tab “chapters” for a quick refresher on a specific feature

- https://www.youtube.com/watch?v=iZCe48_MtsE



Adult Clinic Insights

Past (✓) and Current (🔄 Adult QI Projects

	BDC	SUNY	Stanford	Penn	Wayne	Miami	NYU	Grady	Albert Einstein	UCSF	BMC	Mt. Sinai	Northwestern
A1c		✓	🔄	✓				🔄					
CGM		🔄							🔄				
Pump	🔄	🔄				🔄			🔄		🔄		
Depression Screening				✓									
SDOH Screening		🔄		✓									
Health Equity in devices		🔄							🔄				
Data/ Infrastructure					🔄		🔄					🔄	🔄

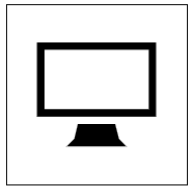
Resources Available

- Monthly Collaborative Calls
- Coaching Calls with Ori/Ann
- QI Portal and Dashboards
- IHI Open School Courses
- PDSA cycle documentation in LifeQI
- T1Dx QIC Trello page
- Case Studies and Change Packages

Recommendations for next 1/2 year (through June 2022)

- If not already, identify a QI project for the next 4-6 months
- If not already, provide Phase 1 measures
- If collecting Phase 1, begin collection on Phase 2 measures
- Utilize the QI Portal for data trending, benchmarking, and creating notifications, and resources
- Take IHI Open School courses
- Document PDSAs in LifeQI
- Engage other faculty members in your improvement efforts by discussing/sharing these insights
- Consider submitting an abstract for your improvement work

T1D Exchange

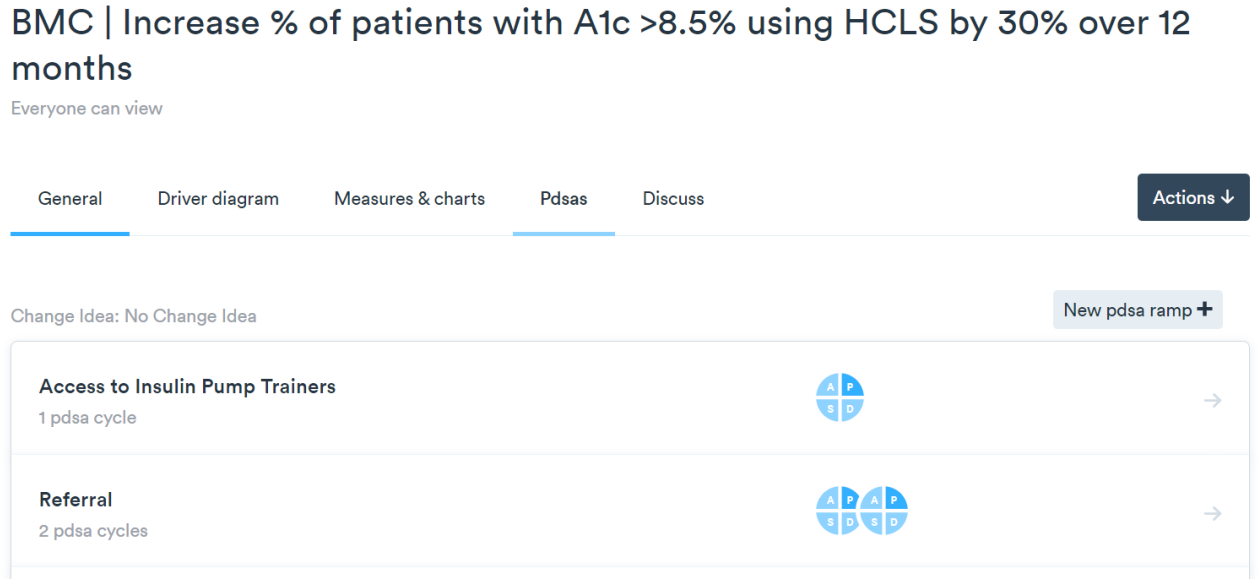


ONLINE

QI 101: Introduction to Health Care Improvement

ADDED: 08/25/2020

880 user reviews




T1D
Exchange

Next Adult Collaborative Call (combo with peds!)

Thursday March 24th, 11:00-12:30 PM EST

Questions from the Collaborative