CARDI·OH

Ohio Cardiovascular and Diabetes Health Collaborative

CASE WESTERN RESERVE UNIVERSITY
School of Medicine

In partnership with:

The Ohio State University College of Medicine

University of Toledo College of Medicine and Life Sciences

Ohio University Heritage College of Osteopathic Medicine

Northeast Ohio Medical University

University of Cincinnati College of Medicine

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Project ECHO®

Cardi-OH ECHO

Health Equity and Cardiovascular Risk

February 8, 2024

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About Cardi-OH

Founded in 2017, the mission of Cardi-OH is to improve cardiovascular and diabetes health outcomes and eliminate disparities in Ohio's Medicaid population.

WHO WE ARE: An initiative of health care professionals across Ohio's seven medical schools.

WHAT WE DO: Identify, produce, and disseminate evidence-based cardiovascular and diabetes best practices to primary care teams.

HOW WE DO IT: Best practices resources are available via an online library at Cardi-OH.org, including monthly newsletters, podcasts, webinars, and virtual clinics using the Project ECHO® virtual training model.

Learn more at Cardi-OH.org

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Disclosure Statements

- The following speakers and subject matter experts have a relevant financial interest or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of their presentation*:
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Promoting Diabetes Control

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Learning Objectives

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1. List and describe a minimum of three barriers specific subpopulations face in achieving control of diabetes
2. Describe alternatives to newer medications for control of diabetes for patients with limited financial means
3. Describe the use of continuous glucose monitoring for patients with diabetes and effective strategies to promote uptake among minority patients

Stagnation of HbA1C—NHANES data

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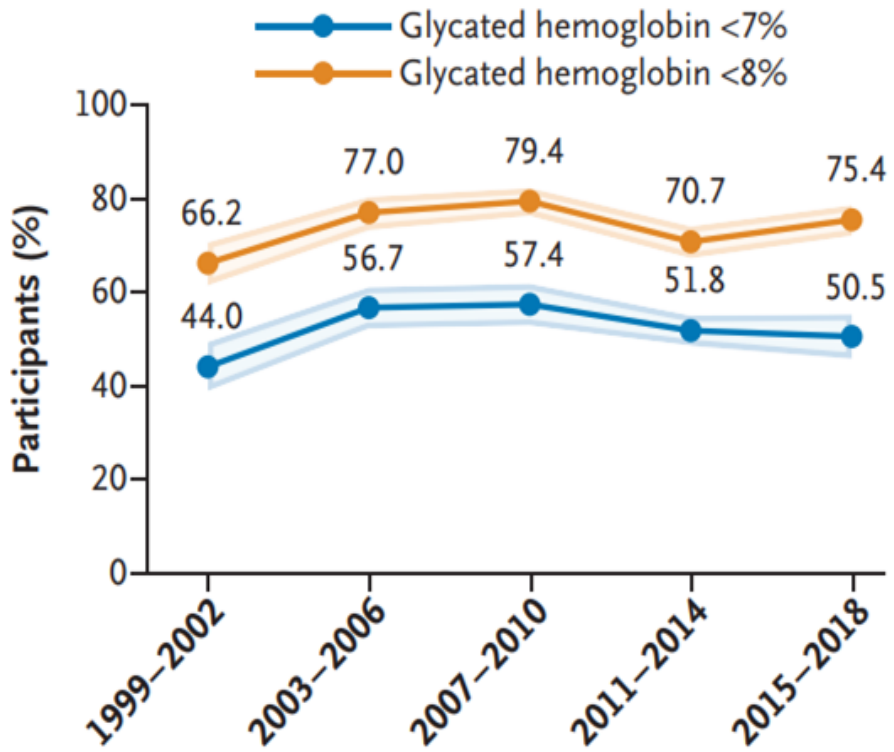
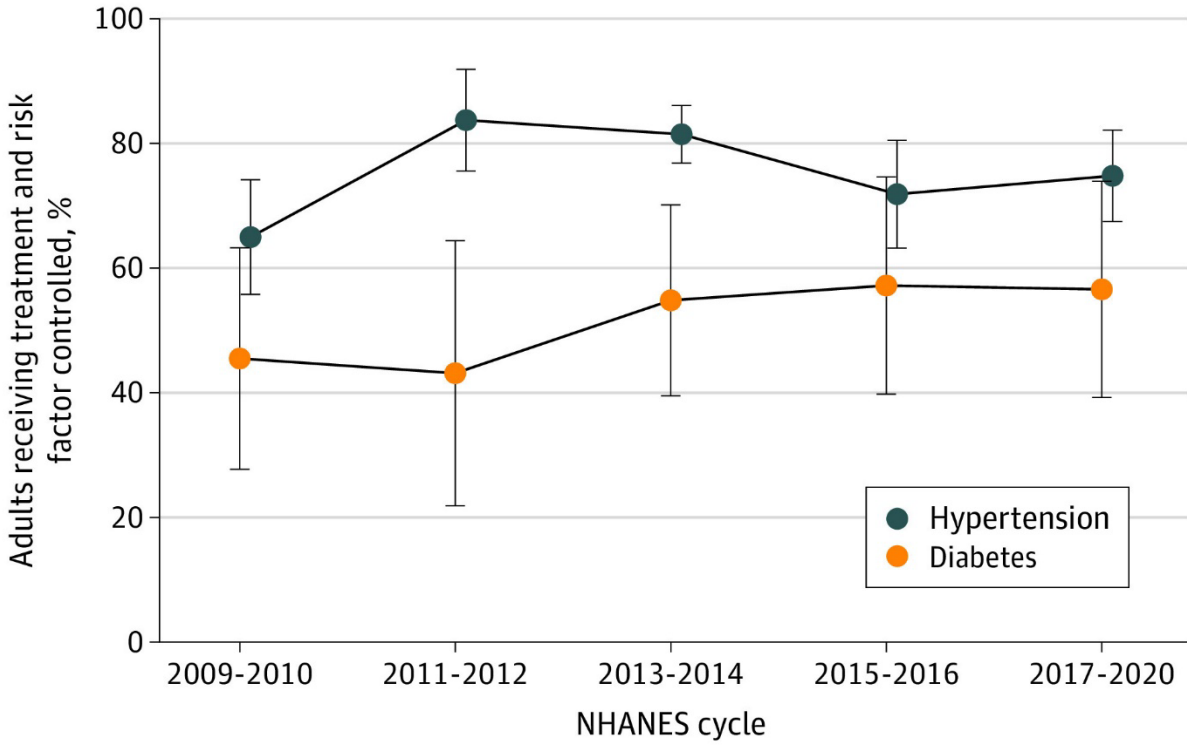
All Adults



Fang M, et al.. NEJM 2021;384:2219-2228.

Age 20-44



Aggarwal et al. JAMA. 2023;329(11):899-909. doi: 10.1001/jama.2023.2307.

Barriers to Glycemic Control

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Patients

- Cost/access to medication
- SDOH
- Limited understanding of progressive nature of DM
- Access to DSMES, MNT
- Fear of side effects
- Complexity
- Communication/trust
- Lack of support

Providers

- Time constraints/competing priorities
- Lack of goals for therapy
- Concern about side effects
- Concern about patient ability/needs

Systems/Payers

- Lack of population health initiatives
- Lack of team-based approach
- Lack of transparency in formulary

SDOH=social determinants of health
DSMES=diabetes self-management education and support
MNT=medical nutrition therapy

Addressing Therapeutic Inertia in 2020 and Beyond: A 3-Year Initiative of the American Diabetes Association, Clin Diabetes. 2020 ;38(4):371-381. doi: 10.2337/cd20-0053.
Blonde et al. Adv Ther 2018;35:1735-45

Social Determinants/Populations

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Determinant	Context
Race/ethnicity	Implicit bias, discrimination, trust with providers, culture/values, stress
Gender	Caregiver role, stereotypes, body image
Geographic region	Access to care, health policy, built environment
Food insecurity	Obesity, hypoglycemia
Built environment	Transportation, access to healthcare, internet/cellular access, food deserts, safe space to exercise
Housing instability	Ability to cook at home, establish a routine
Social support	Complex regimens, manage stress, transportation
Education/literacy	Stigma, complex regimens/technology
Occupation	Complex regimens/self-care, income
Disability	Limitations of built environment, stereotypes

Hill-Briggs et al. ADA Scientific Statement. Diabetes Care. 2020;44(1):258–79. doi: 10.2337/dci20-0053.

Best Practice Actions to Overcome Therapeutic Inertia

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Clinician-Related

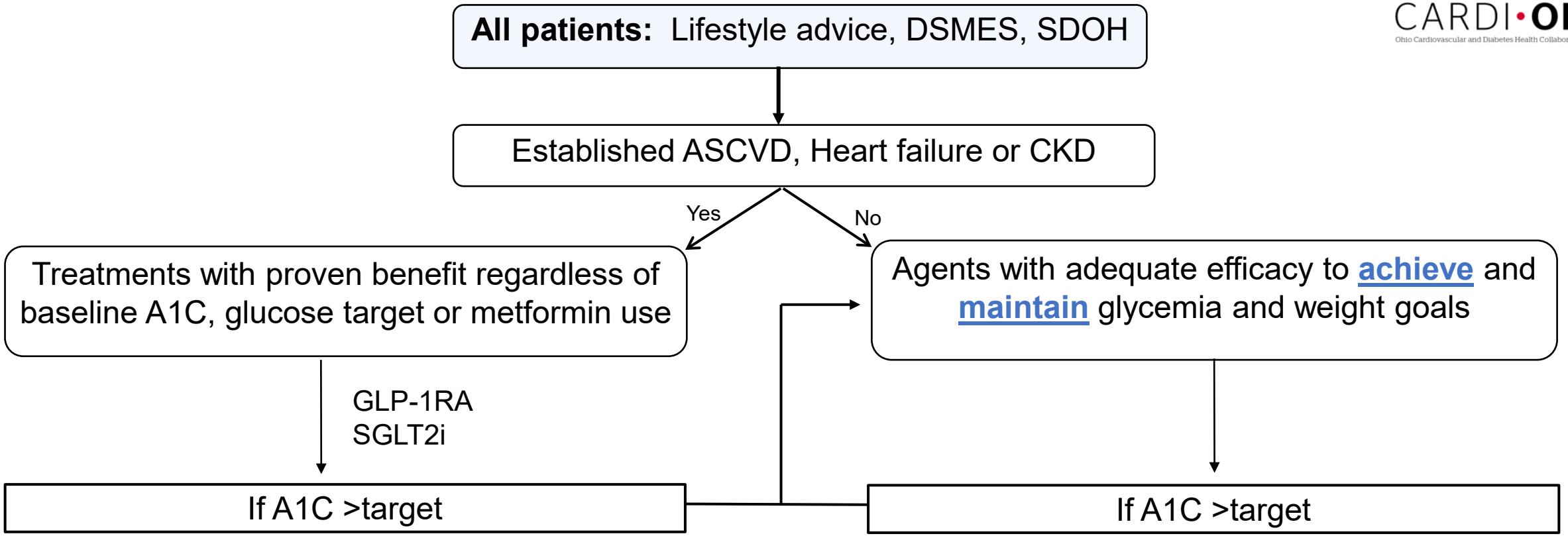
- Set clear glycemic goals and timelines with patients
- Empower team members to independently manage medications (algorithms or protocols)
- Use technologies/CGM to adjust therapy between A1C tests
- Develop and refer to a team of clinicians and community resources

System-Related

- Identify patients with diabetes who are newly diagnosed or not meeting goals with an A1C >9%
- Support, empower, and use a team approach
- Provide access to DSMES services
- Address SDOH in community
- Use technologies in office practices

El-Sayed et al. Diabetes Care 2023;46(Suppl. 1):S10–S18

Pharmacologic Management, ADA/EASD Consensus 2022



DSMES=diabetes self-management education and support, SDOH=social determinants of health, ASCVD=atherosclerotic cardiovascular disease, CKD=chronic kidney disease,GLP-1 glucagon-like peptide-1, SGLT2i=sodium-glucose cotransporter-2 inhibitor

Davies et al. Diabetologia. 2022;65(12):1925-1966. doi: 10.1007/s00125-022-05787-2.

Cost as a barrier

- ½ of adults with diabetes reported financial stress[1]
- Up to 25% of patients who are prescribed insulin report cost-related insulin underuse[2]
- 2/3 of people with chronic illness and cost-related non-adherence never shared this with their HCP[3]

1. Patel et al. Med Care 2016;54:796–803
2. Herkert et al. JAMA Intern Med 2019;179:112–114
3. Piette et al. Arch Intern Med. 2004;164(16):1749-55. doi: 10.1001/archinte.164.16.1749.

Pros/Cons of Low-Cost DM Medications[1]

Class	Examples	Pros	Cons
Sulfonylurea	Glimepiride Glipizide	Preferred for some types of monogenic DM	Hypoglycemia[a] Weight gain Shorter durability
Glinides	Repaglinide Nateglinide	Flexible	Hypoglycemia Weight gain Complexity (QAC)
Thiazolidinedione	Pioglitaone	Longest durability[b] CV benefit NASH/NAFLD benefit	Weight gain Heart failure/edema[c] Fracture risk
Alpha-glucosidase inhibitors	Acarbose	No hypoglycemia or weight gain	Gastrointestinal side effects Complexity (QAC)

a) Avoid glyburide and older generation SFU due to higher hypoglycemia risk
b) vs. SFU or Metformin[2,3]
c) 15/30 mg conferred similar CV benefit and DM prevention with lower risk of HF and weight gain[4]

1. ElSayad et al. Diabetes Care. 2023 Jan 1;46(Suppl 1):S140-S157. doi: 10.2337/dc23-S009
2. Dormandy et al. Lancet 2005;366:1279-89
3. Kahn et al. N Engl J Med. 2006;355(23):2427-43. doi: 10.1056/NEJMoa066224.
4. Spence et al; Diabetes Obes Metab. 2022;24(6):1150-1158. doi: 10.1111/dom.14687

UKPDS: Low-Cost Drugs and Complications

Cardiovascular and mortality benefit emerges after median 8.5 years post-trial

	1997		2007	
	RRR (%)	P-value	RRR (%)	P-value
Any diabetes related endpoint	12	0.029	9	0.040
Microvascular complication	25	0.0099	24	0.001
Myocardial infarction	16	0.052	15	0.014
All cause mortality	6	0.44	13	0.007

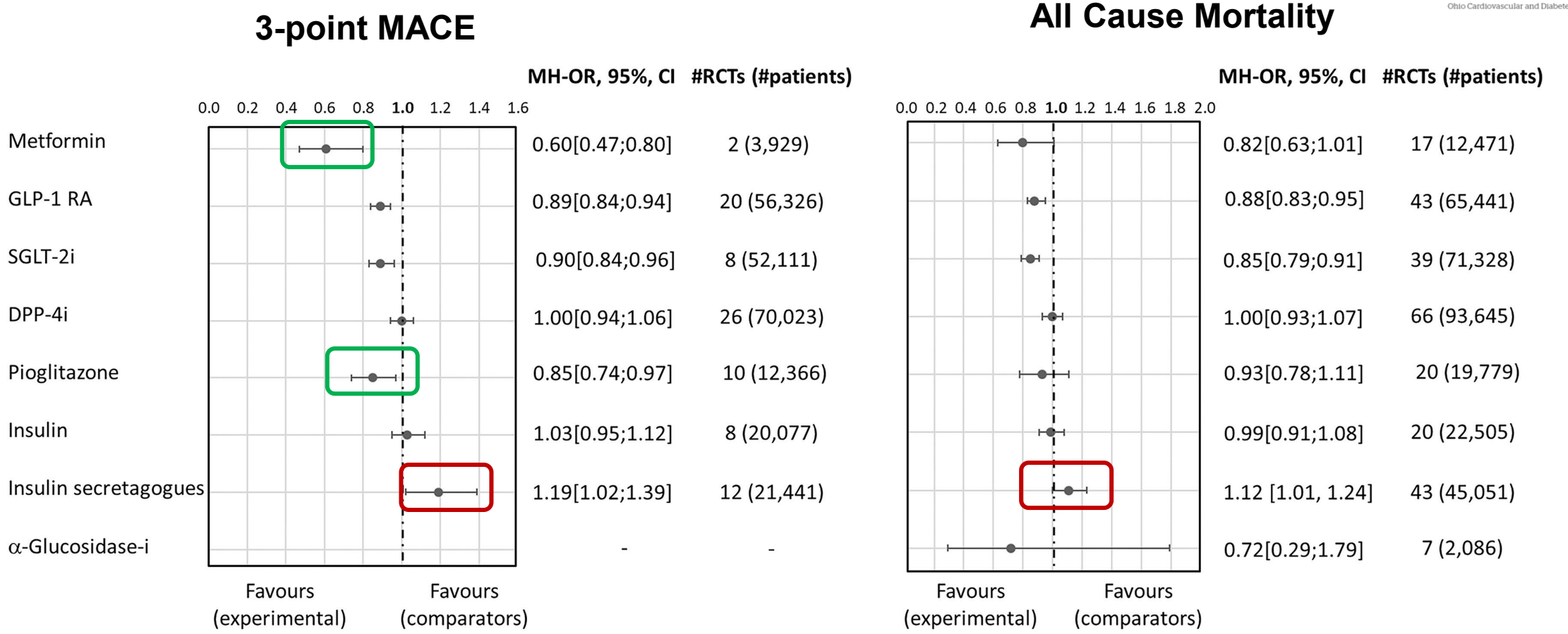
HbA1C at end of Intervention phase

- SFU or insulin vs. conventional therapy: 8.5 vs. 7.9%
- Metformin vs. conventional therapy: 8.9 vs 8.4%

RRR = Relative Risk Reduction, P = Log Rank

Holman et al. N Engl J Med. 2008;359(15):1577-89

Potential CV Effects of Low-Cost Drugs



Manucci et al. Diabetes Obes Metab. 2023;25(2):444-453. doi: 10.1111/dom.14888.

Insulin Costs

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Non-Medicare

- Lilly insulins for $35/month[1]
- Walmart:
- syringes box of 100- $12

	1 Vial	¢/unit	5 Pen	¢/unit
Aspart Premix	$72	7.3	$86	5.7
Novolin 70/30	$25	2.5	$43	2.9

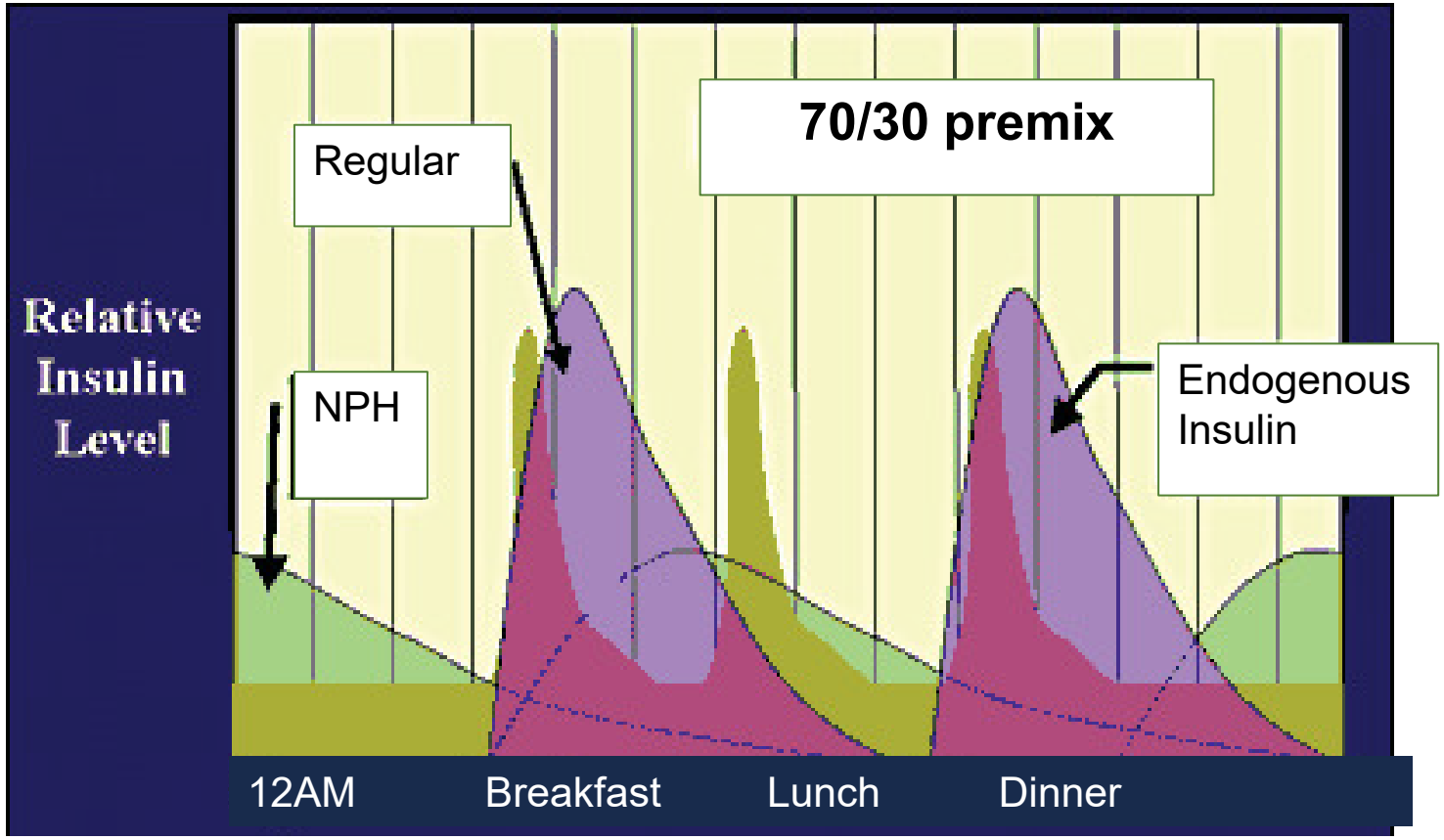
	Monitor	Strips (#50)	Lancet (#100)
Relion	$20	$9	$2
TrueMetrix	$35	$15	$9

- **Medicare – Inflation Reduction Act[2,3]**
- Starting July 1, 2023, $35/month cap on insulin (Part B)
- Caps cost of prescription drugs at $2,000/year (Part D)
- Allows Medicare to negotiate price of drugs with manufacturers

1. https://www.insulinaffordability.com/
2. https://www.hhs.gov/about/news/2023/01/24/new-hhs-report-finds-major-savings-americans-who-use-insulin-thanks-president-bidens-inflation-reduction-act.html#:~:text=The%20insulin%20provisions%20of%20this,a%20month's%20supply%20of%20insulin.
3. https://diabetes.org/sites/default/files/2022-08/What-People-with-Diabetes-Need-to-Know-about-the-Inflation-Reduction-Act.pdf

Tips for Using Human Insulins

- **Regular**:
- 30 minutes before meals
- **NPH**:
- Do not skip meals
- HS snack may be needed
- Time exercise as NPH wears off
- **70/30 premix**
- Daily dose is split 2/3 before BK, 1/3 before supper



- Donnor and Sarkar. Endotext.org. South Dartmouth (MA): MDText.com, Inc.; 2000–. PMID: 25905175

Disparities in CGM Use – T1D

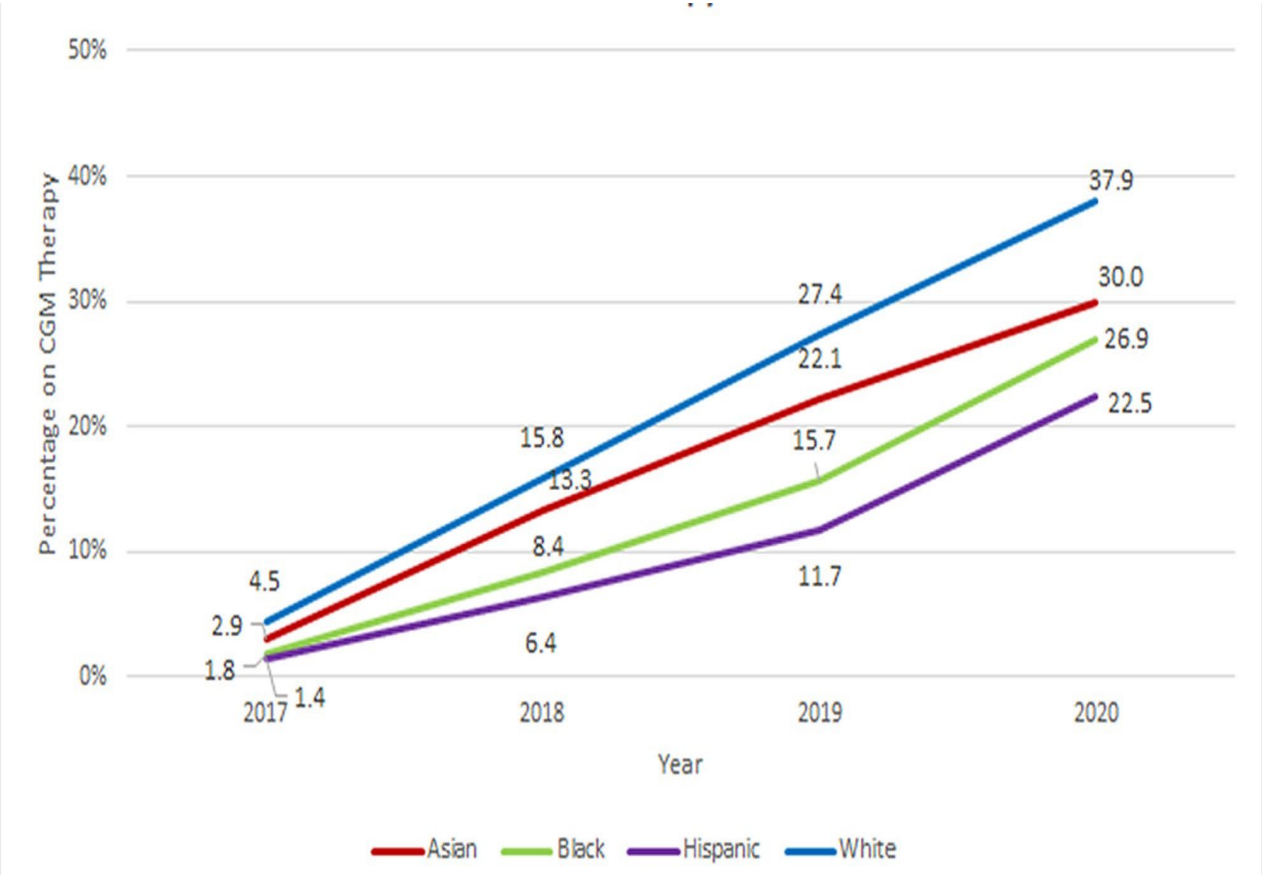
- T1D Exchange Quality Improvement Collaborative (N=11,469)
- 48% used CGM
- CGM use associated with

↓ **HbA1C**	↓ **DKA**	↓ **Severe hypoglycemia**
8.5 vs. 7.7%	230 vs. 80 per 1000 p<0.001	256 vs. 16 per 1000 p<0.001

- NHW (50%) vs. NHB (18%) or Hispanic (38%)
  - ➢ inequities persisted after adjustment for insurance

• Desalvo et al. J Diabetes Sci Technol. 2023 Mar;17(2):322-328. doi: 10.1177/19322968211049783.

Disparities in Device Use Among Medicare Beneficiaries—T1D



"Previous studies have documented numerous potential reasons …, including language barriers, access to quality health care, and implicit bias (3, 9)… Among Black and Hispanic young adults with T1D who had heard of diabetes technology, ***most had not been offered it by their providers*** *(16)."*

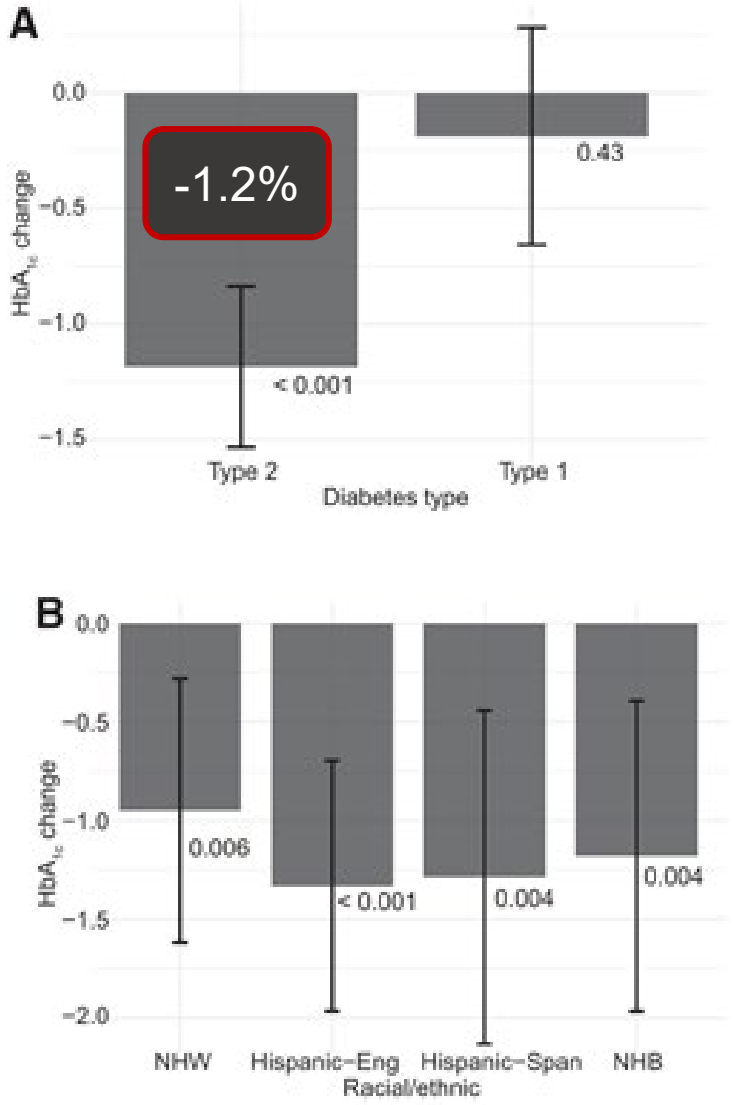
Kommareddi et al. J Clin Endocrinol Metab. 2023 Jun 16;108(7):e388-e395. doi: 10.1210/clinem/dgad046.

Effect of Fully Subsidized CGM in Colorado Medicaid

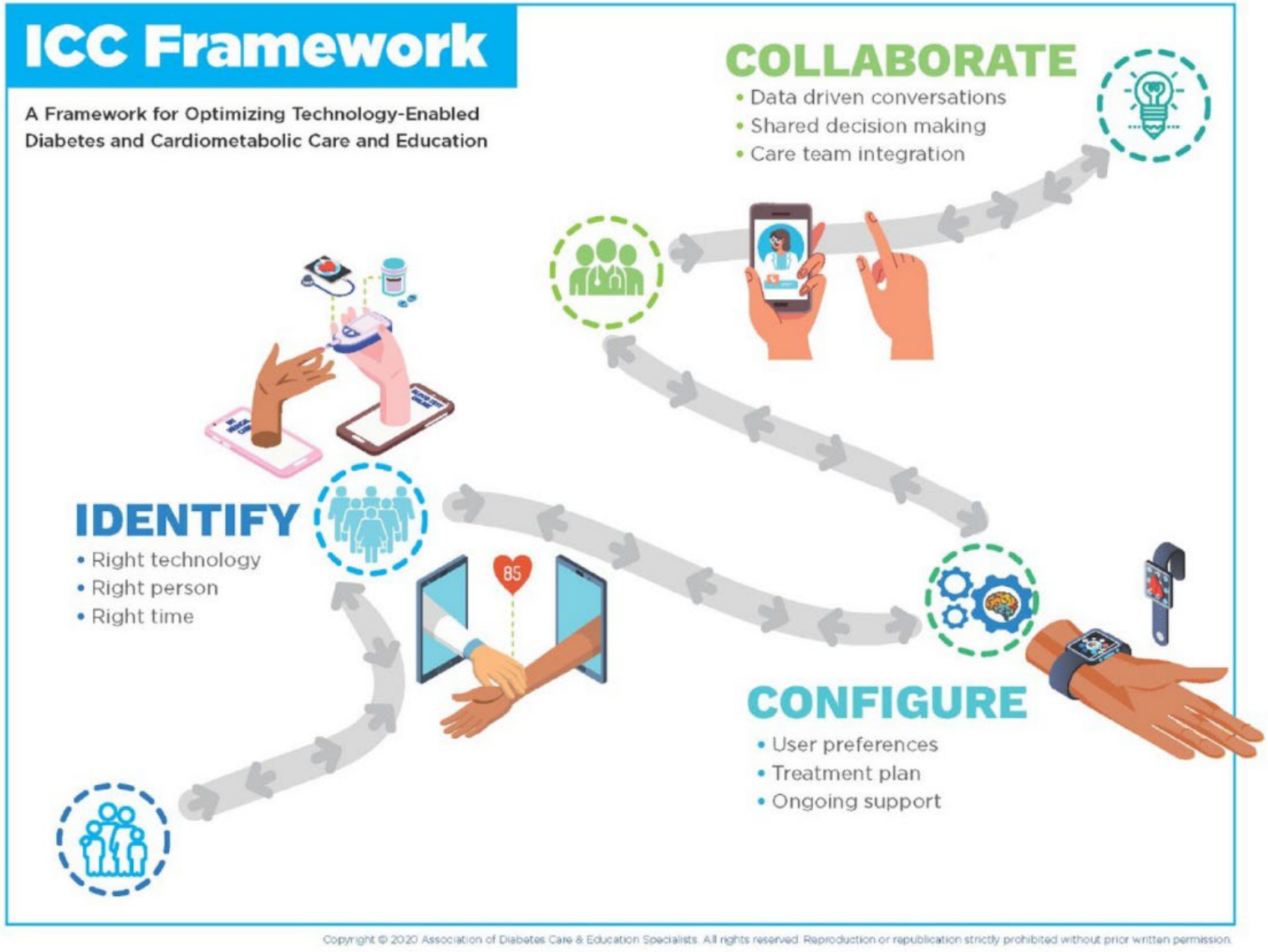
Predictors of Use:

- CGM prescriptions + Dispenses
  - ➢ Endocrinologist prescriber
  - ➢ Insulin use
  - ➢ T1D
  - ➢ High HbA1C
- Repeat fill
  - ➢ MDI/pump
- Fill adherence (MPR)
  - ➢ High HbA1c

❖ Race/ethnicity was not a factor



Ni et al. Diabetes Care. 2022;46(2):391-398. doi:10.2337/dc22-1287



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Device choice
- Location
- Duration of wear
- Compatibility

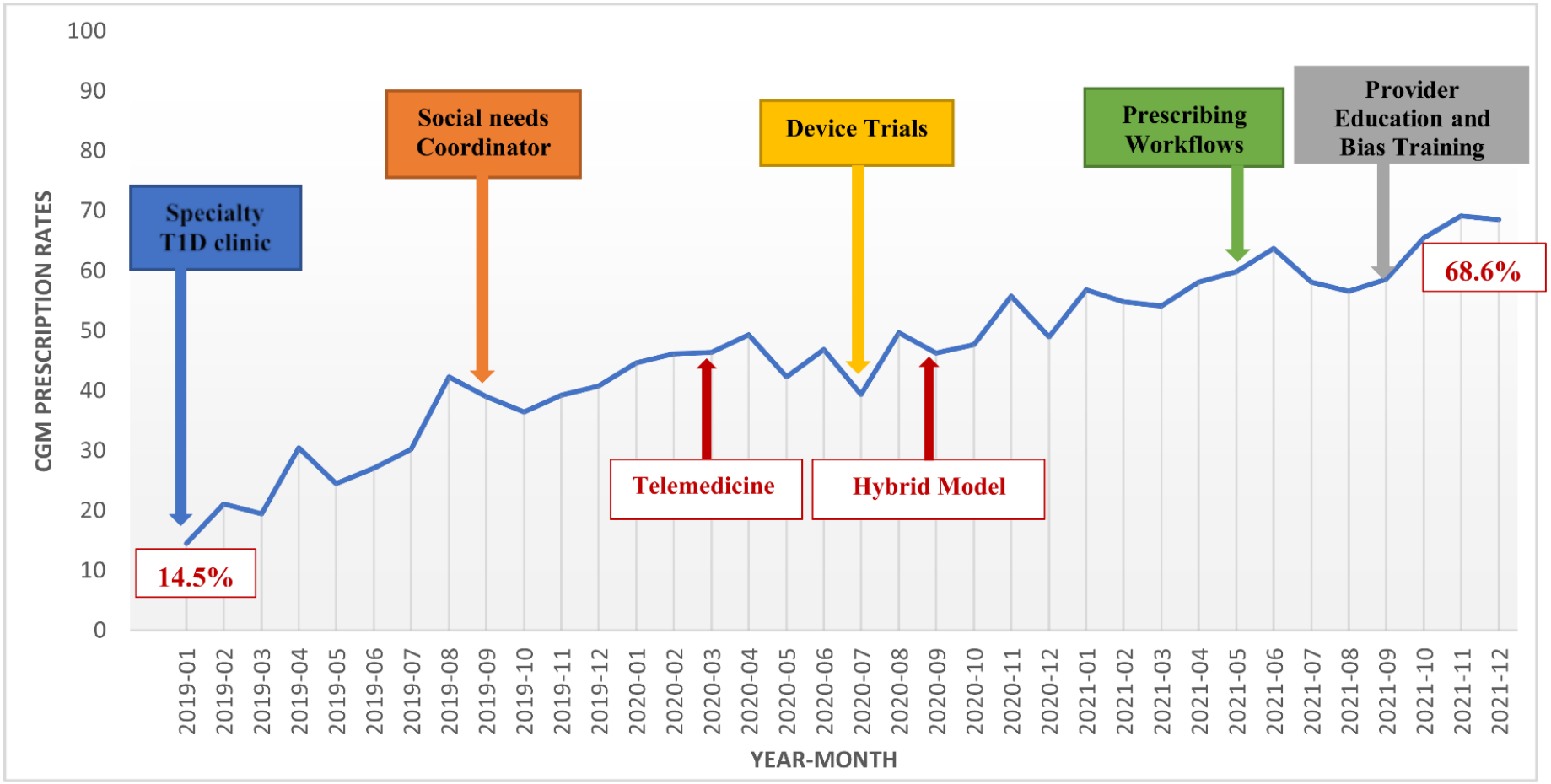
Configuration
- Alerts
- Sharing data
- Reminders

Education
- Expectations
- Goal setting
- Trouble shooting
- When to do a BG

Feedback

Greenwood et al. The Diabetes Educator 2020;46:315

Practice Transformation at a Safety Net Hospital



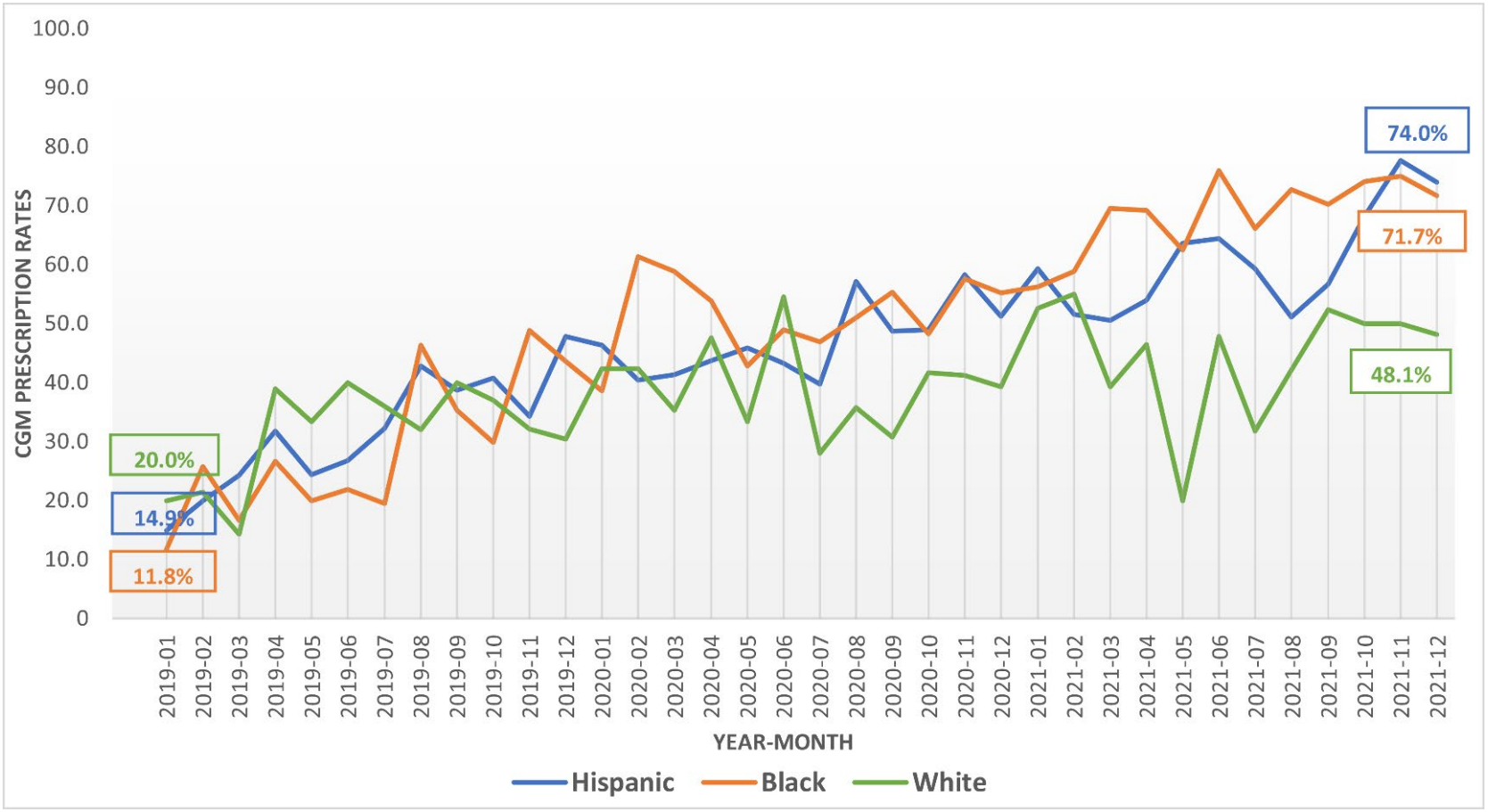
Monthly meetings to unify practices and identify gaps

Manufacturers trained LPN/MAs to implement CGM at point of care, download reports and link patients to clinic accounts

Relationships with DMEs, manufacturers, weekly summaries

- Mathias et al. *Diabetes Care* 2022;45(10):2231–2237

Results of Practice Transformation



- Mathias et al. *Diabetes Care* 2022;45(10):2231–2237

Specific recommendations to promote CGM uptake

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- Population-based approaches to identify and offer CGM
- Tailored education & support programs
- Develop virtual care models that involve key stakeholders
- Incorporate CGM into diabetes virtual care

- Vrany et al. Front Endocrinol (Lausanne). 2023 Jan 25;14:1083145. doi: 10.3389/fendo.2023.1083145.

Thank you!

Questions/Discussion