Welcome!

MCT2D Fall Regional Meetings

Lauren Oshman, MD, MPH, FAAFP

MCT2D Program Director

Liisa, PAB member

Prediabetic for many years, diagnosed with T2D in Feb 2022

I don't know if it was my doctor's approach but it was what I needed, at the right time. It made all the difference.

In our first appointment, immediately, she says enough playing around. Your numbers have been going up and up and up. And it's time to take this serious. **It was very emotional. I've never cried like that in a doctor's office before.**

She put my name in for the diabetes education and started me on a prescription of Rybelsus. But it was the perfect conversation to have at the right time when I needed to make this change. So I'm grateful to it.

MCT2D

It was the perfect conversation to have at the right time when I needed to make this change.

Rybelsus and having the chance to make the right diet choices

Such a supportive family. I feel it. I’m on the receiving end of it this time.

Year in Review

Meetings

Spring Regional Meetings (April/May 2022)

- First time convening practice clinical champions
- Introduced to the MCT2D Data Dashboards
- Discussed barriers and challenges amongst peers
- Learned about chronic kidney disease

Collaborative Wide Meeting (June 2022)

Available on YouTube!

- Convened physician organization leadership
- Shared best practices and implementation strategies from pilot/accelerated sites
- Keynote speaker (Dr. David Ludwig) presentation on low carbohydrate diets
- Demonstrated cost savings of SGLT2is/GLP-1RAs

Year in Review

What We've Been Working On

Launching the Learning Community

- Hosting educational events
- Learning Community Newsletter
- Learning from you (blog posts, patient stories, feedback)

Submitting Case Summaries

Each MCT2D physician submitted a case summary about their experience with the initiatives. **We are using these case summaries for the following:**

- Case examples
- Understanding needs (e.g. prioritized low carb resource creation based on feedback)
- Learning challenges with each initiative
- Demonstrating challenges to key stakeholders (e.g. insurers)

Today's Agenda

Time	Topic	Presenter
6:00pm - 6:15pm	**Welcome and Updates**	Lauren Oshman, MD MCT2D Program Director
6:15pm - 6:25pm	**Data Dashboard Updates**	Jake Reiss, MHSA Associate Program Manager
6:25pm - 6:45pm	**Regional Summary Statistics And Performance**	Table discussions
6:45pm - 6:55pm	**Break**	N/A
6:55pm - 7:20pm	**Updates on Guidelines & Care Coordination**	Kara Mizokami-Stout, MD University of Michigan Metabolism Endocrinology & Diabetes
7:20pm - 7:50pm	**Operationalizing a Low Carb Diet In Type 2 Diabetes**	Lauren Oshman, MD MCT2D Program Director
7:50pm - 8:00pm	**Wrap Up & Closing**	Jackie Rau, MHSA MCT2D Program Manager

Updates

- Who is MCT2D?
- Coverage Wins
- Jumpstart Program
- New Tools

Who is MCT2D?

>300 Primary Care Practices

15 Nephrology Practices

14 Endocrinology Practices

1000+ Participating Physicians

Represented by

28 Physician Organizations

Steering Committee

12 members, representatives from each stakeholder in MCT2D (POs, PCP practices, patients, endocrinology, & nephrology)

Patient Advisory Board

Meetings bi-monthly
~12-14 regular attendees
Invited to all regional and collaborative meetings

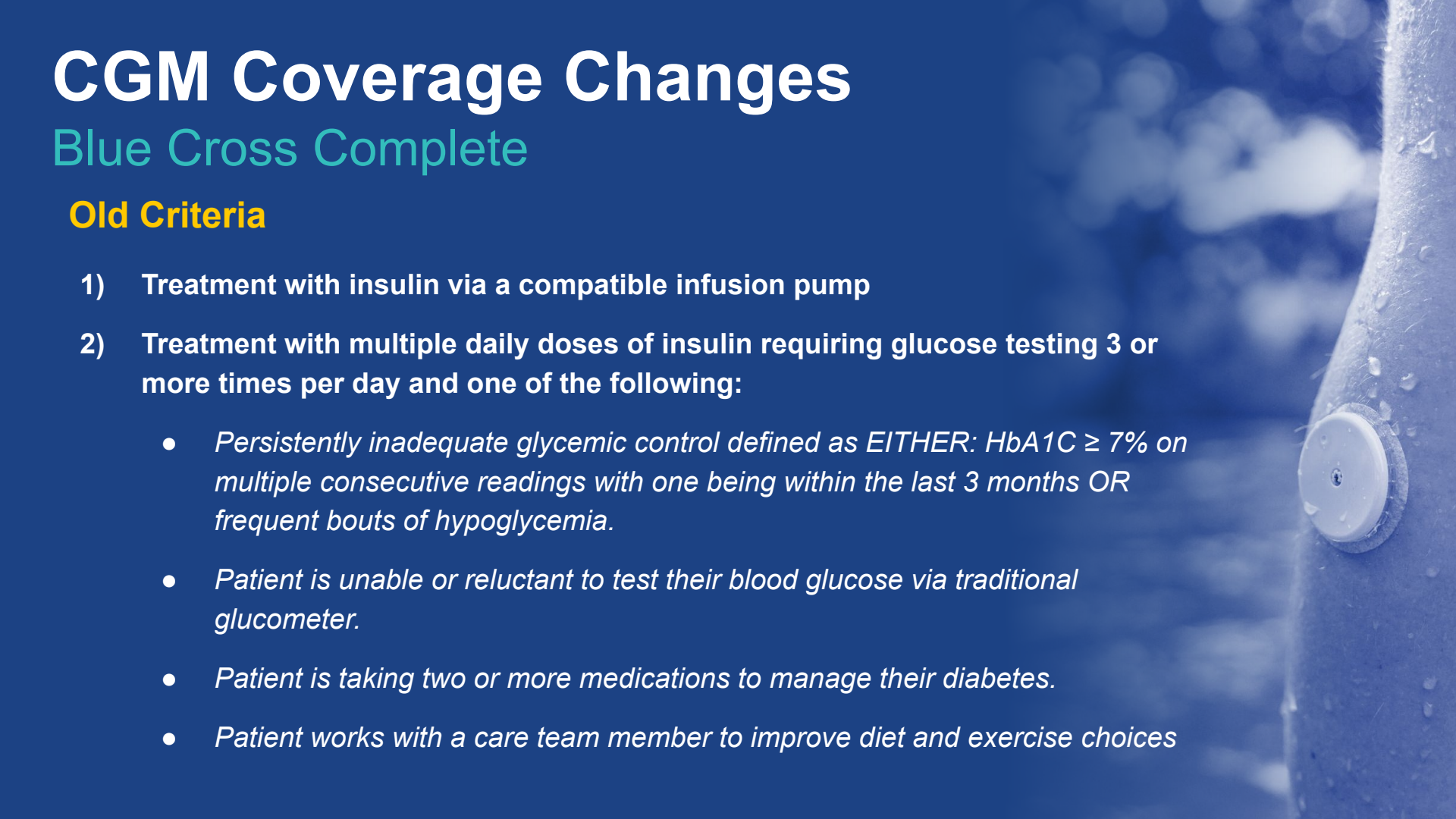
Expansions in CGM Coverage

CGM Coverage Changes

Blue Cross Complete

Old Criteria

1) **Treatment with insulin via a compatible infusion pump**
2) **Treatment with multiple daily doses of insulin requiring glucose testing 3 or more times per day and one of the following:**
    - *Persistently inadequate glycemic control defined as EITHER: HbA1C ≥ 7% on multiple consecutive readings with one being within the last 3 months OR frequent bouts of hypoglycemia.*
    - *Patient is unable or reluctant to test their blood glucose via traditional glucometer.*
    - *Patient is taking two or more medications to manage their diabetes.*
    - *Patient works with a care team member to improve diet and exercise choices*



CGM Coverage Changes

Blue Cross Complete

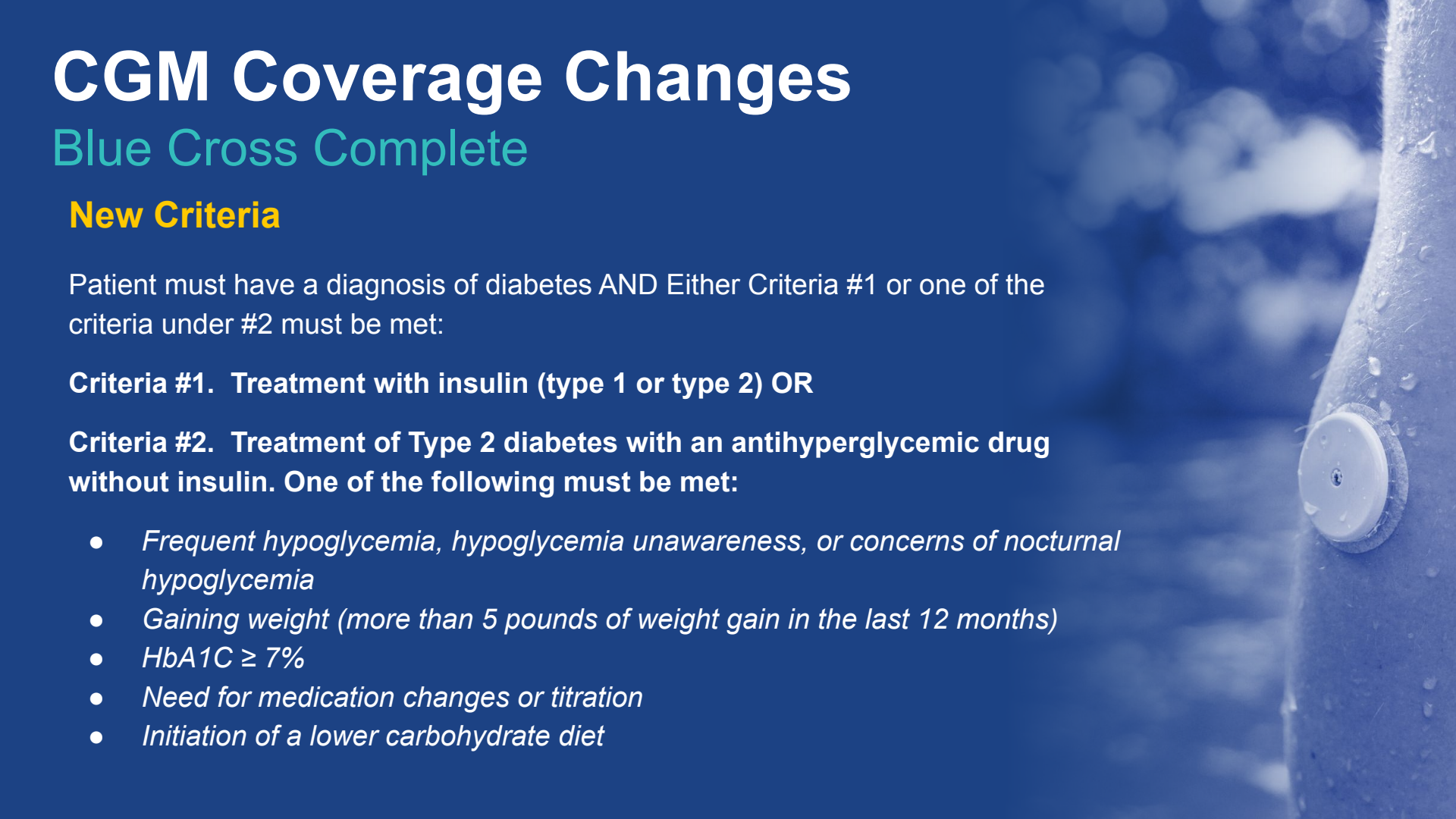
New Criteria

Patient must have a diagnosis of diabetes AND Either Criteria #1 or one of the criteria under #2 must be met:

Criteria #1. Treatment with insulin (type 1 or type 2) OR

Criteria #2. Treatment of Type 2 diabetes with an antihyperglycemic drug without insulin. One of the following must be met:

- *Frequent hypoglycemia, hypoglycemia unawareness, or concerns of nocturnal hypoglycemia*
- *Gaining weight (more than 5 pounds of weight gain in the last 12 months)*
- *HbA1C ≥ 7%*
- *Need for medication changes or titration*
- *Initiation of a lower carbohydrate diet*



CGM Coverage Changes

United Healthcare

DME Criteria and Criteria for non-MCT2D Physicians

- Diagnosis of diabetes requiring insulin
- Blood glucose testing at least 4x daily
- Insulin injections at least 3 x daily OR use of continuous insulin infusion pump
- Frequent adjustments to treatment regimen necessary based on glucose testing results
- Documented compliance to physician-directed comprehensive diabetes management program

New Criteria for MCT2D Physicians

- Ordered by an MCT2D member provider
- Patient has T2D diagnosis

Great News: United Healthcare will be adding NPs and PAs to the prior authorization removal. Stay tuned for more details!

How to use Poll Everywhere

Join by Web

1. Go to **PollEv.com**
2. Enter **MCT2D945**
3. Respond to activity

Join by Text

1. Text **MCT2D945** to **22333**
2. Text in your message

Have you submitted any CGM prescriptions for United Healthcare patients since the coverage change in mid-August?

Yes, and they went through without any issues

Yes, but there were issues with getting the CGM prescription without prior authorization

No

HEALTHY EATING JUMPSTART

GROCERY DELIVERY PROGRAM

An MCT2D + HBOM + MSHIELD Initiative

PURPOSE

To allow individuals diagnosed with **Type 2 Diabetes** who experience **food insecurity or are low-income** to have healthy, lower carb foods delivered to their home to **promote healthy eating patterns.**

OVERVIEW

3 Months of Shipt Healthy Choice Credits

$240 of total food credits ($80 per month)

Multiple Options for Ordering

Online ordering can be done on computer or mobile device

12 Weeks of Education and Support

Via website, email, and print

JUMPSTART practices in this region!

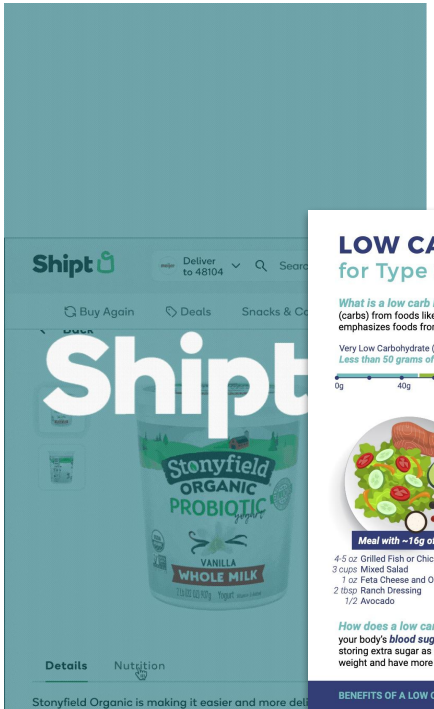
Munson Healthcare Manistee Primary Care

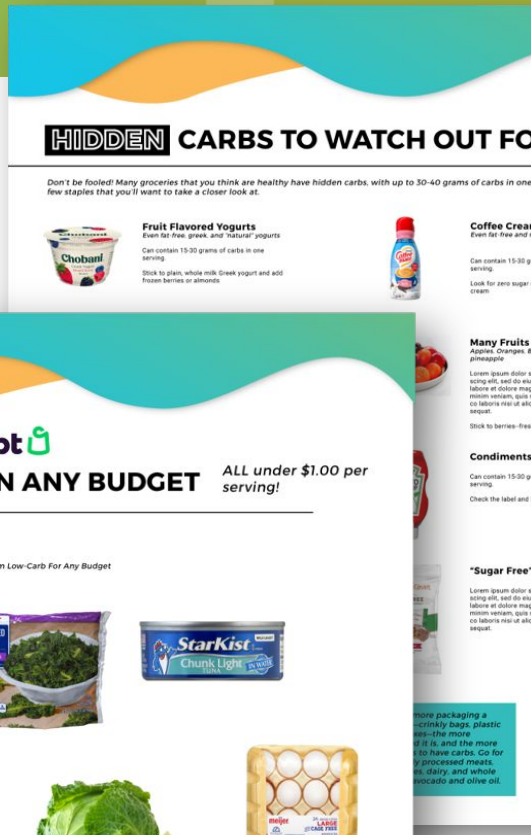
JUMPSTART practices in this region!

Practice Names

12 WEEKS of lower carb lifestyle education

Each week participants will get meal plans, recipes, tips tools, and educational materials delivered directly to them.

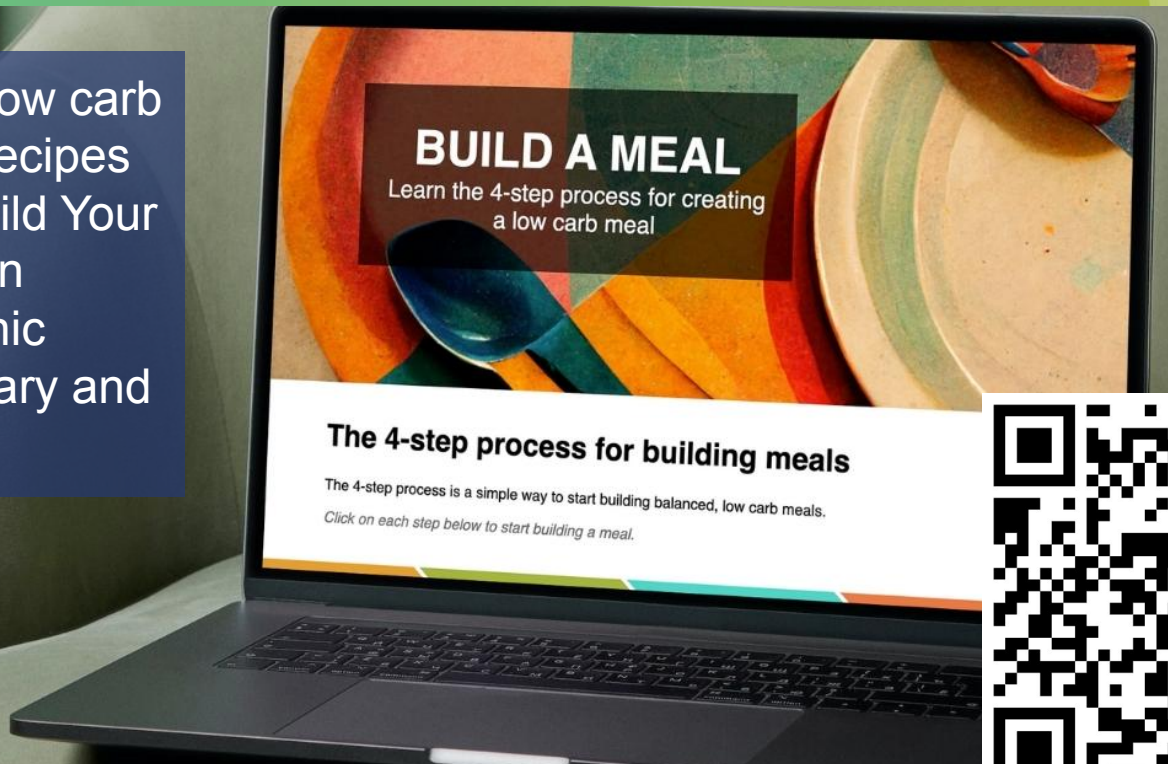




www.jumpstart.mct2d.org

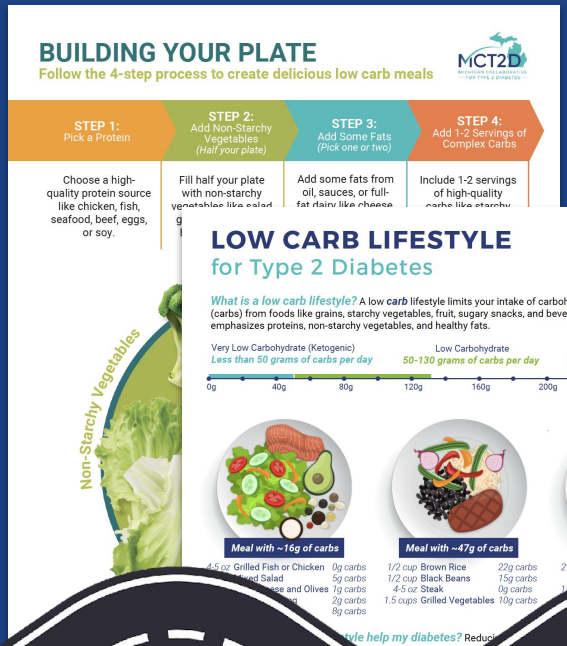
Patient-focused website open to any patient curious about starting a lower carb lifestyle

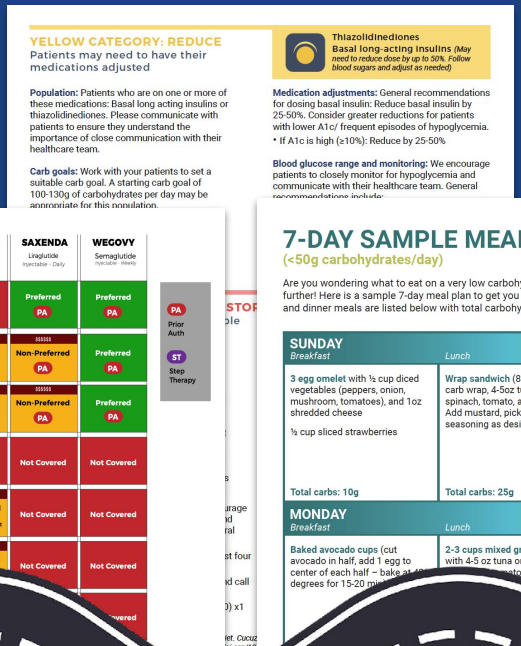
- Build a custom low carb meal plan with recipes
- Learn about “Build Your Plate” through an interactive graphic
- Set specific dietary and lifestyle goals



New MCT2D Tools

What we've been working on: new tools and resources!





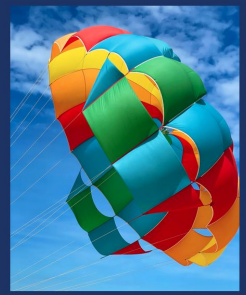
MCT2D Learning Community

The MCT2D Learning Community launched in May 2022 with opportunities to provide feedback on MCT2D developed tools, attend educational events, and contribute stories to the MCT2D blog, and the debut of the learning community newsletter.

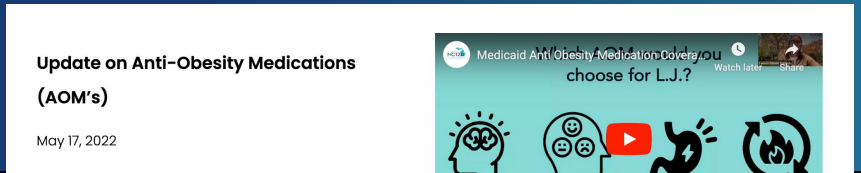
Learning Community events have included:

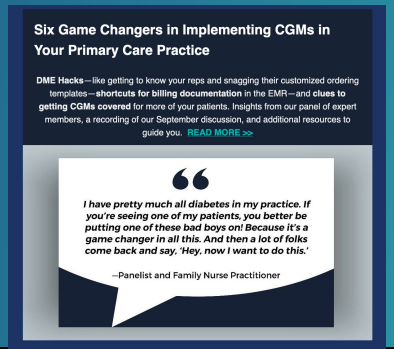
- Weight Loss Medications
  (Clinical Use and Medicaid Coverage Changes)
- Prior Authorization Panel
- CGM Implementation Panel

Prior Auth specialists have called this online tool "phenomenal" and "life changing." Are you using it?



Six key takeaways from our July 18th panel of Prior Authorization experts (including recommended tools), watch the recorded session, and browse past learning community webinars >>





What can the learning community do for you in 2023?

We want to host additional educational events and panels.

What topics are you interested in hearing about?

What topics would you like to see covered at future learning community events?

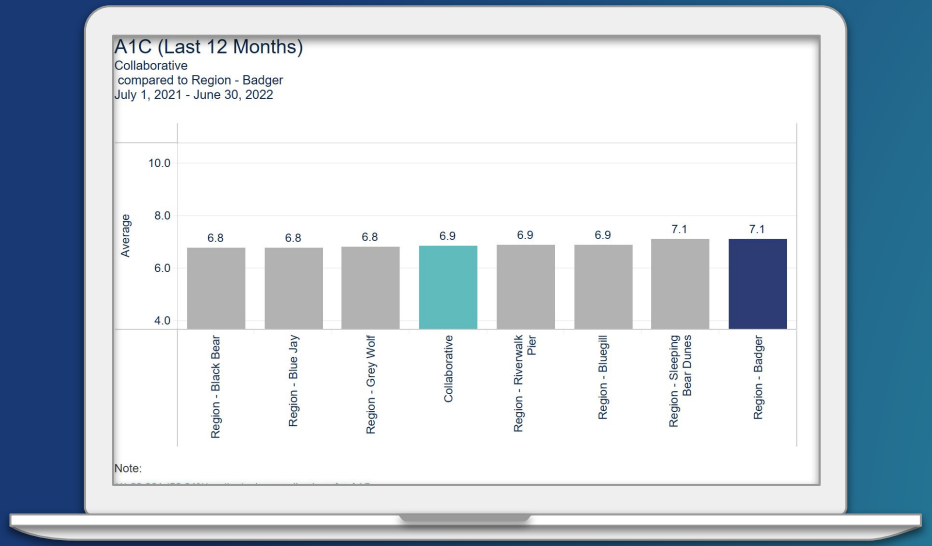
Patient Data Dashboard Updates and Demo

Jake Reiss, MHSA

MCT2D Associate Program Manager

Dashboard Enhancements

Conducted dashboard usability testing sessions



Focusing on design and user experience

Data up to date through 6/30/2022

Launched summary statistics

Later this year, addition of BCN claims data

Future Directions: Data

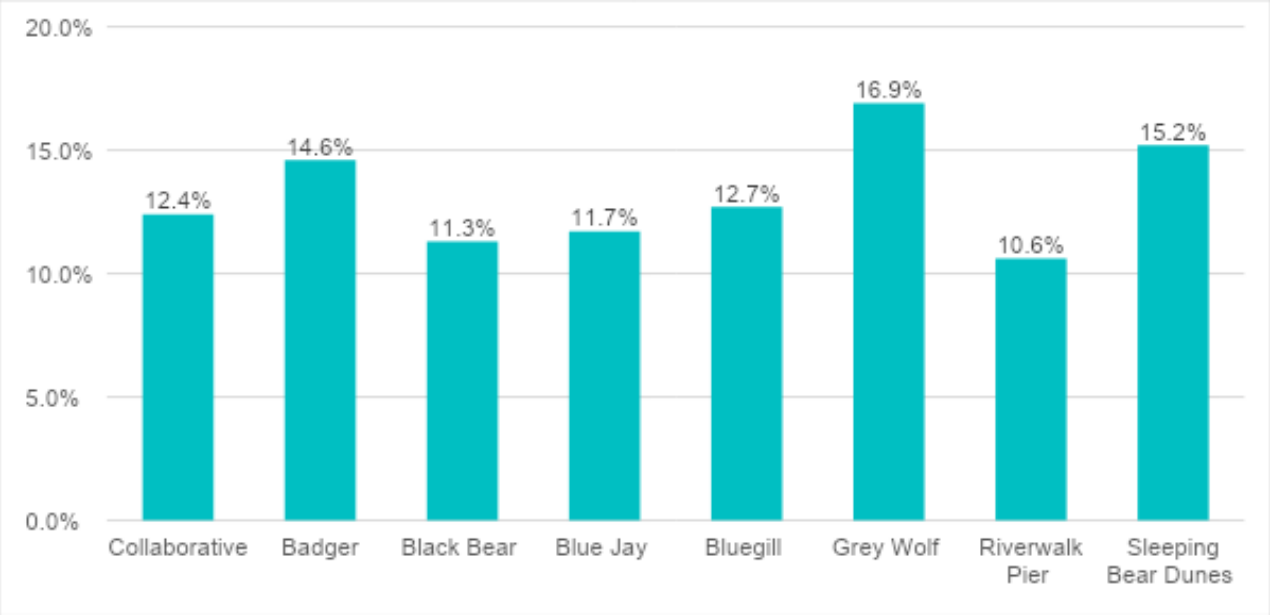
Rel #	MCT2D Publish date		Paid claims data through	Clinical data through
	2/15/2023	Data Refresh	11/30/2022	11/30/2022
1	4/11/2023	Release 1 Enhancement & Data Refresh	12/31/2022	12/31/2022
	5/4/2023	Data Refresh	2/28/2023	2/28/2023
2	6/19/2023	Release 2 Enhancement & Data Refresh	3/31/2023	3/31/2023
	8/4/2023	Data Refresh	5/31/2023	5/31/2023
3	9/21/2023	Release 3 Enhancement & Data Refresh	6/30/2023	6/30/2023
	11/7/2023	Data Refresh	8/31/2023	8/31/2023
4	12/14/2023	Release 4 Enhancement & Data Refresh	9/30/2023	9/30/2023

- **User experience/design changes**
- **Planned enhancements**
  - Patient exclusion tool to remove patients who should not be in the dashboard.
  - Dashboard will be limited to patients at least 18 years old.
  - Actual medication names and strengths will be listed rather than just the medication class.
  - Prepopulated reports of common and relevant filtering.
  - Adding serum creatinine
- **All payor PPQC data delayed- MDC determining an updated date this can be incorporated**

MCT2D
MICHIGAN COLLABORATIVE
FOR TYPE 2 DIABETES

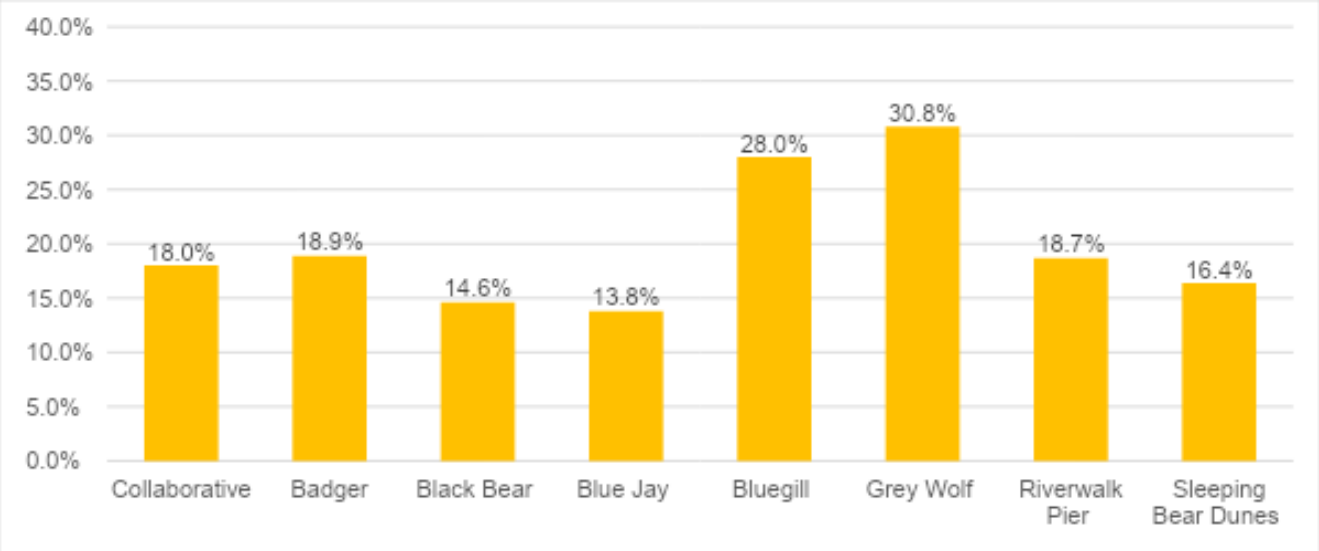
Discussion: **Regional Reports**

2. Comparison of Prescribing Rates of SGLT2i Across MCT2D Regions (Excluding Pharmacy Carve Outs)



*The denominator used to calculate the medication prescribing rates was the number of unique patients (N=30,932) part of MCT2D. For each region, the denominator used to calculate the medication prescribing rates was the number of unique patients part of the region (Badger: N=3,103, Black Bear: N=9,829, Blue Jay: N=6,323, Bluegill: N=1,767, Grey Wolf: N=3,126, Riverwalk Pier: N=5,156, Sleeping Bear Dunes: N=1,628).

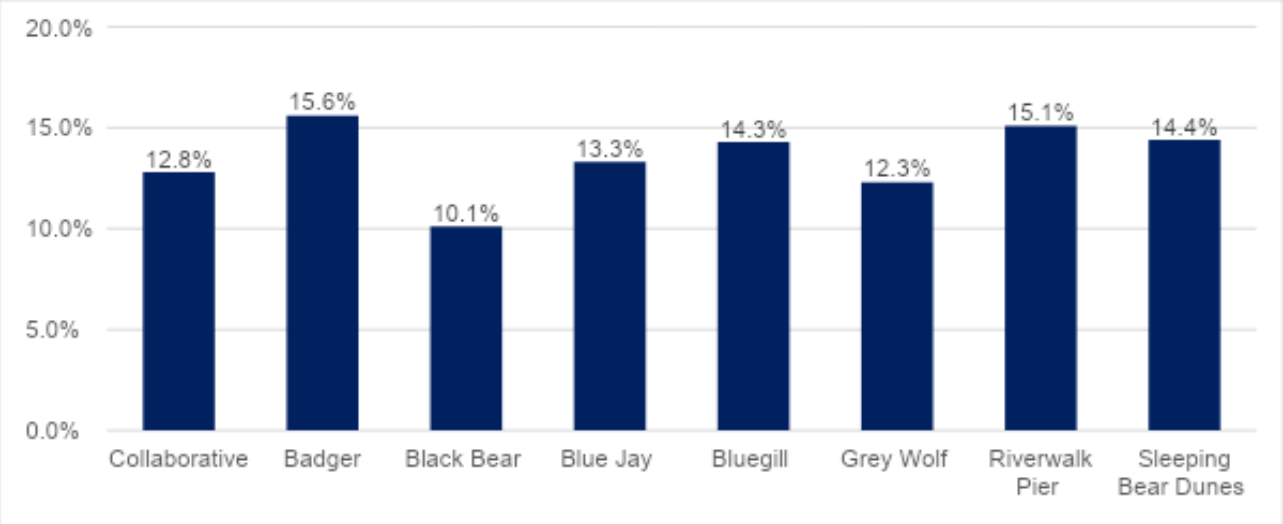
3. Comparison of Prescribing Rates of GLP-1RA Across MCT2D Regions (Excluding Pharmacy Carve Outs)



*The denominator used to calculate the medication prescribing rates was the number of unique patients (N=30,932) part of MCT2D. For each region, the denominator used to calculate the medication prescribing rates was the number

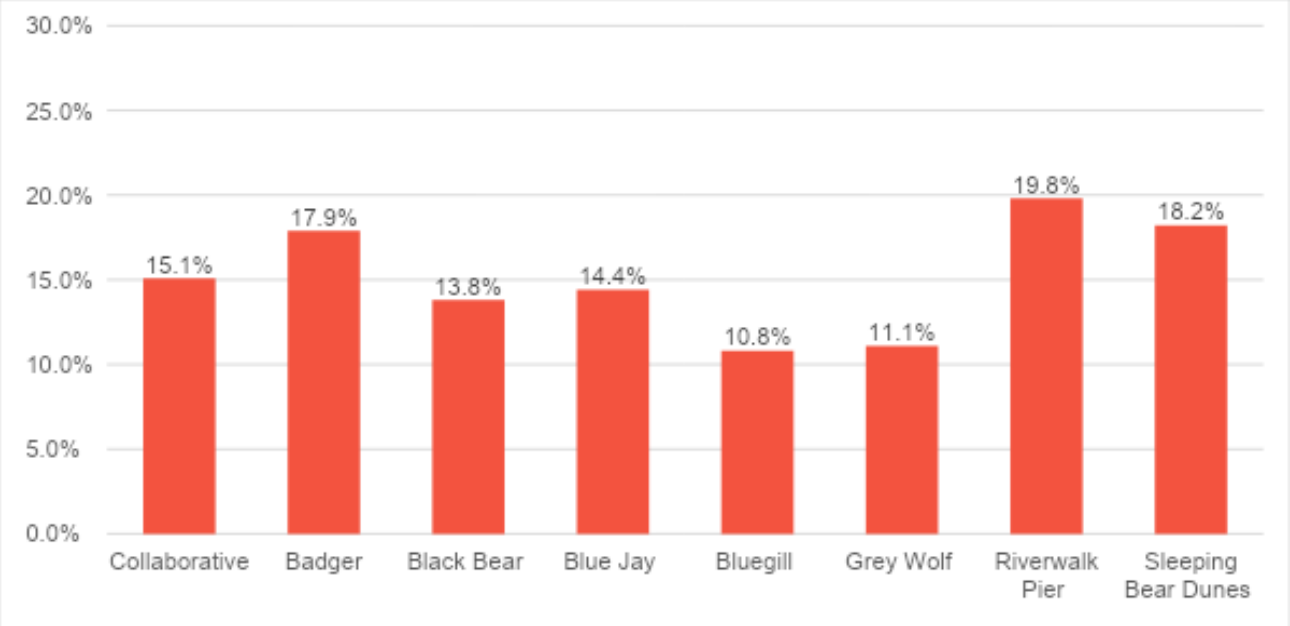
of unique patients part of the region (Badger: N=3,103, Black Bear: N=9,829, Blue Jay: N=6,323, Bluegill: N=1,767, Grey Wolf: N=3,126, Riverwalk Pier: N=5,156, Sleeping Bear Dunes: N=1,628).

4. Comparison of Prescribing Rates of Insulin Across MCT2D Regions (Excluding Pharmacy Carve Outs)



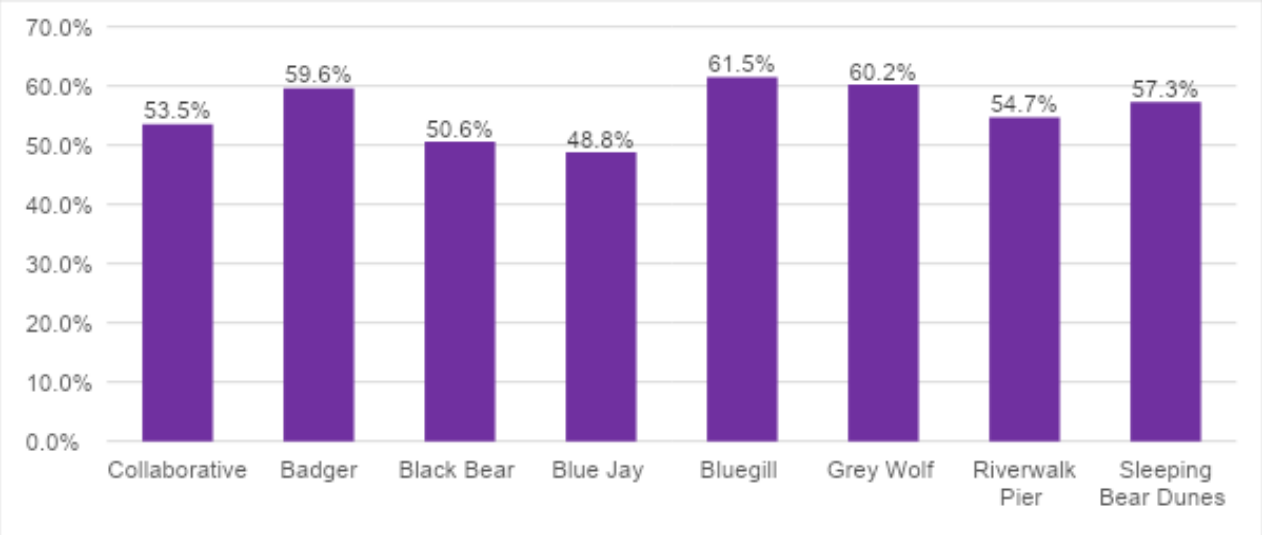
*The denominator used to calculate the medication prescribing rates was the number of unique patients (N=30,932) part of MCT2D. For each region, the denominator used to calculate the medication prescribing rates was the number of unique patients part of the region (Badger: N=3,103, Black Bear: N=9,829, Blue Jay: N=6,323, Bluegill: N=1,767, Grey Wolf: N=3,126, Riverwalk Pier: N=5,156, Sleeping Bear Dunes: N=1,628).

5. Comparison of Prescribing Rates of Sulfonylurea Across MCT2D Regions (Excluding Pharmacy Carve Outs)



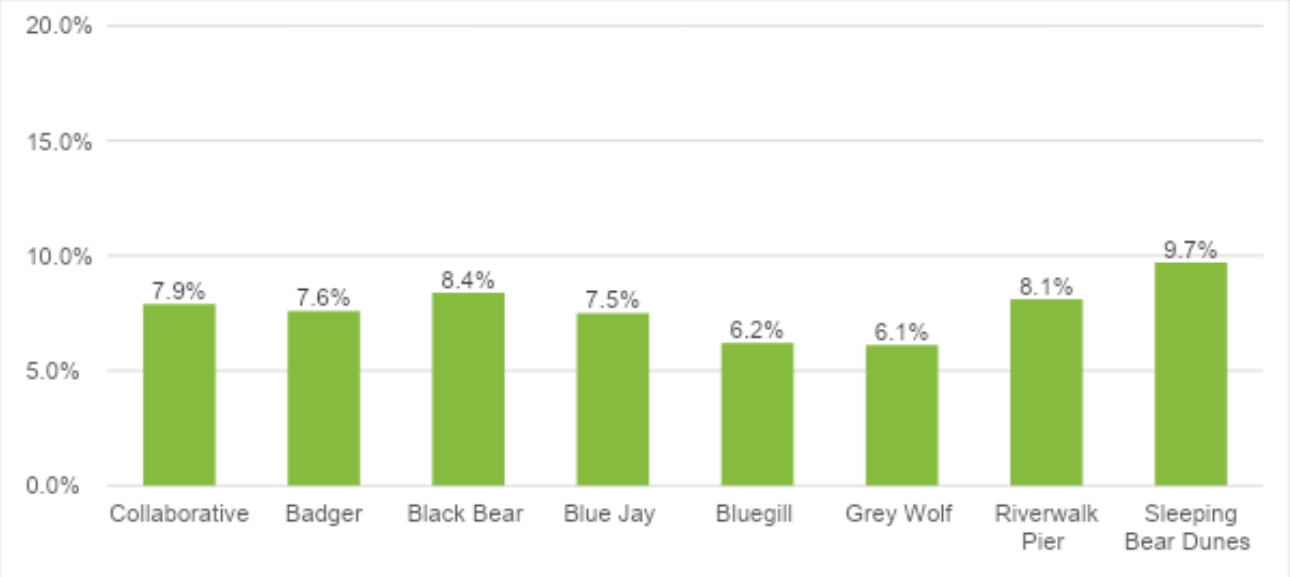
*The denominator used to calculate the medication prescribing rates was the number of unique patients (N=30,932) part of MCT2D. For each region, the denominator used to calculate the medication prescribing rates was the number of unique patients part of the region (Badger: N=3,103, Black Bear: N=9,829, Blue Jay: N=6,323, Bluegill: N=1,767, Grey Wolf: N=3,126, Riverwalk Pier: N=5,156, Sleeping Bear Dunes: N=1,628).

6. Comparison of Prescribing Rates of Metformin Across MCT2D Regions (Excluding Pharmacy Carve Outs)



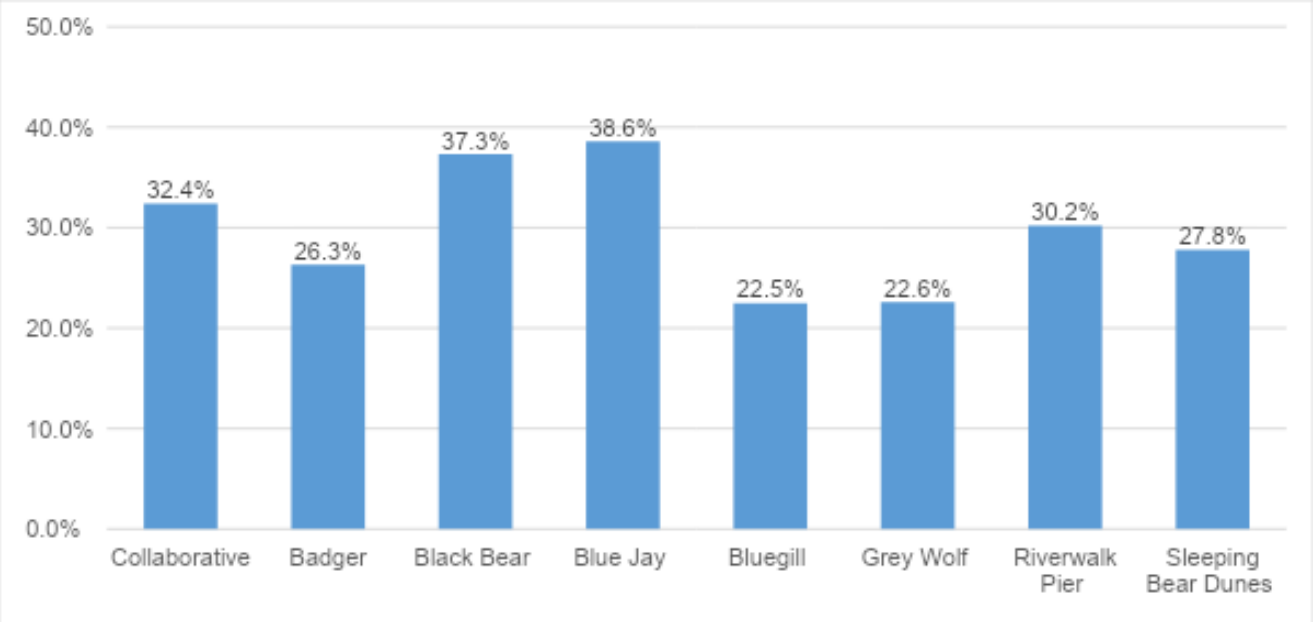
*The denominator used to calculate the medication prescribing rates was the number of unique patients (N=30,932) part of MCT2D. For each region, the denominator used to calculate the medication prescribing rates was the number of unique patients part of the region (Badger: N=3,103, Black Bear: N=9,829, Blue Jay: N=6,323, Bluegill: N=1,767, Grey Wolf: N=3,126, Riverwalk Pier: N=5,156, Sleeping Bear Dunes: N=1,628).

7. Comparison of Prescribing Rates of Dipeptidyl Peptidase 4 Inhibitors (DPP4i) Across MCT2D Regions (Excluding Pharmacy Carve Outs)



*The denominator used to calculate the medication prescribing rates was the number of unique patients (N=30,932) part of MCT2D. For each region, the denominator used to calculate the medication prescribing rates was the number of unique patients part of the region (Badger: N=3,103, Black Bear: N=9,829, Blue Jay: N=6,323, Bluegill: N=1,767, Grey Wolf: N=3,126, Riverwalk Pier: N=5,156, Sleeping Bear Dunes: N=1,628).

8. Percentage of Patients Not On Any Diabetes Medication Across MCT2D Regions

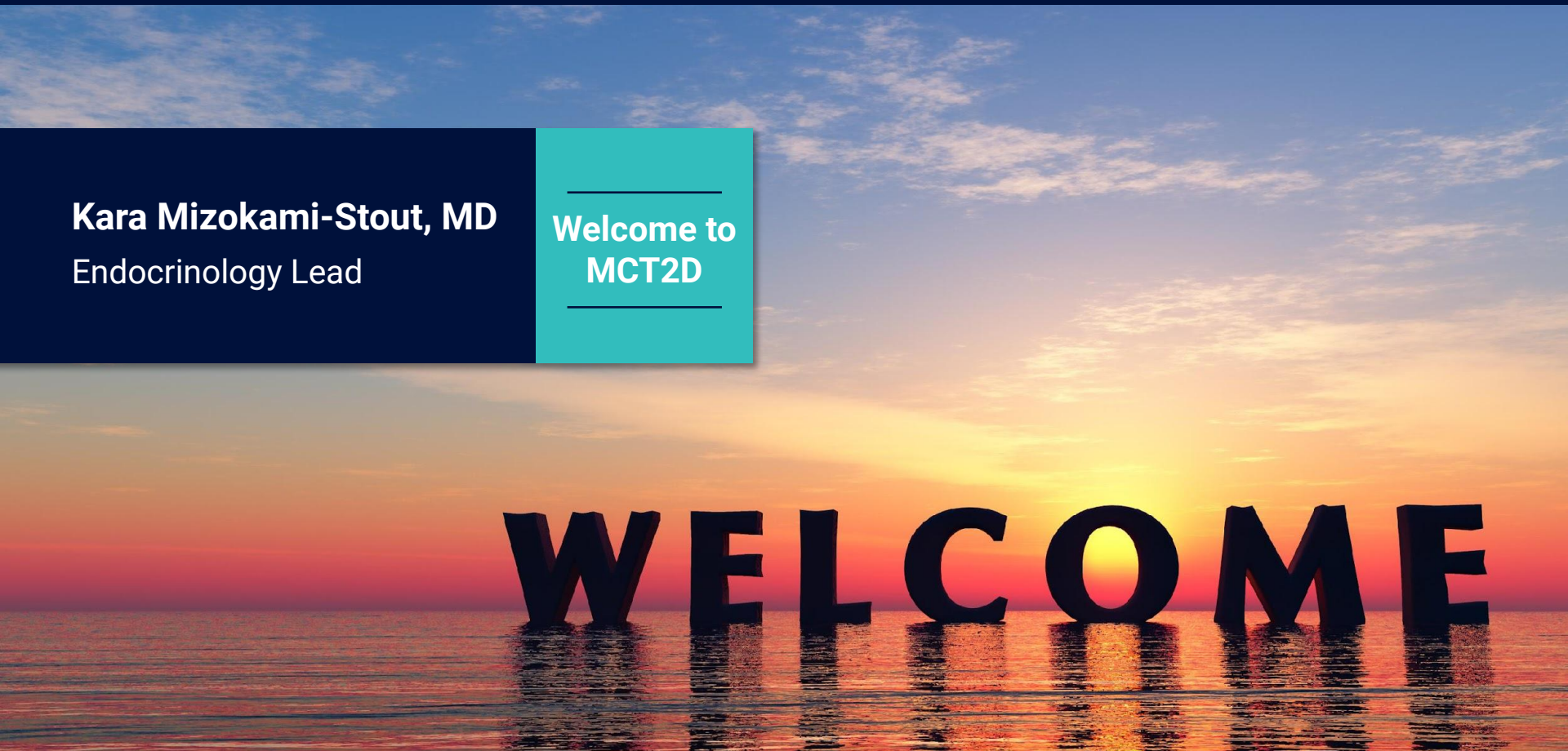


*The denominator used to calculate the medication prescribing rates was the number of unique patients (N=30,932) part of MCT2D. For each region, the denominator used to calculate the medication prescribing rates was the number of unique patients part of the region (Badger: N=3,103, Black Bear: N=9,829, Blue Jay: N=6,323, Bluegill: N=1,767, Grey Wolf: N=3,126, Riverwalk Pier: N=5,156, Sleeping Bear Dunes: N=1,628).

Discussion Question Suggestions

- Knowing that the insurance coverage for all of these patients are the same, why do you think we are seeing variability amongst regions?
- The Sleeping Bear Dunes Region has the 2nd highest sulfonylurea prescribing rate and highest DPP4I prescribing rate amongst the different regions of MCT2D. Why do you think this may be?
- Looking at patients who are on no therapy or patients who are on therapy that is not guideline concordant (e.g. DPP4is and sulfonylureas), what ideas do you have to improve the use of SGLT2is and GLP-1RAs?

MCT2D



Kara Mizokami-Stout, MD

Endocrinology Lead

Welcome to MCT2D

Kara Mizokami-Stout, MD, MSc

- Assistant Professor of Internal Medicine
- Staff Physician, Ann Arbor VA Hospital

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Disclosures and Conflicts of Interests

Funding: NIH/NIDDK K23 (1 K23 DK131296-01A1)

Conflicts of Interest: None

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Agenda

1) Current state of Type 2 Diabetes in the USA
2) Review current major guidelines for the management of people with type 2 diabetes (T2D) .
    a) Update: Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)
    b) Update: American Association of Clinical Endocrinology Clinical Practice Guidelines
3) Care Coordination between Endocrinology/Other Specialties and Primary Care

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

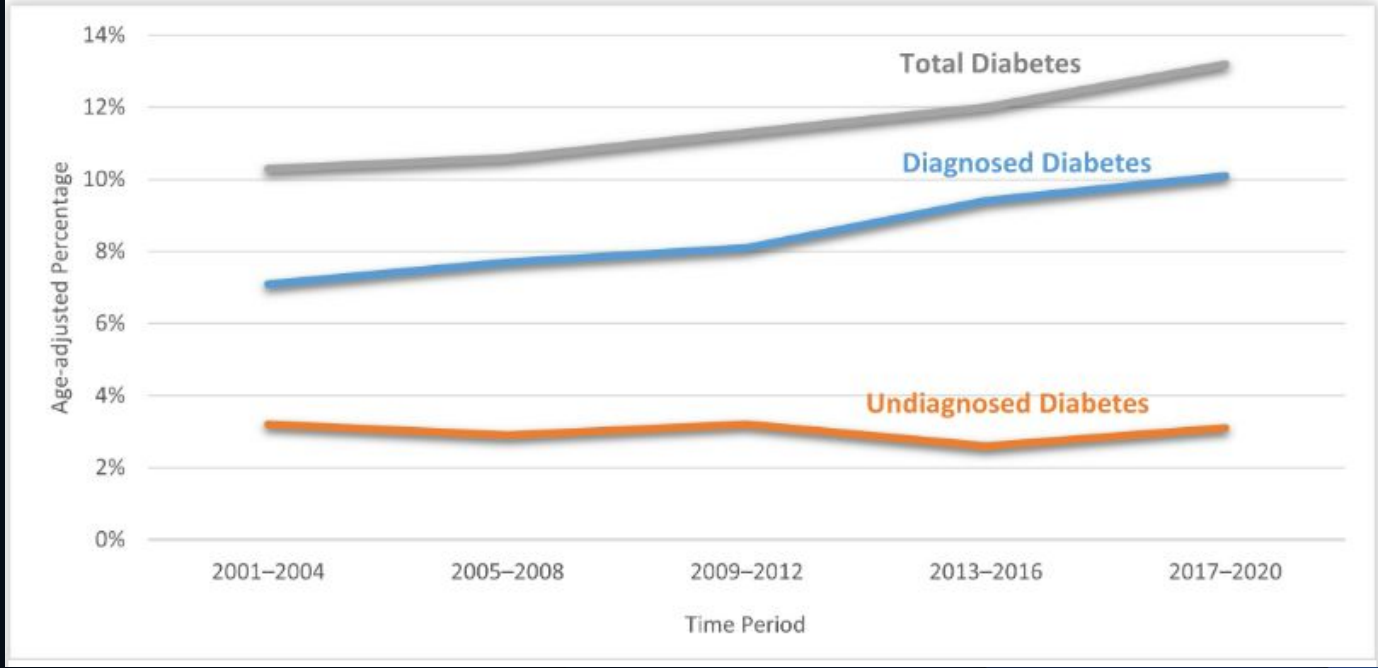
Agenda

1) Current state of Type 2 Diabetes in the USA
2) Review current major guidelines for the management of people with type 2 diabetes (T2D) .
    a) Update: Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)
    b) Update: American Association of Clinical Endocrinology Clinical Practice Guidelines
3) Care Coordination between Endocrinology/Other Specialties and Primary Care

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Diabetes Affects Nearly 15% of American Adults

Figure 2. Trends in Prevalence of Diagnosed Diabetes, Undiagnosed Diabetes, and Total Diabetes Among Adults Aged 18 Years or Older, United States, 2001–2004 to 2017–2020

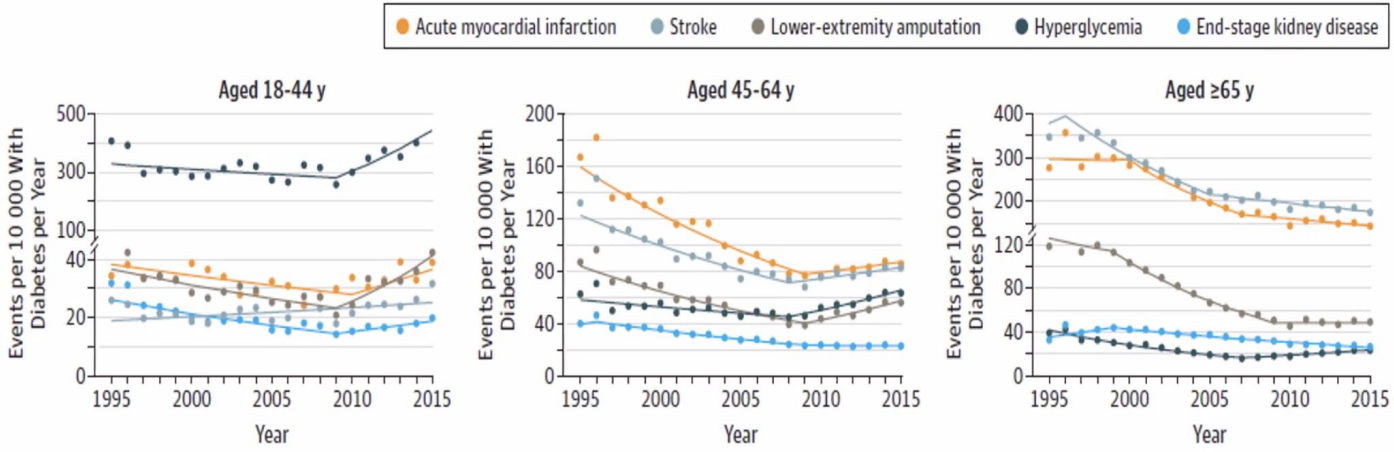


Centers for Disease Control and Prevention; National Diabetes Statistics Report; 2022.

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Complication Burden Remains Unacceptably High

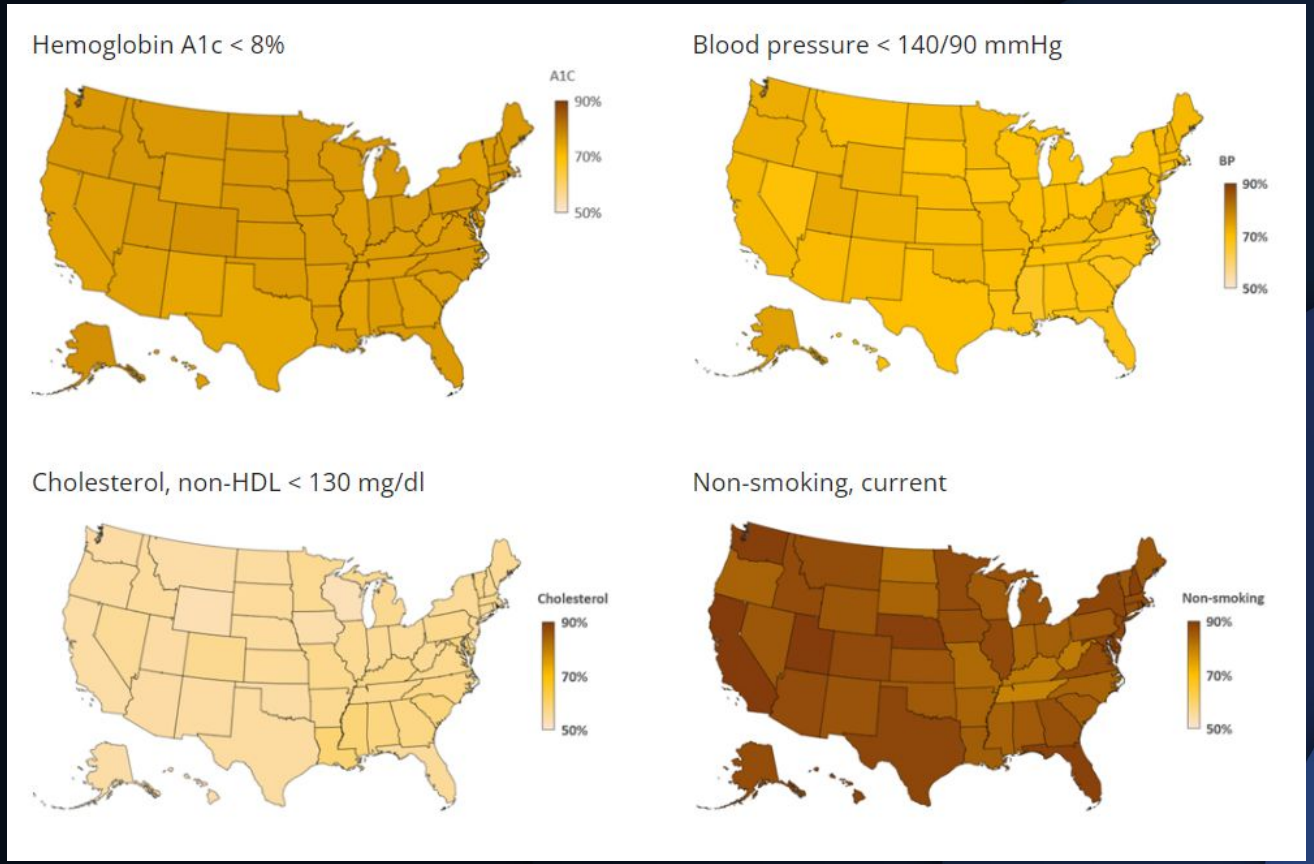
Trends in Diabetes-related Complications, United States, 1995-2015



https://www.cdc.gov/diabetes/data; Gregg EW et al., JAMA 2019

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Only 1 in 4 Americans Meet ABCs Targets



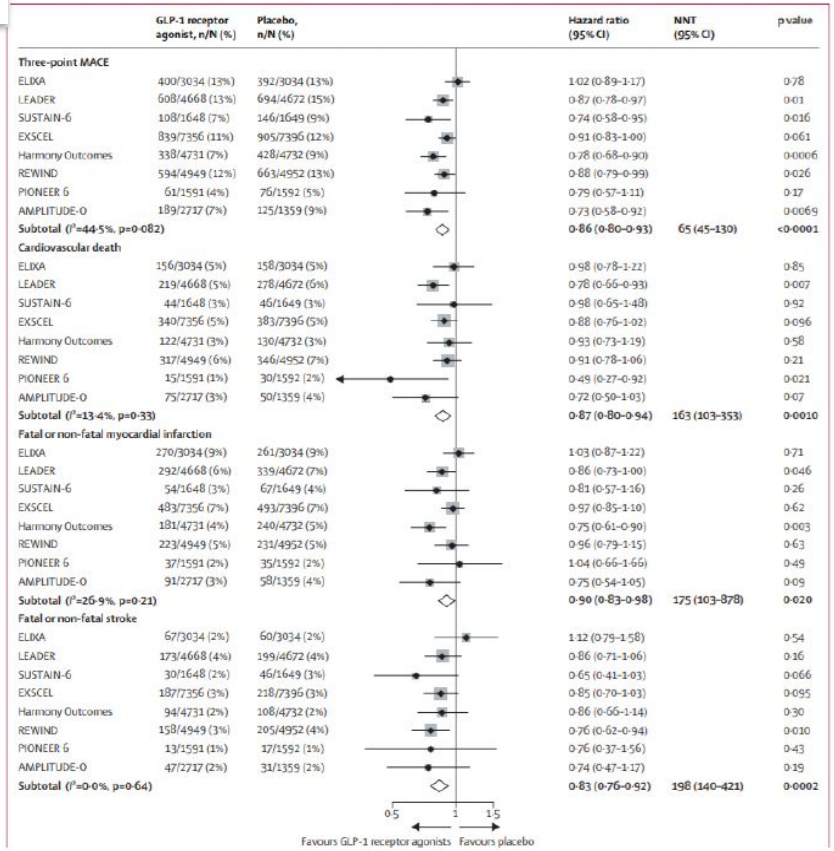
Chen et al. MMWR Morb Mortal Wkly Rep 2020;69:1665–1670

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

GLP-1 Receptor Agonists: Cardiovascular Outcomes

GLP-1 RA:

- **Major Adverse Cardiovascular Events:** HR 0.86, 14% reduction
- **CV death:** HR 0.87, 13% reduction
- **Fatal or non-fatal Myocardial Infarction:** HR 0.90, 10% reduction
- **Fatal or non-fatal Stroke:** HF 0.83, 17% reduction



	GLP-1 receptor agonist, n/N (%)	Placebo, n/N (%)	Hazard ratio (95% CI)	NNT (95% CI)	p value
Three-point MACE					
ELIXA	400/3034 (13%)	392/3034 (13%)	1·02 (0·89–1·17)		0·78
LEADER	608/4668 (13%)	694/4672 (15%)	0·87 (0·78–0·97)		0·01
SUSTAIN-6	108/1648 (7%)	146/1649 (9%)	0·74 (0·58–0·95)		0·016
EXSCEL	839/7356 (11%)	905/7396 (12%)	0·91 (0·83–1·00)		0·061
Harmony Outcomes	338/4731 (7%)	428/4732 (9%)	0·78 (0·68–0·90)		0·0006
REWIND	594/4949 (12%)	663/4952 (13%)	0·88 (0·79–0·99)		0·026
PIONEER 6	61/1591 (4%)	76/1592 (5%)	0·79 (0·57–1·11)		0·17
AMPLITUDE-O	189/2717 (7%)	125/1359 (9%)	0·73 (0·58–0·92)		0·0069
Subtotal (I^2=44·5%, p=0·082)			**0·86 (0·80–0·93)**	**65 (45–130)**	**<0·0001**
Cardiovascular death					
ELIXA	156/3034 (5%)	158/3034 (5%)	0·98 (0·78–1·22)		0·85
LEADER	219/4668 (5%)	278/4672 (6%)	0·78 (0·66–0·93)		0·007
SUSTAIN-6	44/1648 (3%)	46/1649 (3%)	0·98 (0·65–1·48)		0·92
EXSCEL	340/7356 (5%)	383/7396 (5%)	0·88 (0·76–1·02)		0·096
Harmony Outcomes	122/4731 (3%)	130/4732 (3%)	0·93 (0·73–1·19)		0·58
REWIND	317/4949 (6%)	346/4952 (7%)	0·91 (0·78–1·06)		0·21
PIONEER 6	15/1591 (1%)	30/1592 (2%)	0·49 (0·27–0·92)		0·021
AMPLITUDE-O	75/2717 (3%)	50/1359 (4%)	0·72 (0·50–1·03)		0·07
Subtotal (I^2=13·4%, p=0·33)			**0·87 (0·80–0·94)**	**163 (103–353)**	**0·0010**
Fatal or non-fatal myocardial infarction					
ELIXA	270/3034 (9%)	261/3034 (9%)	1·03 (0·87–1·22)		0·71
LEADER	292/4668 (6%)	339/4672 (7%)	0·86 (0·73–1·00)		0·046
SUSTAIN-6	54/1648 (3%)	67/1649 (4%)	0·81 (0·57–1·16)		0·26
EXSCEL	483/7356 (7%)	493/7396 (7%)	0·97 (0·85–1·10)		0·62
Harmony Outcomes	181/4731 (4%)	240/4732 (5%)	0·75 (0·61–0·90)		0·003
REWIND	223/4949 (5%)	231/4952 (5%)	0·96 (0·79–1·15)		0·63
PIONEER 6	37/1591 (2%)	35/1592 (2%)	1·04 (0·66–1·66)		0·49
AMPLITUDE-O	91/2717 (3%)	58/1359 (4%)	0·75 (0·54–1·05)		0·09
Subtotal (I^2=26·9%, p=0·21)			**0·90 (0·83–0·98)**	**175 (103–878)**	**0·020**
Fatal or non-fatal stroke					
ELIXA	67/3034 (2%)	60/3034 (2%)	1·12 (0·79–1·58)		0·54
LEADER	173/4668 (4%)	199/4672 (4%)	0·86 (0·71–1·06)		0·16
SUSTAIN-6	30/1648 (2%)	46/1649 (3%)	0·65 (0·41–1·03)		0·066
EXSCEL	187/7356 (3%)	218/7396 (3%)	0·85 (0·70–1·03)		0·095
Harmony Outcomes	94/4731 (2%)	108/4732 (2%)	0·86 (0·66–1·14)		0·30
REWIND	158/4949 (3%)	205/4952 (4%)	0·76 (0·62–0·94)		0·010
PIONEER 6	13/1591 (1%)	17/1592 (1%)	0·76 (0·37–1·56)		0·43
AMPLITUDE-O	47/2717 (2%)	31/1359 (2%)	0·74 (0·47–1·17)		0·19
Subtotal (I^2=0·0%, p=0·64)			**0·83 (0·76–0·92)**	**198 (140–421)**	**0·0002**

0·5 1 1·5

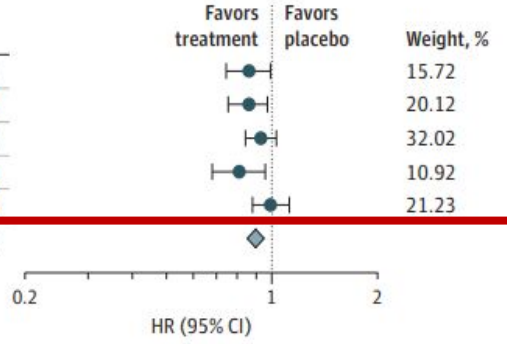
Favours GLP-1 receptor agonists Favours placebo

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

SGLT2 Inhibitors: Cardiovascular Outcomes

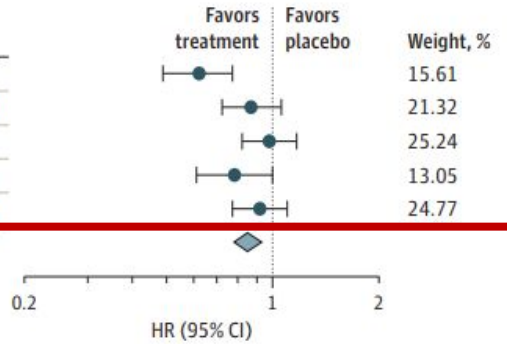
MACE

	Treatment		Placebo		
	No./total No.	Rate/1000 patient-years	No./total No.	Rate/1000 patient-years	Hazard ratio (95% CI)
EMPA-REG OUTCOME	490/4687	37.4	282/2333	43.9	0.86 (0.74-0.99)
CANVAS program	NA/5795	26.9	NA/4347	31.5	0.86 (0.75-0.97)
DECLARE-TIMI 58	756/8582	22.6	803/8578	24.2	0.93 (0.84-1.03)
CREDENCE	217/2202	38.7	269/2199	48.7	0.80 (0.67-0.95)
VERTIS CV	735/5499	40.0	368/2747	40.3	0.99 (0.88-1.12)
Fixed-effects model ($Q = 5.22$; $df = 4$; $P = .27$; $I^2 = 23.4\%$)					0.90 (0.85-0.95)



CV Death

	Treatment		Placebo		
	No./total No.	Rate/1000 patient-years	No./total No.	Rate/1000 patient-years	Hazard ratio (95% CI)
EMPA-REG OUTCOME	172/4687	12.4	137/2333	20.2	0.62 (0.49-0.77)
CANVAS program	NA/5795	11.6	NA/4347	12.8	0.87 (0.72-1.06)
DECLARE-TIMI 58	245/8582	7.0	249/8578	7.1	0.98 (0.82-1.17)
CREDENCE	110/2202	19.0	140/2199	24.4	0.78 (0.61-1.00)
VERTIS CV	341/5499	17.6	184/2747	19.0	0.92 (0.77-1.10)
Fixed-effects model ($Q = 11.22$; $df = 4$; $P = .02$; $I^2 = 64.3\%$)					0.85 (0.78-0.93)

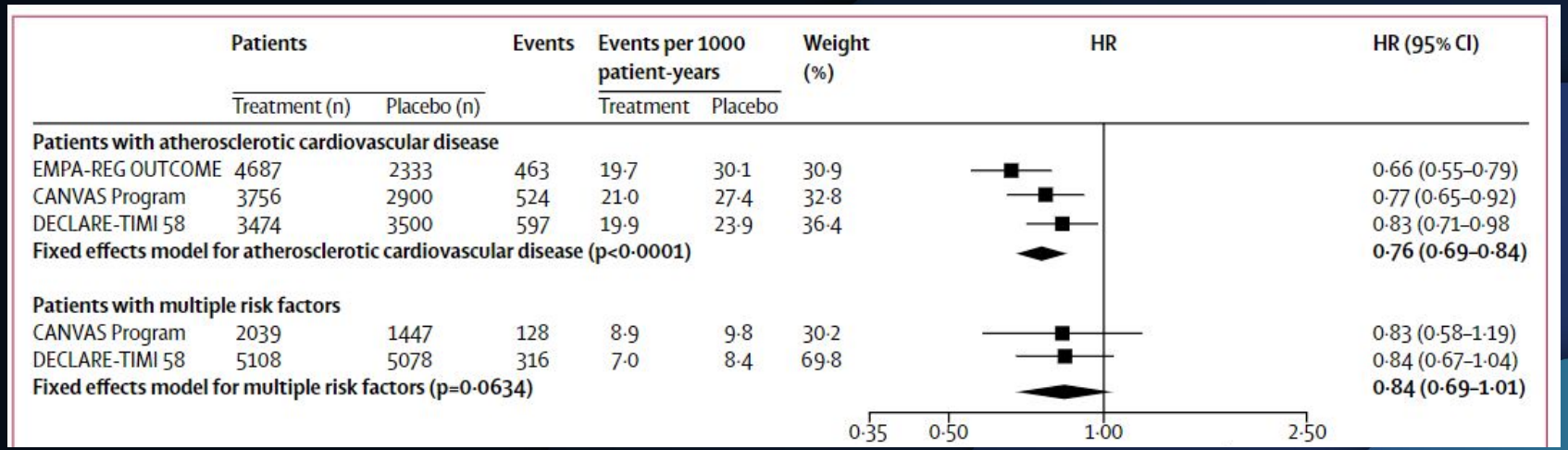


McGuire DK et al. JAMA Cardiol 2021; 6: 148-158.

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

SGLT2 Inhibitors: Heart Failure

Hospitalization for heart failure and cardiovascular death stratified by the presence of established ASCVD



	Patients		Events	Events per 1000 patient-years		Weight (%)	HR	HR (95% CI)
	Treatment (n)	Placebo (n)		Treatment	Placebo			
Patients with atherosclerotic cardiovascular disease								
EMPA-REG OUTCOME	4687	2333	463	19·7	30·1	30·9		0·66 (0·55–0·79)
CANVAS Program	3756	2900	524	21·0	27·4	32·8		0·77 (0·65–0·92)
DECLARE-TIMI 58	3474	3500	597	19·9	23·9	36·4		0·83 (0·71–0·98
Fixed effects model for atherosclerotic cardiovascular disease (p<0·0001)								**0·76 (0·69–0·84)**
Patients with multiple risk factors								
CANVAS Program	2039	1447	128	8·9	9·8	30·2		0·83 (0·58–1·19)
DECLARE-TIMI 58	5108	5078	316	7·0	8·4	69·8		0·84 (0·67–1·04)
Fixed effects model for multiple risk factors (p=0·0634)								**0·84 (0·69–1·01)**

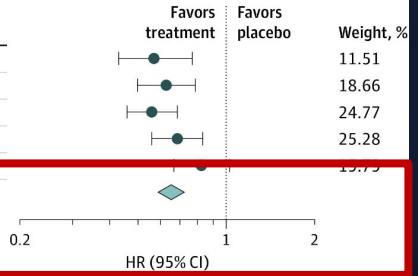
Zelniker et al, Lancet 2019; 393: 31–39.

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

SGLT2 Inhibitors: Renal Outcomes

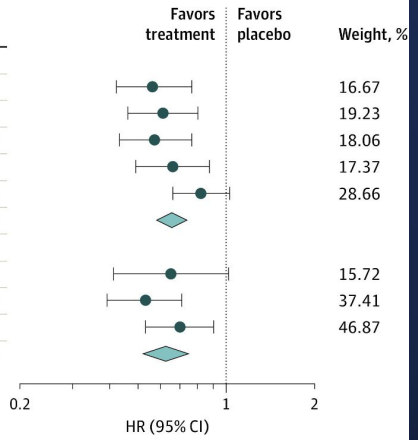
A Overall kidney outcomes

	Treatment		Placebo		Hazard ratio (95% CI)	Weight, %
	No./total No.	Rate/1000 patient-years	No./total No.	Rate/1000 patient-years		
EMPA-REG OUTCOME	81/4645	6.3	71/2323	11.5	0.54 (0.40-0.75)	11.51
CANVAS program	NA/5795	5.5	NA/4347	9.0	0.60 (0.47-0.77)	18.66
DECLARE-TIMI 58	127/8582	3.7	238/8578	7.0	0.53 (0.43-0.66)	24.77
CREDENCE	153/2202	27.0	224/2199	40.4	0.66 (0.53-0.81)	25.28
VERTIS CV	175/5499	9.3	108/2747	11.5	0.81 (0.64-1.03)	15.73
Fixed-effects model ($Q = 7.96$; $df = 4$; $P = .09$; $I^2 = 49.7\%$)					0.62 (0.56-0.70)	



B Kidney outcomes by ASCVD status

	Treatment		Placebo		Hazard ratio (95% CI)	Weight, %
	No./total No.	Rate/1000 patient-years	No./total No.	Rate/1000 patient-years		
Patients with ASCVD						
EMPA-REG OUTCOME	81/4645	6.3	71/2323	11.5	0.54 (0.40-0.75)	16.67
CANVAS program	NA/3756	6.4	NA/2900	10.5	0.59 (0.44-0.79)	19.23
DECLARE-TIMI 58	65/3474	4.7	118/3500	8.6	0.55 (0.41-0.75)	18.06
CREDENCE	69/1113	24.1	102/1107	36.5	0.64 (0.47-0.87)	17.37
VERTIS CV	175/5499	9.3	108/2747	11.5	0.81 (0.64-1.03)	28.66
Fixed-effects model ($Q = 6.09$; $df = 4$; $P = .19$; $I^2 = 34.4\%$)					0.64 (0.56-0.72)	
Patients without ASCVD						
CANVAS program	NA/2039	4.1	NA/1447	6.6	0.63 (0.39-1.02)	15.72
DECLARE-TIMI 58	62/5108	3.0	120/5078	5.9	0.51 (0.37-0.69)	37.41
CREDENCE	84/1089	29.9	122/1092	44.3	0.68 (0.51-0.89)	46.87
Fixed-effects model ($Q = 1.86$; $df = 2$; $P = .40$; $I^2 = 0.0\%$)					0.60 (0.50-0.73)	



McGuire DK et al. JAMA Cardiol 2021; 6: 148-158.

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Agenda

1) Current state of Type 2 Diabetes in the USA
2) Review current major guidelines for the management of people with type 2 diabetes (T2D) .
    a) Update: Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)
    b) Update: American Association of Clinical Endocrinology Clinical Practice Guidelines
3) Care Coordination between Endocrinology/Other Specialties and Primary Care

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

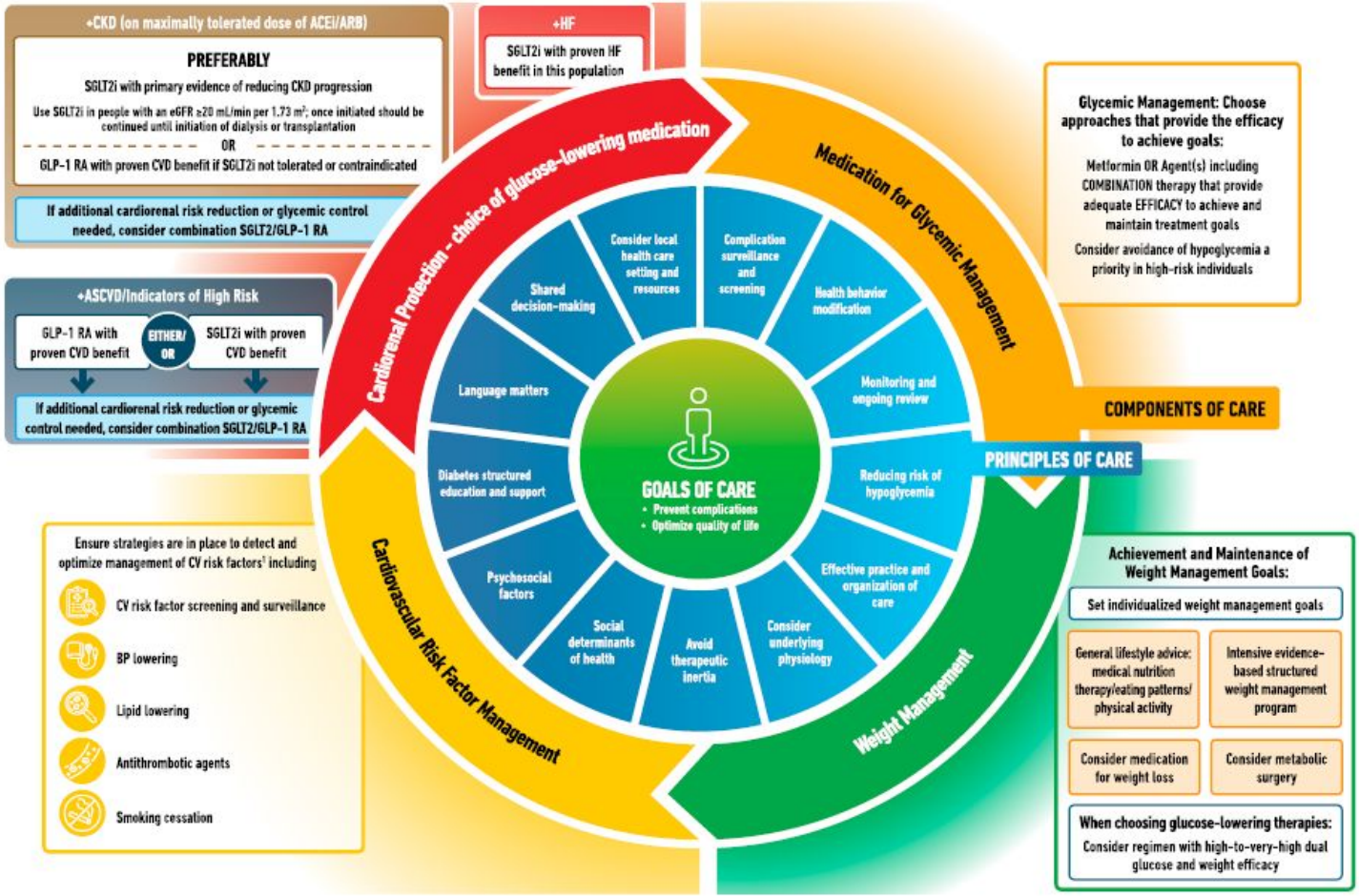
“Management of Hyperglycemia in Type 2 Diabetes”

A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)

Davies et al. *Diabetes Care,* 2022.

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

HOLISTIC PERSON-CENTERED APPROACH TO T2DM MANAGEMENT



MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

USE OF GLUCOSE-LOWERING MEDICATIONS IN THE MANAGEMENT OF TYPE 2 DIABETES

HEALTHY LIFESTYLE BEHAVIORS; DIABETES SELF-MANAGEMENT EDUCATION AND SUPPORT (DSMES); SOCIAL DETERMINANTS OF HEALTH (SDOH)

TO AVOID THERAPEUTIC INERTIA REASSESS AND MODIFY TREATMENT REGULARLY (3–6 MONTHS)

Goal: Cardiorenal Risk Reduction in High-Risk Patients with Type 2 Diabetes (in addition to comprehensive CV risk management)*

+ASCVD†

Defined differently across CVOTs but all included individuals with established CVD (e.g., MI, stroke, any revascularization procedure). Variably included: conditions such as transient ischemic attack, unstable angina, amputation, symptomatic or asymptomatic coronary artery disease.

+Indicators of high risk

While definitions vary, most comprise ≥55 years of age with two or more additional risk factors (including obesity, hypertension, smoking, dyslipidemia, or albuminuria)

+ASCVD/Indicators of High Risk

GLP-1 RA# with proven CVD benefit — EITHER/OR — SGLT2i§ with proven CVD benefit

If HbA_{1c} above target

- For patients on a GLP-1 RA consider adding SGLT2i with proven CVD benefit or vice versa
- TZD^

+HF

Current or prior symptoms of HF with documented HFrEF or HFpEF

+HF

SGLT2i§ with proven HF benefit in this population

+CKD

eGFR <60 mL/min per 1.73 m^2 OR albuminuria (ACR ≥3.0 mg/mmol [30mg/g]). These measurements may vary over time; thus, a repeat measure is required to document CKD.

+CKD (on maximally tolerated dose of ACEi/ARB)

PREFERABLY

SGLT2i§ with primary evidence of reducing CKD progression

Use SGLT2i in people with an eGFR ≥20 mL/min per 1.73 m^2; once initiated should be continued until initiation of dialysis or transplantation

OR

GLP-1 RA with proven CVD benefit if SGLT2i not tolerated or contraindicated

If HbA_{1c} above target, for patients on SGLT2i, consider incorporating a GLP-1 RA or vice versa

If additional cardiorenal risk reduction or glycemic lowering needed

Goal: Achievement and Maintenance of Glycemic and Weight Management Goals

Glycemic Management: Choose approaches that provide the efficacy to achieve goals:

Metformin OR Agent(s) including COMBINATION therapy that provide adequate EFFICACY to achieve and maintain treatment goals

Consider avoidance of hypoglycemia a priority in high-risk individuals

In general, higher efficacy approaches have greater likelihood of achieving glycemic goals

Efficacy for glucose lowering

Very High:
Dulaglutide (high dose), Semaglutide, Tirzepatide

Insulin

Combination Oral, Combination Injectable (GLP-1 RA/Insulin)

High:
GLP-1 RA (not listed above), Metformin, SGLT2i, Sulfonylurea, TZD

Intermediate:
DPP-4i

Achievement and Maintenance of Weight Management Goals:

Set individualized weight management goals

General lifestyle advice: medical nutrition therapy/eating patterns/physical activity

Intensive evidence-based structured weight management program

Consider medication for weight loss

Consider metabolic surgery

When choosing glucose-lowering therapies:

Consider regimen with high-to-very-high dual glucose and weight efficacy

Efficacy for weight loss

Very High:
Semaglutide, Tirzepatide

High:
Dulaglutide, Liraglutide

Intermediate:
GLP-1RA (not listed above), SGLT2i

Neutral:
DPP-4i, Metformin

If HbA_{1c} above target

Identify barriers to goals:

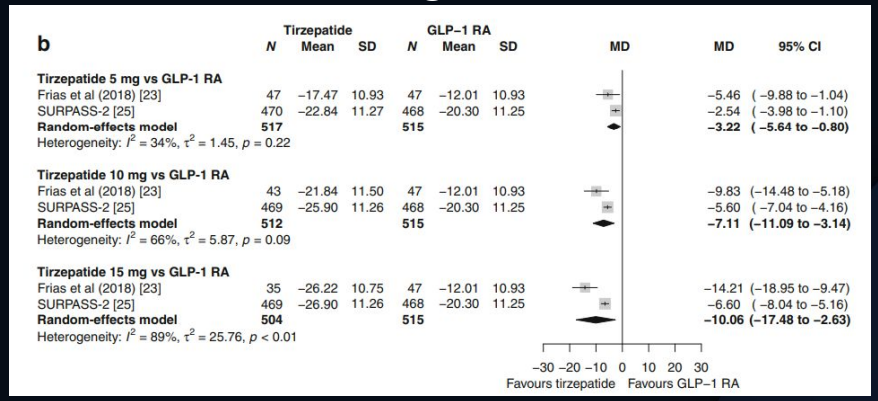
- Consider DSMES referral to support self-efficacy in achievement of goals
- Consider technology (e.g., diagnostic CGM) to identify therapeutic gaps and tailor therapy
- Identify and address SDOH that impact achievement of goals

* In people with HF, CKD, established CVD or multiple risk factors for CVD, the decision to use a GLP-1 RA or SGLT2i with proven benefit should be independent of background use of metformin; † A strong recommendation is warranted for people with CVD and a weaker recommendation for those with indicators of high CV risk. Moreover, a higher absolute risk reduction and thus lower numbers needed to treat are seen at higher levels of baseline risk and should be factored into the shared decision-making process. See text for details; ^ Low-dose TZD may be better tolerated and similarly effective; § For SGLT2i, CV/renal outcomes trials demonstrate their efficacy in reducing the risk of composite MACE, CV death, all-cause mortality, MI, HHF, and renal outcomes in individuals with T2D with established/high risk of CVD; # For GLP-1 RA, CVOTs demonstrate their efficacy in reducing composite MACE, CV death, all-cause mortality, MI, stroke, and renal endpoints in individuals with T2D with established/high risk of CVD.

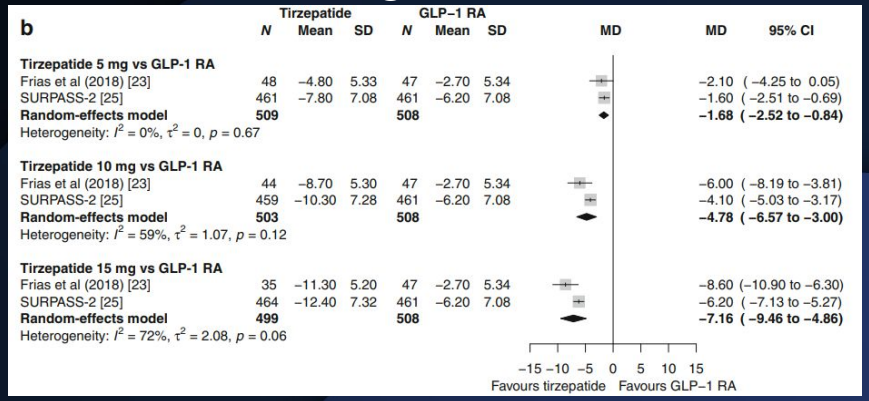
MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Tirzepatide (Mounjaro)

Hemoglobin A1c



Weight Reduction



- Novel GIP/GLP-1 RA; approved for obesity in T2D
- Dose-dependent HbA1c reduction (-1.6 to -2.1%) vs placebo; -0.-3 to -0.9%) vs GLP-1 RAs
- Dose-dependent weight reduction (-1.7 to -7.2 kg) vs GLP-1 RAs
- No data yet on cardiovascular benefits (SURPASS-CVOT in process)

Karagiannis, et al. *Diabetologia*, 2022.

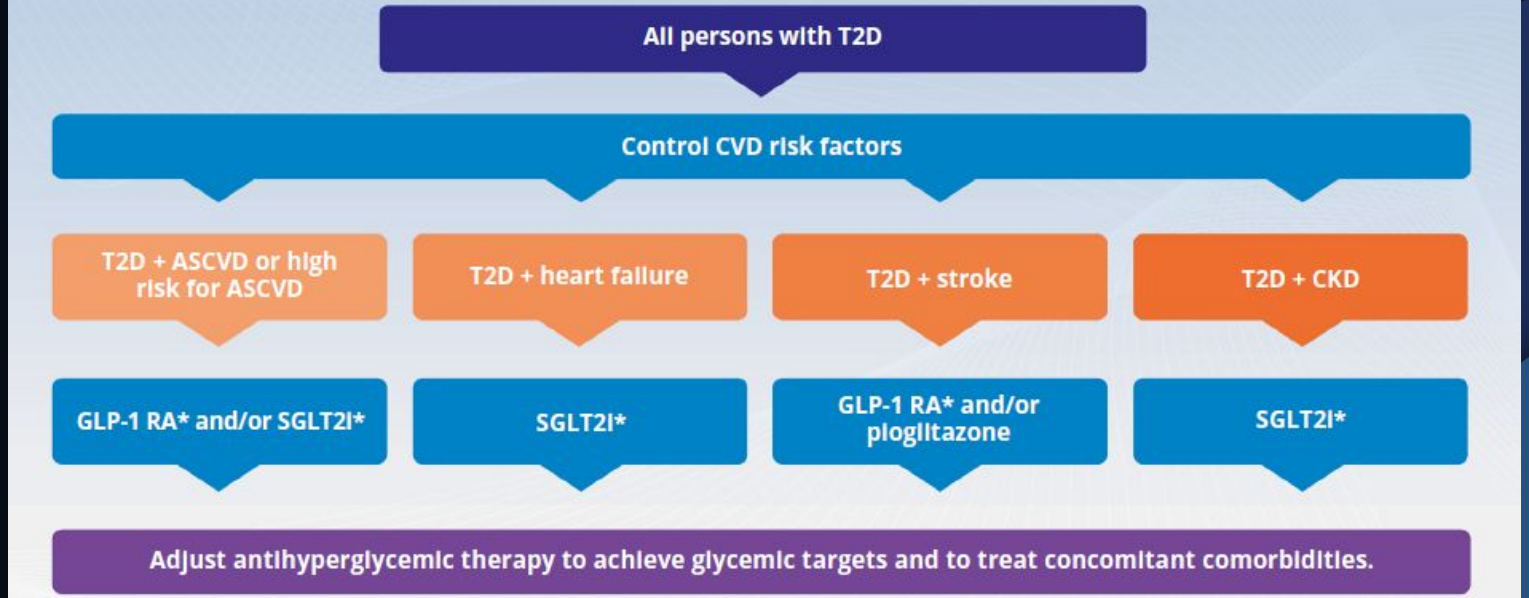
MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

American Association of Clinical Endocrinology Clinical Practice Guideline: Developing a Diabetes Mellitus Comprehensive Care Plan—2022 Update

Blonde, Pop-Busui, et al. *Endocrine Practice* 2022.

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

ANTIHYPERGLYCEMIC THERAPY FOR PERSONS WITH TYPE 2 DIABETES AND ATHEROSCLEROTIC CARDIOVASCULAR DISEASE (ASCVD), VERY HIGH RISK FOR ASCVD, HEART FAILURE, CEREBRAL VASCULAR DISEASE, OR CHRONIC KIDNEY DISEASE



MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

DECISION TREE FOR TREATING HYPERCHOLESTEROLEMIA IN PERSONS WITH DIABETES MELLITUS

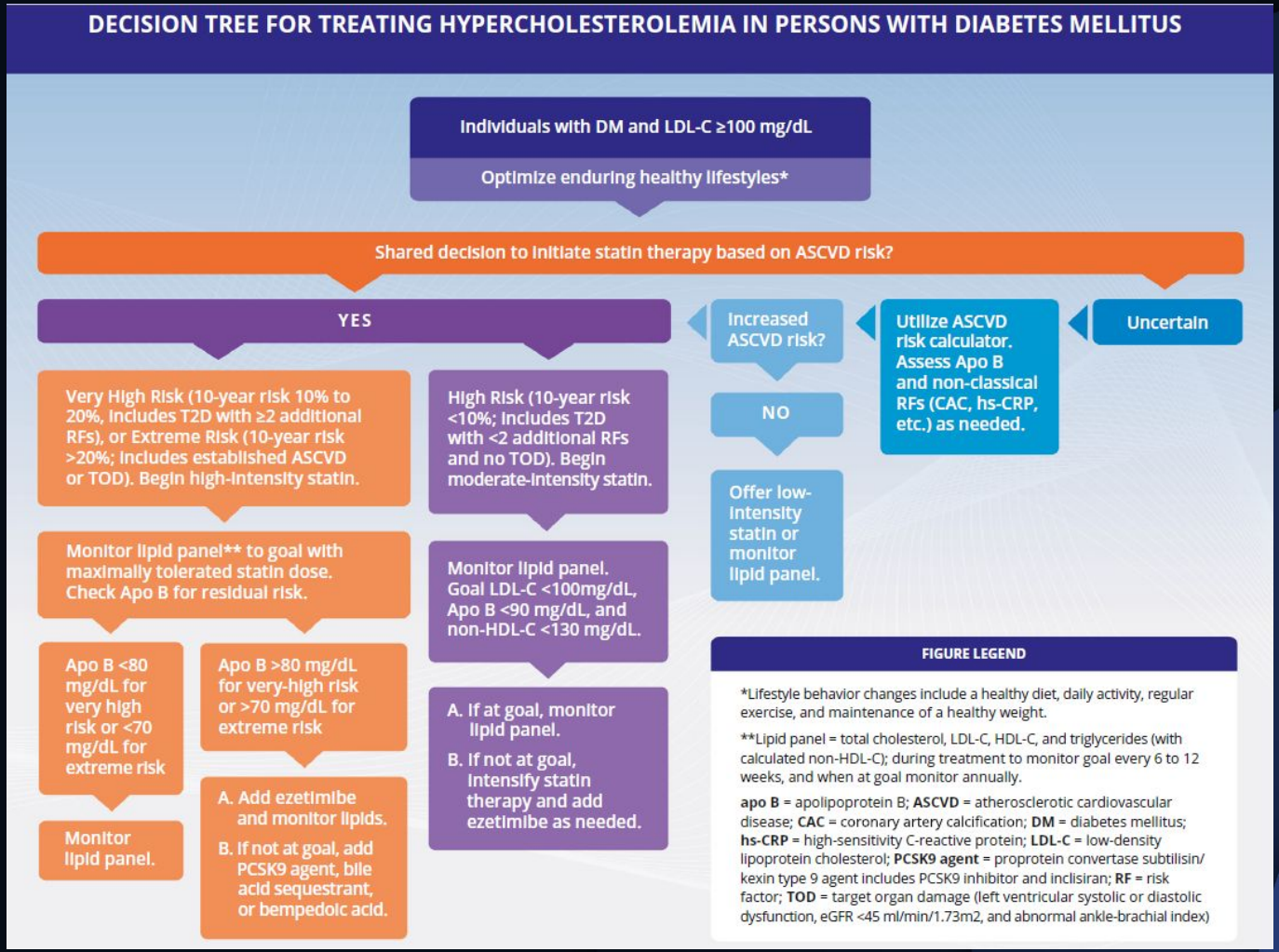


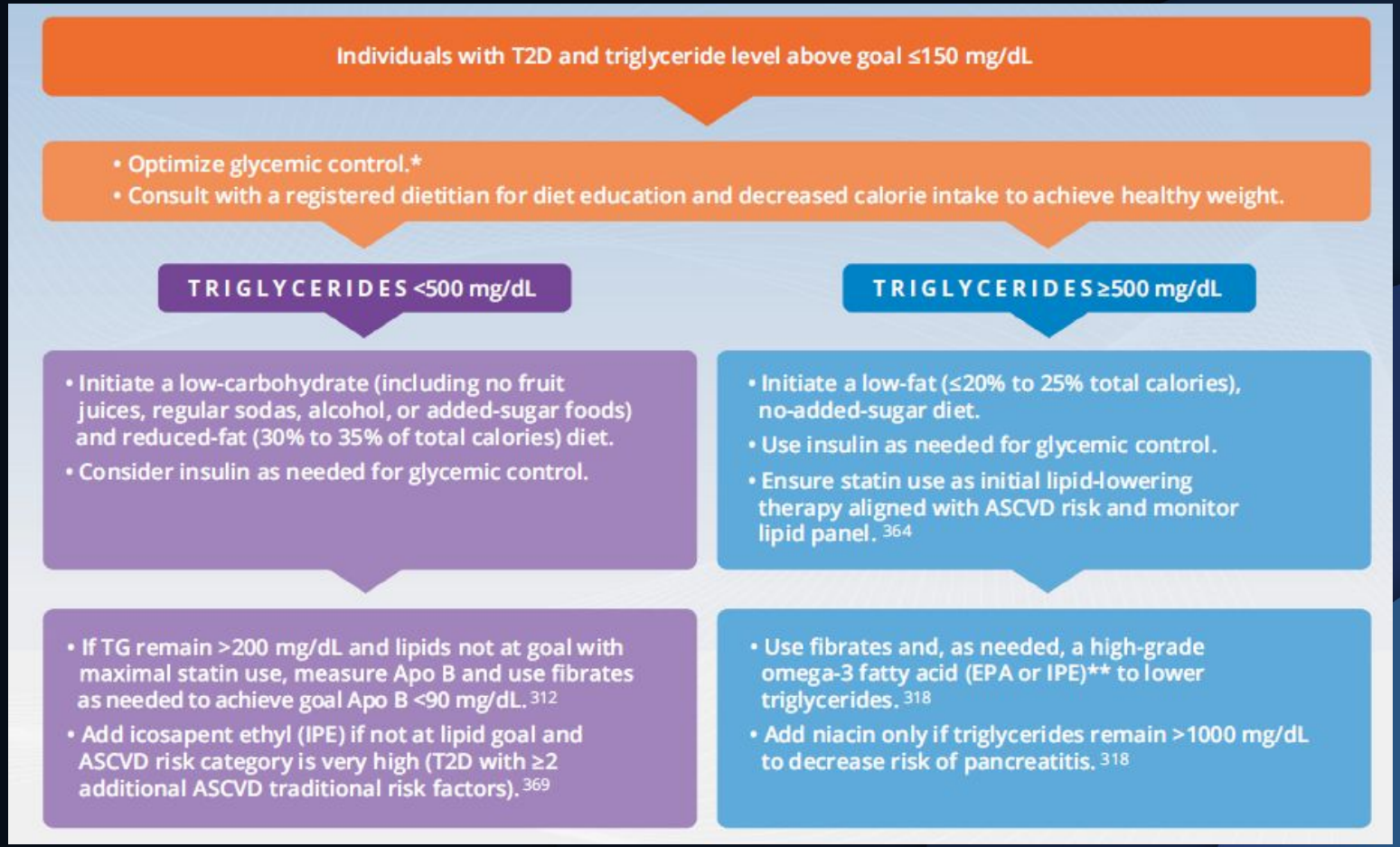
FIGURE LEGEND

*Lifestyle behavior changes include a healthy diet, daily activity, regular exercise, and maintenance of a healthy weight.

**Lipid panel = total cholesterol, LDL-C, HDL-C, and triglycerides (with calculated non-HDL-C); during treatment to monitor goal every 6 to 12 weeks, and when at goal monitor annually.

apo B = apolipoprotein B; **ASCVD** = atherosclerotic cardiovascular disease; **CAC** = coronary artery calcification; **DM** = diabetes mellitus; **hs-CRP** = high-sensitivity C-reactive protein; **LDL-C** = low-density lipoprotein cholesterol; **PCSK9 agent** = proprotein convertase subtilisin/kexin type 9 agent includes PCSK9 inhibitor and inclisiran; **RF** = risk factor; **TOD** = target organ damage (left ventricular systolic or diastolic dysfunction, eGFR <45 ml/min/1.73m2, and abnormal ankle-brachial index)

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES



MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Summary

Known ASCVD	GLP-1 RA	SGLT2-i		
CKD	SGLT2-i (eGFR >20)	GLP-1 RA (eGFR >15)	Ace-i/ARB	Finerenone (eGFR >25)
HF	SGLT2-i			
Obesity	5-15% weight loss	GLP-1 RA & GIP/GLP-1 RA > SGLT2 > DPP4i > Metformin	Diet & Physical Activity	Bariatric Surgery
Glycemic Control	<6.5-8%	Shared-decision making based on costs, preferences, individualized goals, risk for hypoglycemia, underlying comorbidities, family history		
ASCVD Risk Factor Management	Blood pressure	<130-140 systolic; <80-90 diastolic		ACE-I/ARB for proteinuria
	Lipids	Known ASCVD	LDL <55, non-HDL <90	High intensity statin > Ezetimibe > PCSK9-i
		Very High Risk	LDL <70; non-HDL <100	High intensity statin > Ezetimibe
		High Risk	LDL <100; non-HDL <130	Moderate intensity statin
		Hypertriglyceridemia	200-500	Max-tolerated Statin; Fibrates; Icosapent Ethyl; Low Carb Diet
			>500	Max-tolerated Statin; Fibrates; Icosapent Ethyl; Low Fat Diet; Niacin if >1000
	Antithrombotic Agents			
	Smoking Cessation			

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Agenda

1) Current state of Type 2 Diabetes in the USA
2) Review current major guidelines for the management of people with type 2 diabetes (T2D) .
    a) Update: Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)
    b) Update: American Association of Clinical Endocrinology Clinical Practice Guidelines
3) Care Coordination between Endocrinology/Other Specialties and Primary Care

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Reasons a patient with T2D should see an endocrinologist

- On 3 meds and still not at goal
- Pregnancy planning
- Patients with an HbA1c over goal for more than a year
- Patient has two or more complications
- When prandial insulin is needed or basal insulin exceeds ~80 units/day
- History of frequent or severe hypoglycemia
- History of nocturnal hypoglycemia
- Patient is interested in an insulin pump
- Need for U500 insulin (total daily dose >200 units)

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Case 1:

- 71 year old man history of obesity (BMI 35), type 2 diabetes c/b stage IIIb CKD, peripheral neuropathy; HTN and dyslipidemia presenting for follow-up. Remote history of phimosis s/p surgical repair.
- Current regimen: Insulin glargine 35 units nightly and Ozempic 1 mg weekly. Previously required 3+ meds.
- Follows with Nephrology for CKD (2/2 diabetes)
- HgA1c: 7.1%, UMA/Cr 62 (on max-dose ACE-i)
- Former smoker.
- On high-intensity statin

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Case 2:

51 year old woman history of obesity (BMI 40), type 2 diabetes c/b mild NPDR, peripheral neuropathy, CAD s/p 3-v CABG; HTN and dyslipidemia presenting for follow-up.

- Current DM regimen: U500 110 units twice daily, Dapagliflozin 5 mg daily.
- HbA1c: 9.7%.
- Previously unable to tolerate Liraglutide, Dulaglutide, and Semaglutide.
- Not interested in Bariatric Surgery or seeing Nutrition.

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Who owns diabetes care? Everyone!

- Prescriptions - non insulin diabetes meds
- Prescriptions - insulin
- Testing supplies orders
- Lipids
- Blood pressure
- Smoking cessation
- Screening for heart failure and ASCVD
- Microvascular complications: foot screening, eye exam referrals, diabetic kidney disease
- Vaccines
- Referral to other specialists

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Type 2 Diabetes Care - It Takes a Village!

Primary Care Clinician

Endocrinology
Nephrology
Cardiology

Primary Care Team

Pharmacy

Healthcare System

Patient

MCT2D
MICHIGAN COLLABORATIVE FOR TYPE 2 DIABETES

Questions / Discussion

Diving Deeper

Operationalizing a Low Carb Diet in Type 2 Diabetes

Rina Hisamatsu, MPH RDN
Registered Dietitian, Domino's Farms Family Medicine
Health Educator, MCT2D
rinhis@med.umich.edu

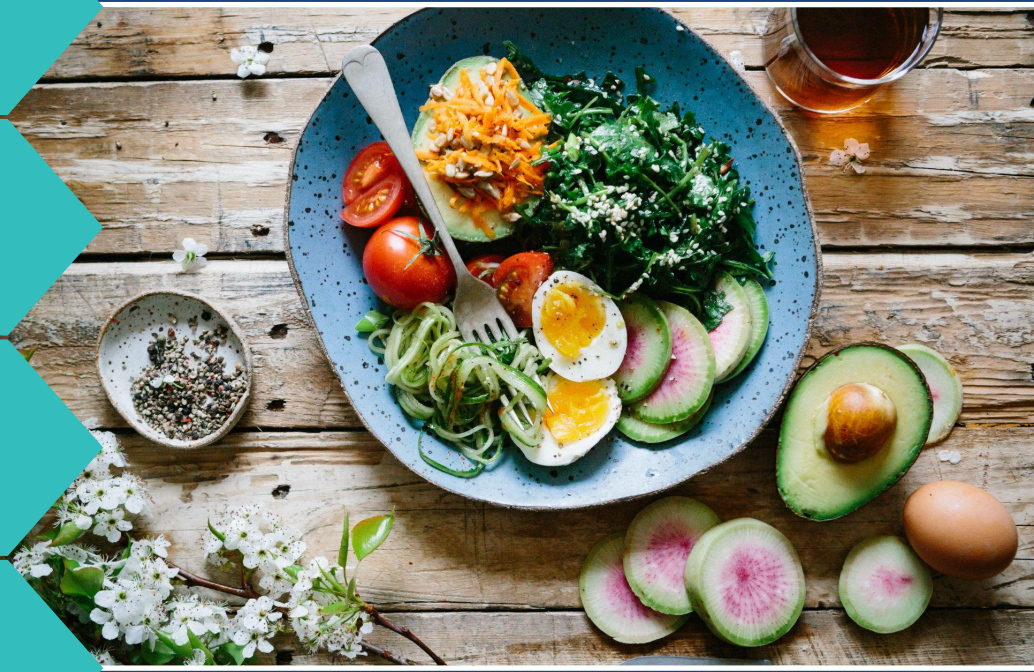
Overview

01 MCT2D core goals and the low-carb initiative

02 Fundamentals of the low-carbohydrate lifestyle

03 Identifying Suitable Patients

04 Case examples



The Michigan Collaborative for

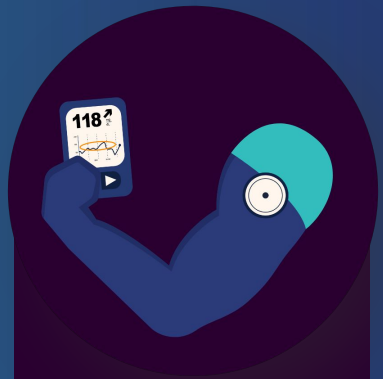
TYPE 2 DIABETES

MCT2D

MCT2D Quality Improvement Goals

Prescribing of GLP1 Receptor Agonists & SGLT2 inhibitors

Supporting Lower Carbohydrate Diets



Expanding use of Continuous Glucose Monitoring (CGM)

Focus for Today

How to integrate low-carbohydrate meal plans as an effective means of blood sugar control

Variations Of The Low-Carbohydrate Meal Plan

Very Low Carbohydrate (Keto) Diet	Low Carbohydrate Diet	Moderate Carbohydrate Diet	High Carbohydrate Diet
• ≤10% • 20-50g carbs/day	• >10-26% • 50-130g carbs/day	• 26-45% • 130-225g carbs/day	• >45% • >225g carbs/day

Based on 2000 kcal/day

Sainsbury et al. Diabetes Research and Clinical Practice, 2018

Fundamentals of The Low-Carbohydrate Lifestyle

A Well-Formulated Low-Carbohydrate Meal Plan…

Prioritizes protein intake

Includes an abundance of non-starchy vegetables

Includes some fats for satiety

A Well-Formulated Low-Carbohydrate Meal Plan

Low Carbohydrate Foods

High Carbohydrate Foods

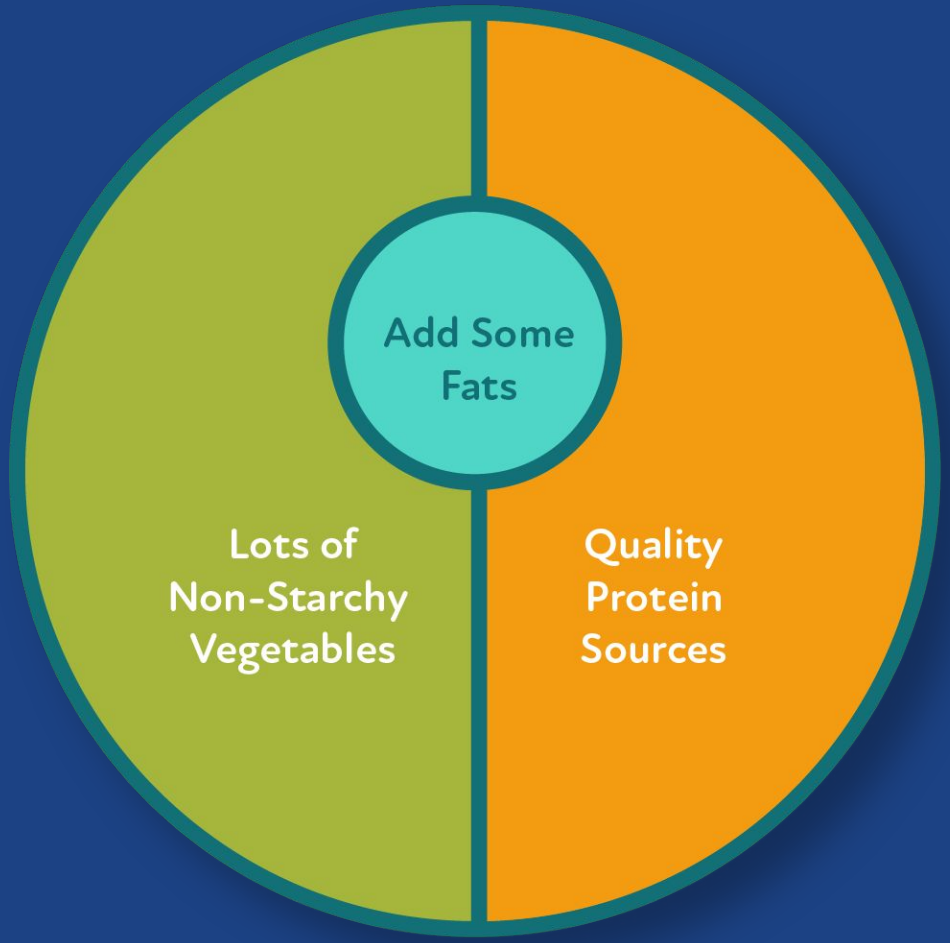
The Step Process
(3 step)

- Very low-carbohydrate meal plan
- <50g total carbohydrates/day

1) Pick a protein source

2) Add non-starchy vegetables

3) Add some fats



The Step Process
(4 step)

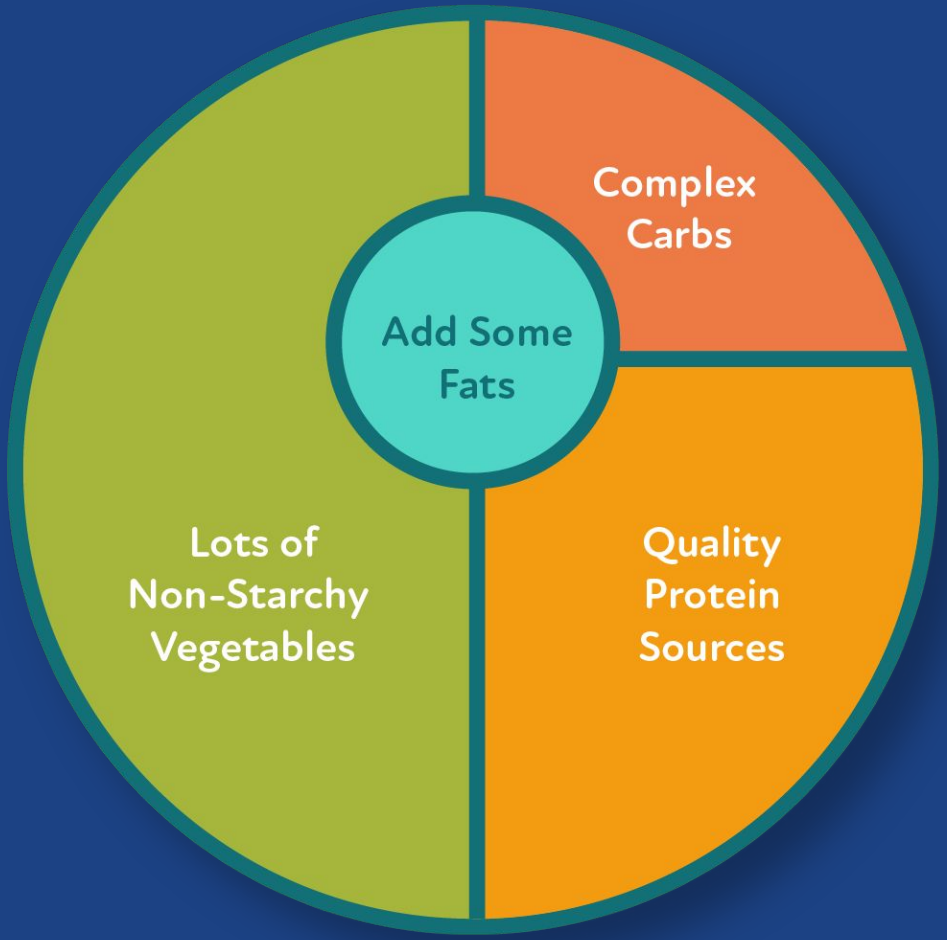
- Low carbohydrate meal plans
- 50-130g total carbohydrates/day

1) Pick a protein

2) Add non-starchy vegetables

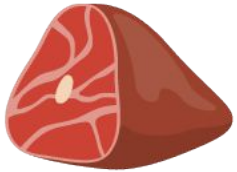
3) Add some fats

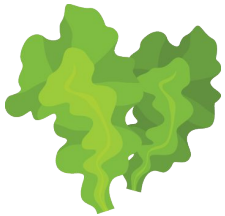
4) Add some complex carbs



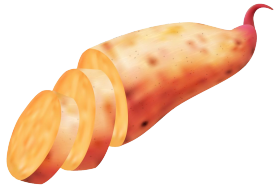
Summary

STEP 1: Pick a Protein	STEP 2: Add Non-Starchy Vegetables *(Half your plate)*	STEP 3: Add Some Fats	STEP 4: Add 1-2 Servings of Complex Carbs
Choose a high-quality protein source like chicken, fish, seafood, beef, eggs, or soy.	Fill half your plate with non-starchy vegetables like salad greens, broccoli, or Brussels sprouts.	Add some fats from oil, sauces, or full-fat dairy like cheese, butter or sour cream.	Include 1-2 servings of high-quality carbs like starchy vegetables, fruits, legumes/lentils or whole grains.

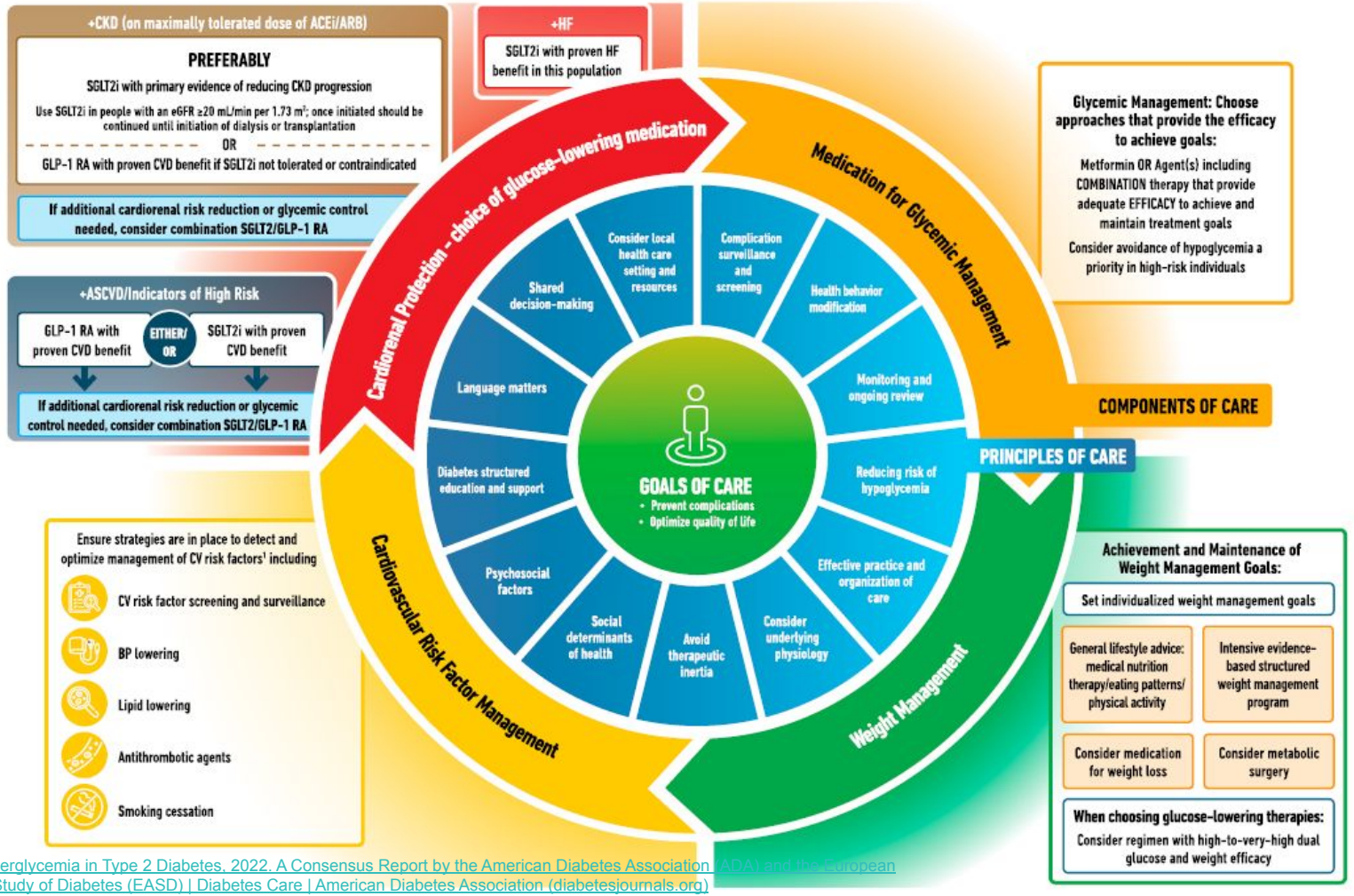








HOLISTIC PERSON-CENTERED APPROACH TO T2DM MANAGEMENT



Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) | Diabetes Care | American Diabetes Association (diabetesjournals.org)

Modifying Meal Plans to Fit Dietary Restrictions And Cultural Preferences

Pescatarian

- Includes fish and shellfish
- Includes soy, nuts and seeds, legumes/lentils*

Vegetarian/Vegan

- Includes soy, nuts and seeds, legumes/lentils*
- +/- eggs and dairy products

***Legumes/lentils can be added based on individual carb goals**

Adapting to cultural food preferences including:

Hispanic cuisine

South Asian cuisine

East Asian cuisine

Case Example A

Working together with care team to reach individualized carbohydrate goal

Case Example A: Ted

40 y.o. M, with PMH of T2D, obesity, HTN, TIA (2019)

Established care 1 year ago at Diabetes Clinic with following baseline:

- Starting weight: 342 lbs, BMI 47.7
- Hemoglobin A1c: 6.6%
- FBGs: 120s range

Medications: Victoza (d/c prior to initial eval at clinic), Januvia, Lisinopril, Metformin, Aspirin

Intervention

1. **Initiated GLP1-RA (Ozempic, escalated dose from 0.25mg to 1mg over 4-5 mo)**
2. **Education on low-carbohydrate meal plan**
    a. Recommended ≤100g carbs/day
    b. 5 Ps to avoid (Pastas, regular Pop, Pastries, Potatoes, b(B)read)
    c. Focus on: lean meats, non starchy vegetables 50/50 plate method
3. **Physical activity goals discussed**
    a. Weight lifting to preserve muscle mass

Within 1 year…

- ★ **Medication Reduction:**
  - D/C metformin, Januvia, Lisinopril
- ★ **Weight Reduction:**
  - 104 lbs total: 342 → 238 lbs (BMI 47.7 → 33.2)
  - Lost 7 lbs in 1 mo, 18 lbs in 2 mos, 59 lbs in 5 mos
- ★ **A1c Reduction:**
  - 6.6% → 5.4% (at most recent visit)
- ★ **FBGs Improvement: <90 mg/dL**

Patient Quotes

“[I’m] eating smaller, more frequent meals, and increasing lean proteins and vegetables.”

“[I’m] feeling great - receiving compliments from family and friends has been motivating.”

Delicious Ways to Enjoy Low-Carb Meals

Sample Meal Plan
(Low Carb 50-130g)

SUNDAY

Breakfast	*Lunch*	*Dinner*
3 egg omelet with ½ cup diced vegetables (peppers, onion, mushroom, tomatoes), and 1oz shredded cheese 1 slice whole wheat bread or 1 cup mixed berries **Total carbs: 20-25g**	**Wrap sandwich** (8 inch low carb wrap, 4-5oz turkey, cheese, spinach, tomato, and onion). Add mustard, pickles, mayo, and seasoning as desired *Optional: add 1oz nuts for crunch or avocado* **Total carbs: 25-30g**	**2 cups spaghetti squash*** topped with ½ cup low carb tomato sauce, 4-5oz ground beef, and 1 cup sautéed non-starchy vegetables *Optional: add grated Parmesan* **Note: Can also use high-protein, low carbohydrate pasta* **Total carbs: 40g**

MONDAY

Breakfast	*Lunch*	*Dinner*
¾ cup plain Greek yogurt topped with 1oz mixed nuts, 1 cup berries or 1 piece fruit (1 small apple, plum, kiwi, 1 cup cantaloupe) **Total carbs: 25g**	**2-3 cups mixed greens** topped with 4-5oz tuna or other canned fish, ½ cup chickpeas, diced cucumber, tomato, onion, pickles, olives, avocado, and feta or shredded cheese Serve with 2 tbsp ranch dressing or lemon and olive oil vinaigrette **Total carbs: 25g**	**Chicken Alfredo** (whole grain fettuccine with 4-5oz chicken grilled, ½ cup Alfredo sauce, and 2oz (dried) whole grain fettuccine) Serve with side salad (dressing full-fat or olive oil and vinegar) **Total carbs: 50g**

TUESDAY

Breakfast	*Lunch*	*Dinner*
Baked avocado cups (cut avocado in half, add 1 egg to center of each half, then bake at 425 degrees for 15-20 min) 1 piece of fruit (1 small apple, plum, kiwi, 1 cup cantaloupe, 1 cup berries) **Total carbs: 30g**	**Lettuce wraps** (2-3 large lettuce leaves topped with 4-5 oz turkey or chicken, 2 tbsp hummus, diced tomato, onion, and 1oz pumpkin seeds) **Total carbs: 20g**	**2 cups lentil soup** (brown lentils, onions, garlic, diced carrots, zucchini, celery, mushrooms) Chia pudding (mix 1 tbsp chia seeds, ½ cup coconut cream, and a dash of stevia. Let sit overnight) *You can make these in batches!* **Total carbs: 43g**

WEDNESDAY

Breakfast	*Lunch*	*Dinner*
Farmer's breakfast made with 2 slices bacon or other breakfast meats 1-2 eggs, cooked in any style ½ cup sautéed spinach or other greens 1 slice whole grain toast **Total carbs: 20g**	**Burrito bowl** made with 1 cup cauliflower rice, 4-5oz taco meat, 1 cup sautéed vegetables, ½ cup black beans, 2 tbsp salsa, and 1 tbsp sour cream 1 small fruit **Total carbs: 42g**	**4-5oz Grilled/baked fish** 2 cups baked/grilled non-starchy vegetables sprinkled with 1oz mixed nuts ½ cup sautéed corn or 1 small baked sweet potato *Optional: add 1 tbsp sour cream or butter* **Total carbs: 32g**

Sample Meal Plan
(Very-Low Carb <50g)

SATURDAY

Breakfast	*Lunch*	*Dinner*
Egg bites (whisk together 2-3 eggs, with chopped onion, peppers, tomato, spinach, mushrooms, herbs and spices, 1-2 oz cheese of choice. Pour mixture into muffin tin and bake at 350 degrees for 15-20 min or until set)	**1 cup tuna salad/chicken salad/ egg salad** Serve over 2 cups of mixed leafy greens or make into a wrap or sandwich using low carbohydrate bread. *Optional: 1 oz cheese or nuts*	**4-5 oz steak** Roasted brussel sprouts with crushed bacon 1 cup mashed cauliflower with garlic and parsley
Total carbs: 5g	**Total carbs: 10g (26g with wrap)**	**Total carbs: 15g**

SUNDAY

Breakfast	*Lunch*	*Dinner*
3 egg omelet with ½ cup diced vegetables (peppers, onion, mushroom, tomatoes), and 1oz shredded cheese ½ cup sliced strawberries	**Wrap sandwich** (8 inch low carb wrap, 4-5oz turkey, cheese, spinach, tomato, and onion). Add mustard, pickles, mayo, and seasoning as desired	**2 cups zucchini noodles** topped with ½ cup low carbohydrate tomato sauce, 4-5oz ground beef, and 1 cup sauteed non-starchy vegetables *Optional: add grated Parmesan*
Total carbs: 10g	**Total carbs: 25g**	**Total carbs: 15g**

TUESDAY

Breakfast	*Lunch*	*Dinner*
¾ cup plain Greek yogurt topped with 1 oz chopped almonds, ½ cup mixed berries	**Lettuce wraps** (2-3 large lettuce leaves topped with 4-5oz ground turkey or chicken, diced tomato, and ½ diced avocado, ¼ cup shredded cheese, 2 tbsp ranch dressing)	**Meatloaf** made with sugar-free BBQ glaze, 1 cup sauteed green beans, 1 cup cauliflower mash
Total carbs: 18g	**Total carbs: 10g**	**Total carbs: 18g**

WEDNESDAY

Breakfast	*Lunch*	*Dinner*
Farmer's breakfast made with 2 slices bacon or other breakfast meats 2 eggs, cooked in any style ½-1 cup spinach or other greens sauteed with garlic ½ cup berries	**Burrito bowl** made with 1.5 cups cauliflower rice, 4-5 oz taco meat, 1 cup sauteed vegetables, 2 tbsp salsa, 1 tbsp sour cream, 1 tbsp guacamole	**4-5 oz grilled fish** 2 cups sauteed non-starchy vegetables sprinkled with 1 oz walnuts
Total carbs: 12g	**Total carbs: 17g**	**Total carbs: 10g**

Identifying Your Patients

Taking The First Step

1. Identify “low-risk” patients: not on insulins, sulfonylureas, SGLT2i’s
2. Patients with high engagement/interest in pursuing a low carb lifestyle

Griauzde et al. Front Nutr. (2021)

Avoiding Potential Risks

1) Hypoglycemia

Monitor and adjust blood sugar lowering medications (insulin/combination insulins, sulfonylureas, SGLT2is etc.)

SGLT2-inhibitors

- DO NOT USE: If daily carb intake <50 grams due to risk of euglycemic DKA
- Safe in patients consuming >100 grams of carbs daily

2) Hypotension

Monitor BP for all patients

TREAT hypotension: adjust medications as needed

MONITOR for hyponatremia: consider medication adjustment, comorbidities, hydration status

Cucuzzella M, Riley K, Isaccs D, International Working Group on Remission of T2D
https://doi.org/10.3389/fnut.2021.688540
http://eguideline.guidelinecentral.com/i/1180534-low-carb-nutritional-approaches-guidelines-advisory/13?

Adapting Medications for Type 2 Diabetes to a Low Carb Diet

GUIDE FOR STARTING PATIENTS
on a Low Carb Lifestyle

A low carbohydrate (carb) lifestyle consists of reducing one's carbohydrate intake to 50-130g of total carbohydrates per day. Patients with type 2 diabetes (T2DM) who are interested in adopting a low carbohydrate lifestyle should monitor their blood glucose carefully and work closely with their primary care team to adjust medications as needed. **Risk of hypoglycemia is greatest among patients who are on insulin or sulfonylureas, particularly if they significantly reduce carbohydrate intake without adjusting their medications.**

Patients with T2DM who are on these medications may need to have their medications proactively reduced (i.e., when their diet is initiated) to prevent hypoglycemia. View a detailed review on medication management for patients with T2DM who follow a low carbohydrate lifestyle by visiting **michmed.org/Jyng5** or scanning the QR code.

Low carbohydrate lifestyles are not 'one-size-fits-all.' Success may require fine-tuning and adjustments along the way to find a suitable carbohydrate range for a patient. Considerations such as patient desire/interest, experience, cultural background, and commitment to work closely with their care team and be proactive in self-management skills are necessary tools for success.

MONITORING BLOOD PRESSURE

- Monitor BP for all patients
- For patients with controlled BP or edema:
  - Consider stopping/decreasing diuretics during the first 2-4 weeks of dietary change
  - If BP/edema increase: return to prior dose
- TREAT hypotension: advise patient to monitor for fatigue and dizziness, can give patient permission to stop a medication in this setting (HOLD medication and call office).
- Monitor for hyponatremia
- Hydration!

SETTING CARB GOALS & ADJUSTING MEDICATIONS

GREEN CATEGORY: CONTINUE
Patients will need minimal medication adjustment

Biguanides
GLP-1 RAs
DPP-4 Inhibitors

Population: These patients are considered low risk for hypoglycemia/hypotension: Patients with T2D who are NOT on insulin or sulfonylureas (Biguanides/Metformin, GLP-1 receptor agonists, DPP-4 inhibitors are OKAY).

Carb goal: Work with your patients to set a suitable carb goal. A starting carb goal of 50-130g of carbohydrates per day may be appropriate for this population.

Medication adjustments: If patients are on BP-lowering medications, close monitoring and adjustments may be necessary to prevent hypotension.

Blood glucose range and monitoring: Most patients should achieve a fasting glucose level of 70-130 mg/dL and a two-hour post-prandial meal of <180 mg/dL. Work with your patient to determine blood sugar monitoring goals.

Look for this handout!

SAFE

- Biguanides
- GLP1 Agonists
- DPP4 Inhibitors

REDUCE

- Basal long acting insulins— may need to reduce dose by up to 50%. Follow blood sugars and adjust as needed
- Thiazolidinediones

STOP

- Sulfonylureas
- Meglitinides
- SGLT2 inhibitors
- Bolus meal time insulin. *Might need small amounts to correct high blood sugar.*
- Combination insulins (70/30) — switch to basal long acting
- Alpha-glucosidase inhibitors

Cucuzzella M, Riley K, Isaccs D, International Working Group on Remission of T2D
https://doi.org/10.3389/fnut.2021.688540

Recognizing Challenges

- ★ **Time** constraints
- ★ **Availability** for clinicians to cover in routine visits
- ★ **Access** to clinic resources (MAs, RNs, RDs, Pharmacists, Care Navigators etc.)

Resources and Teaching Tools

- MCT2D Resource Library
- Diet Doctor Free CME course
- Low-Carbohydrate and Very Low-Carbohydrate Eating Patterns in Adults with Diabetes: A Guide for Health Care Providers (ADA)
- The Art and Science of Low Carbohydrate Eating
- Low Carb For Any Budget - Cooking Keto With Kristie
- Always Hungry? by Dr. David Ludwig
- Diet Doctor

Case Example B

Strategies to mitigate potential risk from medications

Team-based care

Case Example B: Fred

69 y.o. M with hx of T2D, dx in 2007 (or possibly earlier)

Started low-carb + CGM program in 7/2022 with following baseline:

- Starting weight: 235 lbs, BMI 35
- Hemoglobin A1c: 7.7%

Medications: Insulin glargine: 30 units twice daily, Insulin aspart: 5 units B/L/D, Dulaglutide: 3mg weekly

Patient counseled to keep total carbs ≤100g per day

MEDICATIONS:

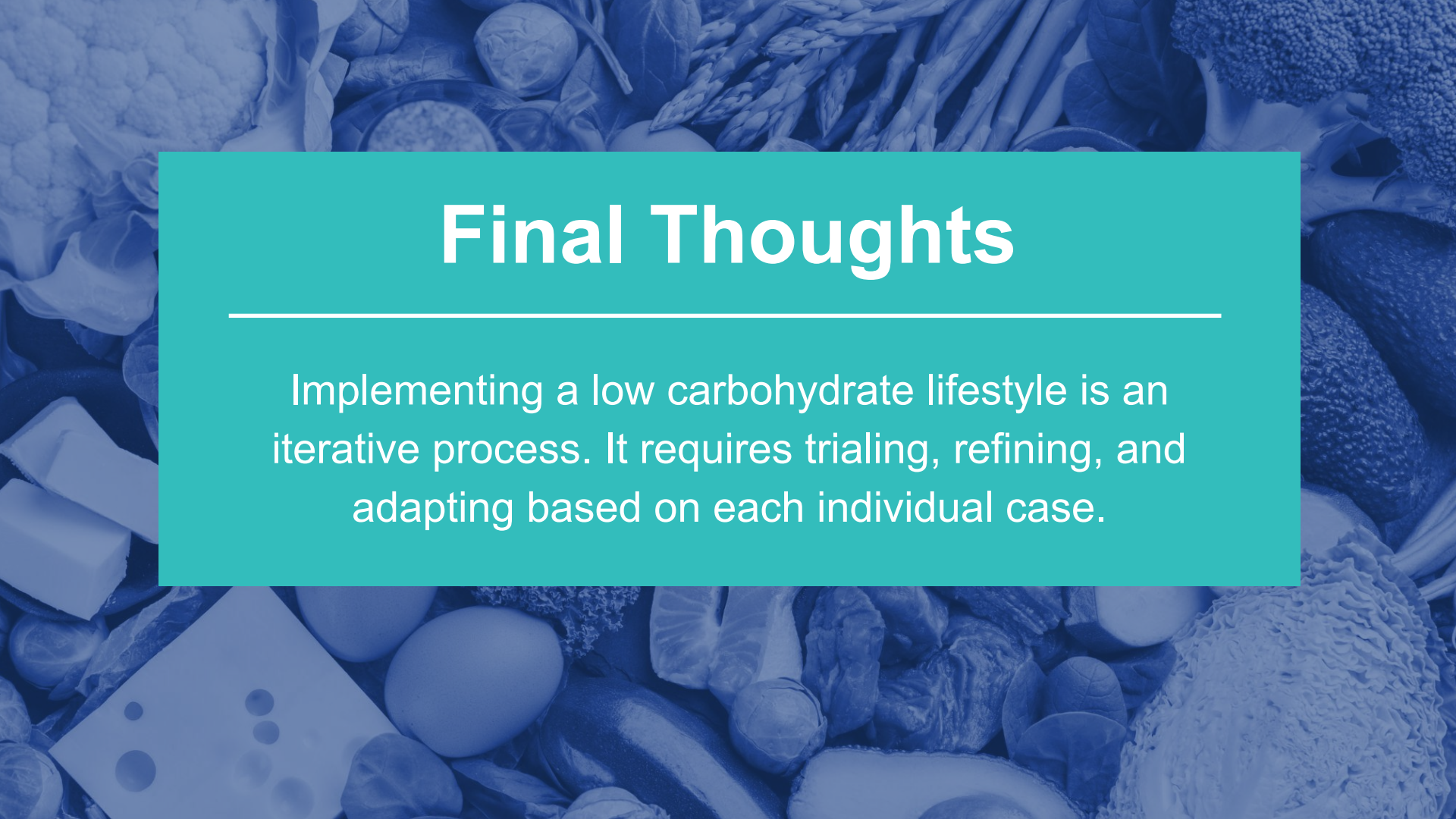
Insulin glargine: 30 units **twice** daily
Insulin aspart: 5 units B/L/D
Dulaglutide 3mg weekly

Within 1 Month of Program…

- ★ Discontinued insulin aspart
- ★ Insulin glargine: 30U bid → 20U qd
- ★ 10 lb weight loss (235 → 225)
- ★ Reduced BP meds
- ★ CGM time in range ~85%
- ★ Patient reports “feeling great”

Key Takeaways

1) Using CGM data, pt able to make real-time connections between food and its effect on blood glucose.
2) Pt felt empowered by results from low-carb lifestyle: weight loss, de-escalation of meds, improved blood glucose control.



Final Thoughts

Implementing a low carbohydrate lifestyle is an iterative process. It requires trialing, refining, and adapting based on each individual case.

Thank you!

Questions/
Concerns?

rinhis@med.umich.edu

References

- Sainsbury E, Kizirian NV, Partridge SR, Gill T, Colagiuri S, Gibson AA. Effect of dietary carbohydrate restriction on glycemic control in adults with diabetes: A systematic review and meta-analysis. Diabetes Res Clin Pract. 2018 May;139:239-252. doi: 10.1016/j.diabres.2018.02.026. Epub 2018 Mar 6. PMID: 29522789.

- Saslow, L.R., Daubenmier, J.J., Moskowitz, J.T. *et al.* Twelve-month outcomes of a randomized trial of a moderate-carbohydrate versus very low-carbohydrate diet in overweight adults with type 2 diabetes mellitus or prediabetes. *Nutr & Diabetes* 7, 304 (2017). https://doi.org/10.1038/s41387-017-0006-9

- Hallberg, S.J., McKenzie, A.L., Williams, P.T. *et al.* Effectiveness and Safety of a Novel Care Model for the Management of Type 2 Diabetes at 1 Year: An Open-Label, Non-Randomized, Controlled Study. *Diabetes Ther* 9, 583–612 (2018). https://doi.org/10.1007/s13300-018-0373-9

- Griauzde DH, Standafer Lopez K, Saslow LR, Richardson CR. A Pragmatic Approach to Translating Low- and Very Low-Carbohydrate Diets Into Clinical Practice for Patients With Obesity and Type 2 Diabetes. *Front Nutr*. 2021;8:682137. Published 2021 Jul 19. doi:10.3389/fnut.2021.682137

- Volek JS and Phinney SD. The Art and Science of Low Carbohydrate Living. Monee, IL, Beyond Obesity LLC. 2011. ISBN-13: 9780983490708

References

- Hamdy, O., Ganda, O. P., Maryniuk, M., Gabbay, R. A., & Members of the Joslin Clinical Oversight Committee (2018). CHAPTER 2. Clinical nutrition guideline for overweight and obese adults with type 2 diabetes (T2D) or prediabetes, or those at high risk for developing T2D. *The American journal of managed care*, *24*(7 Spec No.), SP226–SP231.
- Clinical Guidelines For the Prescription of Carbohydrate Restrictions as a Therapeutic Intervention/Low Carb USA International Scientific and Clinical Advisory www.lowcarbusa.org/standard-of-care/clinical-guidelines/
- Low-Carbohydrate Nutrition Approaches in Patients with Obesity, Prediabetes and Type 2 Diabetes - Low Carb Nutritional Approaches - Guidelines Advisory (guidelinecentral.com)
- Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) | Diabetes Care | American Diabetes Association (diabetesjournals.org)

Closing

Jackie Rau, MHSA

MCT2D Program Manager

Next Steps for MCT2D

- Value Based Reimbursement requirements for Year 2
- MCT2D Learning Community

First Official Year Coming to a Close

In that time we:

- Trained 601 MCT2D clinical champions and physicians on SGLT2i/GLP1RAs, low carbohydrate diets, and continuous glucose monitors
- Hosted 7 regional meetings and 1 collaborative wide meeting totaling over 247 attendees
- Began deploying the MCT2D interventions with patients in the practices, identifying barriers and challenges
- Shared best practices amongst collaborative members through the panels on prior authorization and CGMs.

We will be distributing a progress survey as one of the program requirements in December (due 2/1/23) to learn more about how the first year went for your practice

Year 2 VBR

Requirement	Responsibility
Ongoing Learning Community Requirement: Participate in one learning community activity for each of the two engagement levels. Details below. Due 7/15/2023	Level 1: Each physician Level 2: Each PO/Each Practice
Complete Progress Survey (due 2/1/2023)	Practice
Work with your physician organization to maintain a log of practice interventions and changes related to implementation of the quality initiatives	Practice
Identify and submit one best practice related to continuous glucose monitoring, low carbohydrate diet, prescribing SGLT2s or GLP1s, or urine albumin testing (Due 5/1/2023).	Practice
Distribute patient reported outcomes survey flyers and encourage patient participation.	Practice
Learn about coverage for your primary payor via MCT2D developed videos and materials and take a short post-test to confirm understanding.	Practice
Attend Fall 2022 and Spring 2023 regional meetings	Practice clinical champion
Present on your site's implementation of the quality improvement initiatives at a collaborative meeting, regional meeting, or conference call, if requested	Practice

Learning Community Newsletter

- Began distributing learning community newsletter in May
- Five editions out now, will continue sending these monthly to all clinical champions and all who subscribe
- Encourage subscriptions from your other providers in the clinic
- Will distribute tools through this, announce learning opportunities, etc.
- Where blogs will be posted, etc.

Link to subscribe: michmed.org/e8X8N

Thank you!

We appreciate you joining us today and for your work improving care for patients with T2D!