

# Who Should CaRe? Me!

## Cardio Renal Metabolic (CaRe Me) Approaches to Management of Type 2 Diabetes

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2026 ADCES Diabetes Care and Education Specialist of the Year

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# Objectives

- Describe the cardiovascular, kidney, and metabolic benefits of anti-hyperglycemic medications beyond glucose lowering effects
- Apply the American Diabetes Association (ADA) guideline recommendations to patient cases
- Create treatment and monitoring plans for patient cases

# Background: T2D and Complications

Among U.S. adults 18 years or older with diagnosed diabetes, crude data for 2017–2020

- 89.8% were overweight or had obesity, defined as a body mass index (BMI) of 25 kg/$m^2$ or higher
- 39.2% had chronic kidney disease (CKD, stages 1–4)

In 2020, a total of 1.68 million diabetes related hospital discharges were attributed to major cardiovascular diseases including:

- 368,000 for ischemic heart disease (15.7 per 1,000 adults with diabetes)
- 321,000 for stroke (13.7 per 1,000 adults with diabetes)

CDC.gov/diabetes Accessed 26 May 2025

# Background: T2D and Complications

- It is estimated that in adults in the U.S., the prevalence of metabolic dysfunction-associated steatotic liver disease (MASLD) is >70% of people with type 2 diabetes
- Diabetes is a major risk factor for developing metabolic dysfunction associated steatohepatits (MASH)
- Steatohepatitis is estimated to affect more than half of people with type 2 diabetes with MASLD
- The goal of screening for MASLD is to identify people with at-risk MASH to prevent future cirrhosis, HCC, liver transplantation, and all-cause mortality
- This risk is higher in people who have central obesity and cardiometabolic risk factors or insulin resistance, are >50 years of age, and/or have persistently elevated plasma aminotransferases

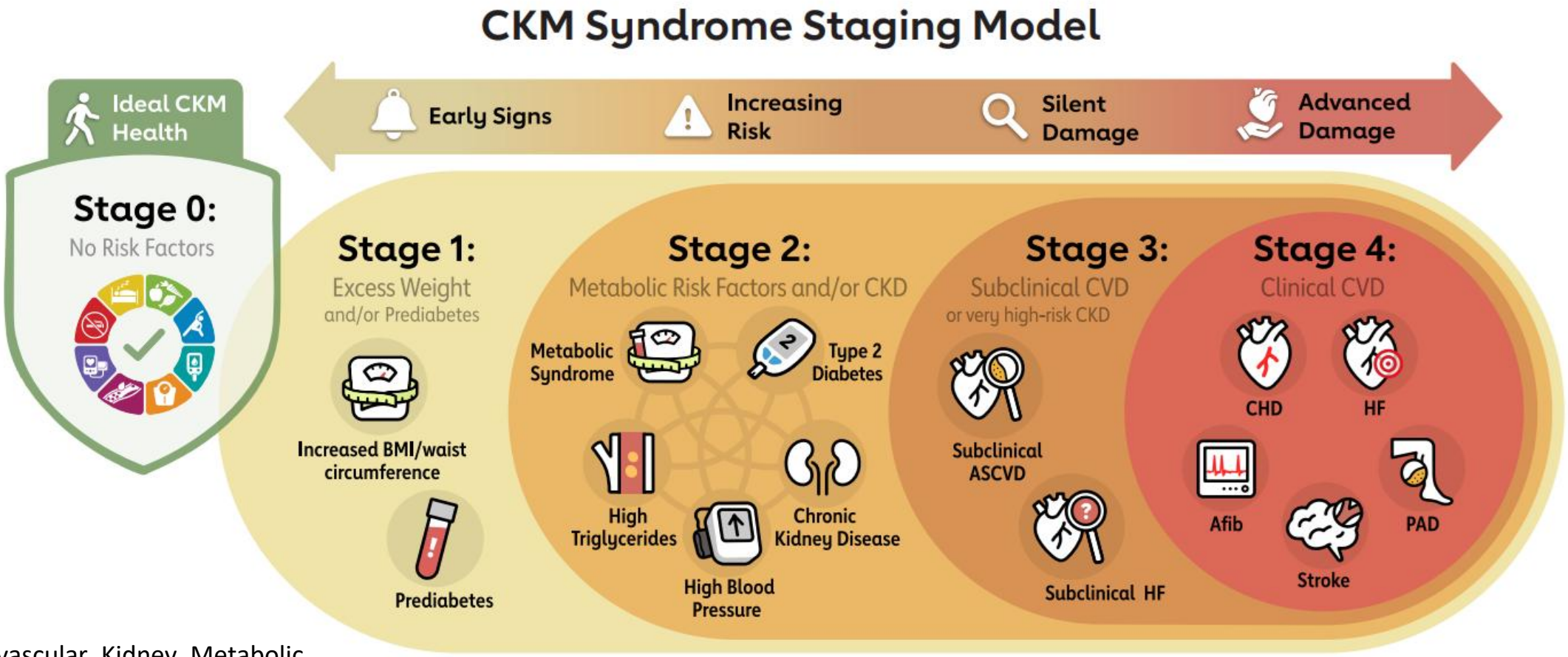
*Diabetes Care* 2021;44:399–406 *J Hepatol* 2021;75:284–291 *Diabetes Care* 2026;49(Supplement_1):S61–S88

# History of Cardiovascular Outcomes Trials




Adapted from: Abhinav Sharma. Circulation. Impact of Regulatory Guidance on Evaluating Cardiovascular Risk of New Glucose-Lowering Therapies to Treat Type 2 Diabetes Mellitus, Volume: 141, Issue: 10, Pages: 843-862, DOI: (10.1161/CIRCULATIONAHA.119.041022)

# 2026: Guidelines on CKM




CKM: Cardiovascular, Kidney, Metabolic

Ndumele, C. et al. 2026 AHA/ACC/ADA/ASN Guideline for the Prevention, Detection, Evaluation, and Management of Cardiovascular-Kidney-Metabolic Syndrome. *JACC.* 2026 Jun, 87 (22_Supplement) e1889–e2007.

# Meet Juan

63 year old Hispanic male

PMH: T2DM, HTN, obstructive sleep apnea, gout, obesity, CKD, and depression.

Current Diabetes Regimen:

- Dulaglutide 3mg SC weekly

- Glipizide XL 5mg with breakfast

Pertinent labs/vitals:

Weight: 126.1 kg (BMI 43.54)

BP: 133/70

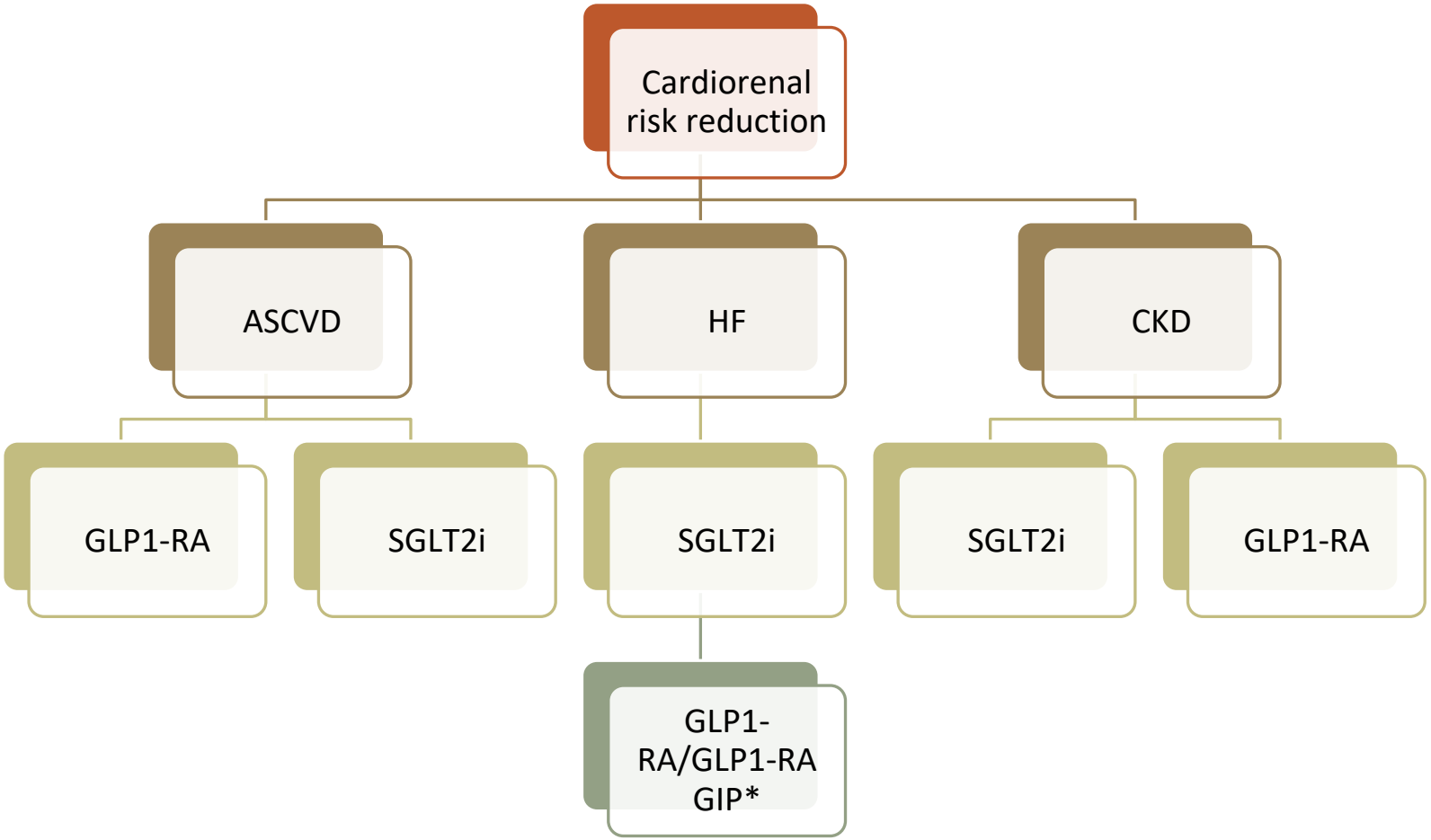
A1c 8.6%

UACR: 998.3

Scr 1.20 (eGFR 68)

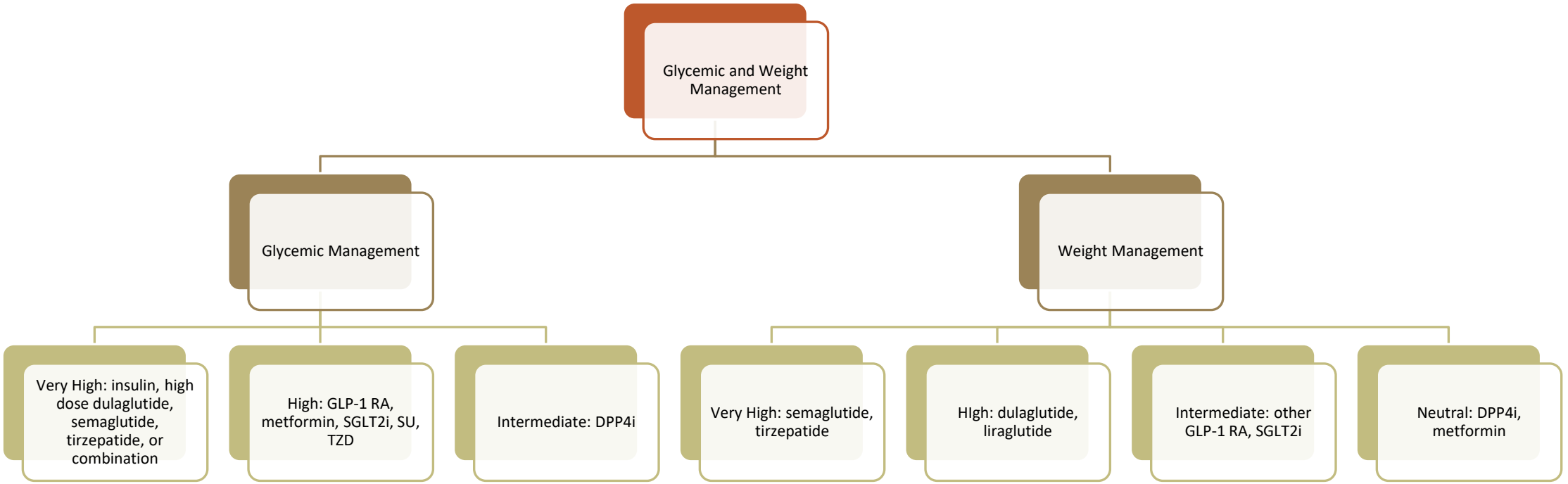
LDL-c 56 mg/dL

# Use of Glucose Lowering Medications in the Management of Type 2 Diabetes



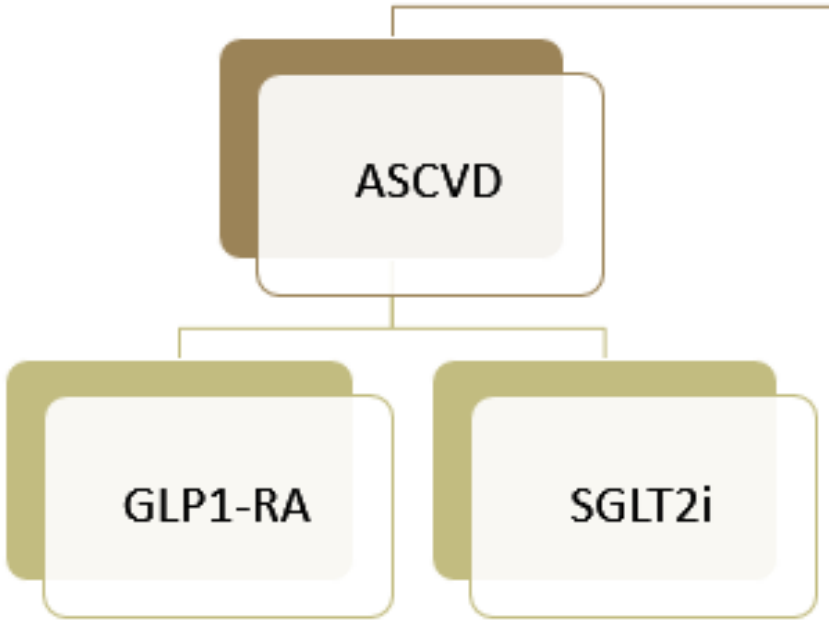

Adapted from Figure 9.4 *Diabetes Care* 2026;49(Supplement_1):S183–S215

# Use of Glucose Lowering Medications in the Management of Type 2 Diabetes




Adapted from Figure 9.4 *Diabetes Care* 2026;49(Supplement_1):S183–S215

# ASCVD/High Risk for ASCVD




- ASCVD: MI, stroke, any revascularization procedure
- High risk for ASCVD: >55 years old with 2 or more risk factors
  - Obesity
  - HTN
  - Smoking
  - Dyslipidemia
  - Albuminuria

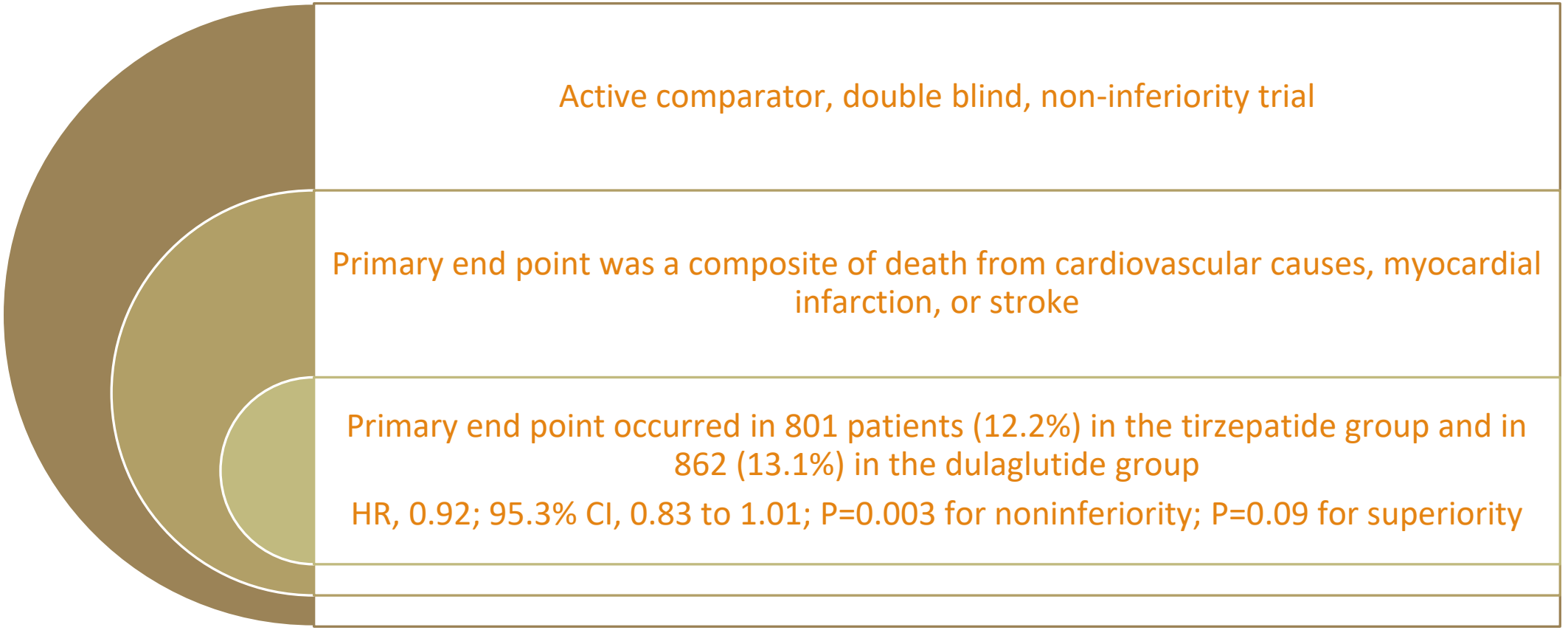
Adapted from Figure 9.4 *Diabetes Care* 2026;49(Supplement_1):S183–S215

# GLP1-RA CVOT

| | ELIXA N=6068 | LEADER N=9340 | SUSTAIN-6 N=3297 | EXSCEL N=14,752 | REWIND N=9901 | SOUL N=9650 |
|---|---|---|---|---|---|---|
| Intervention | Lixisenatide | Liraglutide | Semaglutide SC | Exenatide QW | Dulaglutide | Semaglutide PO |
| Inclusion Criteria | T2DM and ACS (≤180 days) | T2DM with preexisting CVD, CKD, CHF | T2DM with preexisting CVD, CKD, CHF | T2DM with or without CVD | T2DM and prior ASCVD event or high risk for ASCVD | T2DM with CVD or CKD |
| Mean Age (yrs) | 60.3 | 64.3 | 64.6 | 62 | 66.2 | 66 |
| Diabetes Duration (yrs) | 9.3 | 12.8 | 13.9 | 12 | 10.5 | 14.7 |
| Median Follow-up (yrs) | 2.1 | 3.8 | 2.1 | 3.2 | 5.4 | 4.1 |
| Prior CVD/CHF (%) | 100/22 | 81/18 | 60/24 | 73/16 | 32/9 | 71/23 |
| Primary Outcome | 4-point MACE 1.02 (0.89-1.17) | 3-point MACE 0.87 (0.78-0.97) | 3-point MACE 0.74 (0.58-0.95) | 3-point MACE 0.91 (0.83-1.00) | 3-point MACE 0.89 (0.79-0.99) | 3 point-MACE 0.86 (0.77-0.96) |

Adapted from Diabetes Care, Table 10.3b. *Diabetes Care* 2024;47(Supplement_1):S179–S190
McGuire DK, et al. N Engl J Med 2025;392:2001-2012

# SURPASS CVOT




Nicholls SJ, et al; SURPASS-CVOT with Tirzepatide versus Dulaglutide in T2D. N Engl J Med. 2025 Dec 18;393(24):2409-2420.

# GLP1-RA Dosing

## Liraglutide

Multi-dose pen, separate Rx for pen needles

- Start 0.6 mg SC once daily
- Increase to 1.2mg daily after 1 week
- Max: 1.8mg daily

## Semaglutide

Multi-dose pen, needles come with pen

- Start 0.25mg SC once weekly
- Increase to 0.5mg weekly after 4 weeks
- Max dose: 2mg/weekly

## Dulaglutide

Single use pens, needle inside device

- Start 0.75mg SC once weekly
- Increase in 4 week increments; 1.5mg weekly, 3mg weekly as needed for glucose lowering
- Max dose: 4.5mg weekly

# GLP1-RA Dosing

## Exenatide (IR)

Multi-dose pen, separate Rx for pen needles

- Start 5 mcg SC BID; inject 60 min prior to meals
- Increase to 10 mcg BID after 1 month
- Do not use if CrCl <30 mL/min

## Exenatide (ER)

Single use pen, auto-injector

- Start 2mg SC once weekly
- Do not use if eGFR <45 mL/min

## Semaglutide PO

Must be dispensed in original bottle

- Start 1.5mg daily, take on empty stomach with 4 oz water
- Increase to 4mg daily after 1 month
- Max dose: 9 mg daily

# GLP1-RA/GIP Dosing

## Tirzepatide

Single use pens, needle inside device

- Start 2.5 mg SC once weekly
- Increase to 5 mg once weekly after 4 weeks
- Can increase every 4 weeks as needed by increments of 2.5mg
- Max Dose: 15mg once weekly

# Incretin Therapy – Common Side Effects

- Nausea
- Vomiting
- Constipation
- Diarrhea
- Headache
- Nutrition deficiencies
- Fatigue

# SGLT2i - CVOT

| | EMPA-REG Outcome N=7020 | CANVAS Program N=10,142 | DECLARE-TIMI 58 N=17,160 | VERTIS CV N=8246 |
|---|---|---|---|---|
| Intervention | Empagliflozin | Canagliflozin | Dapagliflozin | Ertugliflozin |
| Inclusion Criteria | T2DM and CVD | T2DM and CVD or T2DM and ≥2 CV risk factors | T2DM and ASCVD or multiple risk factors for ASCVD | T2DM and ASCVD |
| Mean Age (yrs) | 63.1 | 63.3 | 64 | 64.4 |
| Diabetes Duration (yrs) | 57% >10 yrs | 13.5 | 11 | 12.9 |
| Median Follow-up (yrs) | 3.1 | 3.6 | 4.2 | 3.5 |
| Prior CVD/CHF (%) | 99/10 | 66/14 | 40/10 | 100/23 |
| Primary Outcome | 3-point MACE 0.86 (0.74-0.99) | 3-point MACE 0.86 (0.75-0.97) | 3-point MACE 0.93 (0.84-1.03)<br>CV death or HF hosp 0.83 (0.73-0.95) | 3-point MACE 0.97 (0.85-1.11) |

Adapted from Diabetes Care, Table 10.3c. *Diabetes Care* 2024;47(Supplement_1):S179–S218

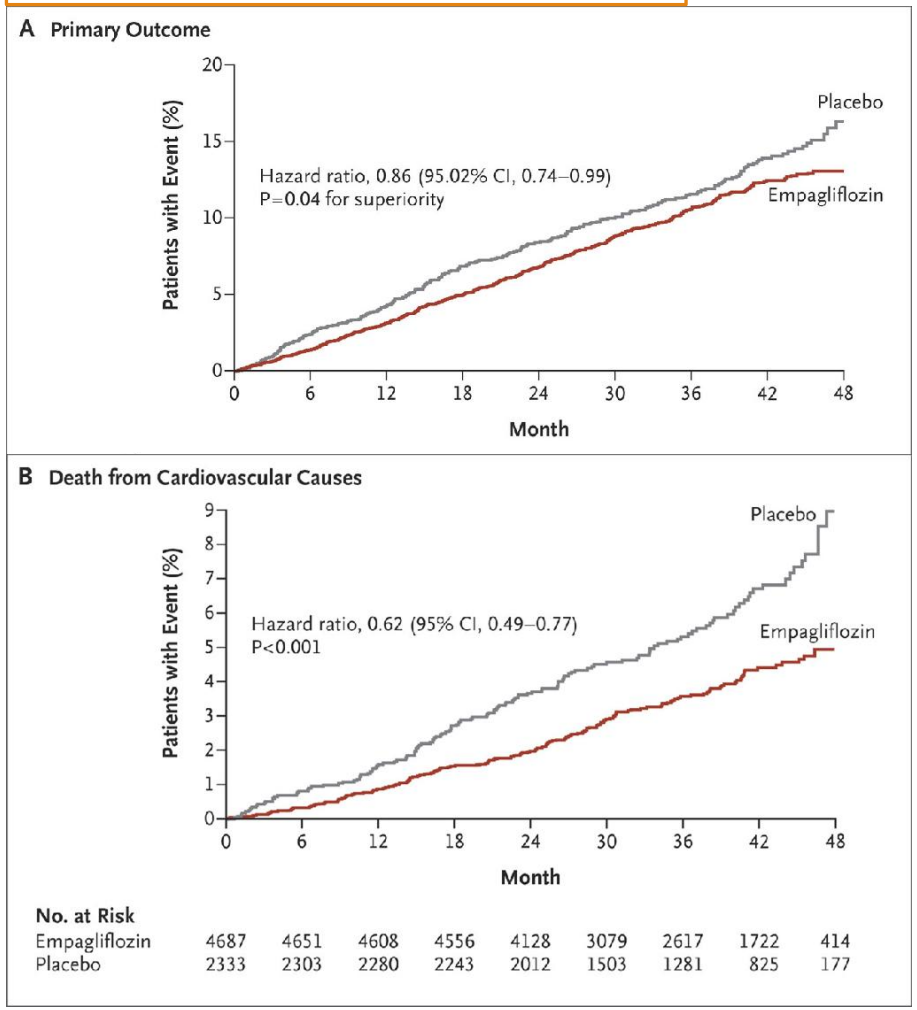
# Which to Initiate First? Comparing Outcomes of SGLT2i vs GLP1-RA CVOT

| NNT | EMPA-REG | LEADER |
|---|---|---|
| CV Death (over 3 yrs) | 39 | 98 |
| Any CV event (primary outcome over 3 years) | 61 | 66 |

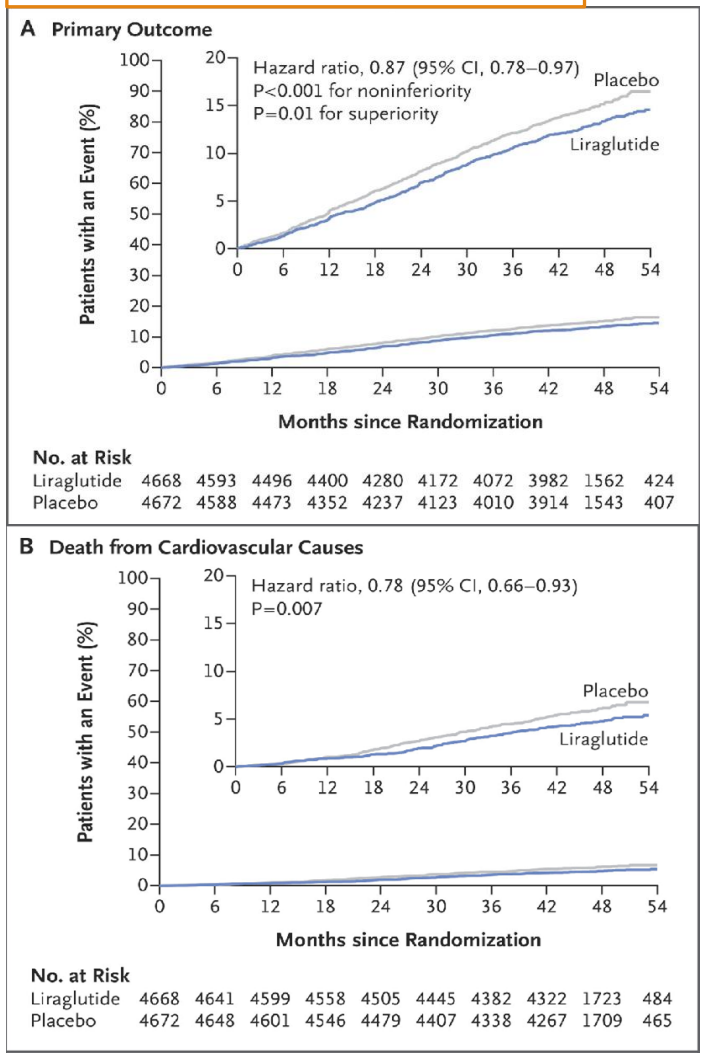
*Marso SP, Daniels GH, Brown-Frandsen K, et al. "Liraglutide and Cardiovascular Outcomes in Type 2 Diabetes."* New England Journal of Medicine. *2016;375(4):311-22.*
*Zinman B, Wanner C, Lachin JM, et al. "Empagliflozin, Cardiovascular Outcomes, and Mortality in Type 2 Diabetes."* New England Journal of Medicine. *2015;373(22):2117-28.*

# ASCVD Benefits –Separation of Curves

**SGLT2 inhibitors**
- **Curves separated within months**

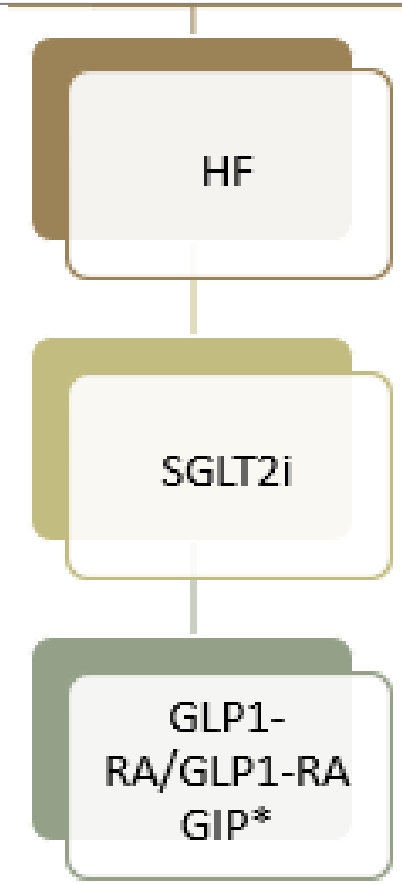



**GLP-1 receptor agonists**
- **Curves separated at 1 year**




*Marso SP, Daniels GH, Brown-Frandsen K, et al. "Liraglutide and Cardiovascular Outcomes in Type 2 Diabetes."* New England Journal of Medicine. *2016;375(4):311-22.*
*Zinman B, Wanner C, Lachin JM, et al. "Empagliflozin, Cardiovascular Outcomes, and Mortality in Type 2 Diabetes."* New England Journal of Medicine. *2015;373(22):2117-28.*

# Heart Failure




- Current or prior symptoms of HF with either HFpEF or HFrEF
- Initiate SGLT2i with proven HF benefit in these populations
- In adults with type 2 diabetes, obesity, and symptomatic heart failure with preserved ejection fraction (HFpEF), the treatment plan should include a dual glucose-dependent insulinotropic polypeptide (GIP) and GLP-1 RA with demonstrated benefits for HF-related symptoms and reduction in HF events (irrespective of A1C) **A**
- In adults with type 2 diabetes, obesity, and symptomatic HFpEF, the glucose-lowering treatment plan should include a GLP-1 RA with demonstrated benefits for HF-related symptoms **A** and/or reduction in HF events (irrespective of A1C). **B**

Adapted from Figure 9.4 *Diabetes Care* 2026;49(Supplement_1):S183–S215

| | DAPA-HF N=4744 | EMPEROR Reduced N=3730 | EMPREOR Preserved N=5988 | DELIVER N=6263 |
|---|---|---|---|---|
| Intervention | Dapagliflozin | Empagliflozin | Empagliflozin | Dapagliflozin |
| Inclusion Criteria | NYHA II-IV HF with EF ≤40%, with or without T2DM | NYHA II-IV HF with EF ≤40%, with or without T2DM | NYHA II-IV HF with EF >40%, | NYHA II-IV HF with EF >40%, with or without T2DM |
| Mean Age (yrs) | 66 | 67 | 72 | 71.1 |
| Median Follow-up (yrs) | 1.5 | 1.3 | 2.2 | 2.3 |
| Prior CVD/CHF (%) | 100% with CHF | | | |
| Primary Outcome | Worsening HF or death from CV causes 0.74 (0.65-0.85) | CV death or HF hospitalization 0.75 (0.65-0.86) | CV death or HF hospitalization 0.79 (0.69-0.9) | Worsening HF or CV death 0.82 (0.73-0.92) |

Adapted from Diabetes Care, Table 10.3c *Diabetes Care* 2024;47(Supplement_1):S179–S218

# Incretin Therapy – Heart Failure and Obesity

## STEP HFPEF (SEMAGLUTIDE)

- **Adults with HFpEF and BMI of ≥30** randomized to once weekly semaglutide 2.4mg or placebo
- Dual primary end points were change in baseline in KCCQ-CSS and change in body weight
  - Mean change in the KCCQ-CSS was 16.6 points with semaglutide and 8.7 points with placebo; P<0.001
  - Mean percentage change in body weight was −13.3% with semaglutide and −2.6% with placebo (estimated difference, −10.7%; 95% CI, −11.9 to −9.4; P<0.001

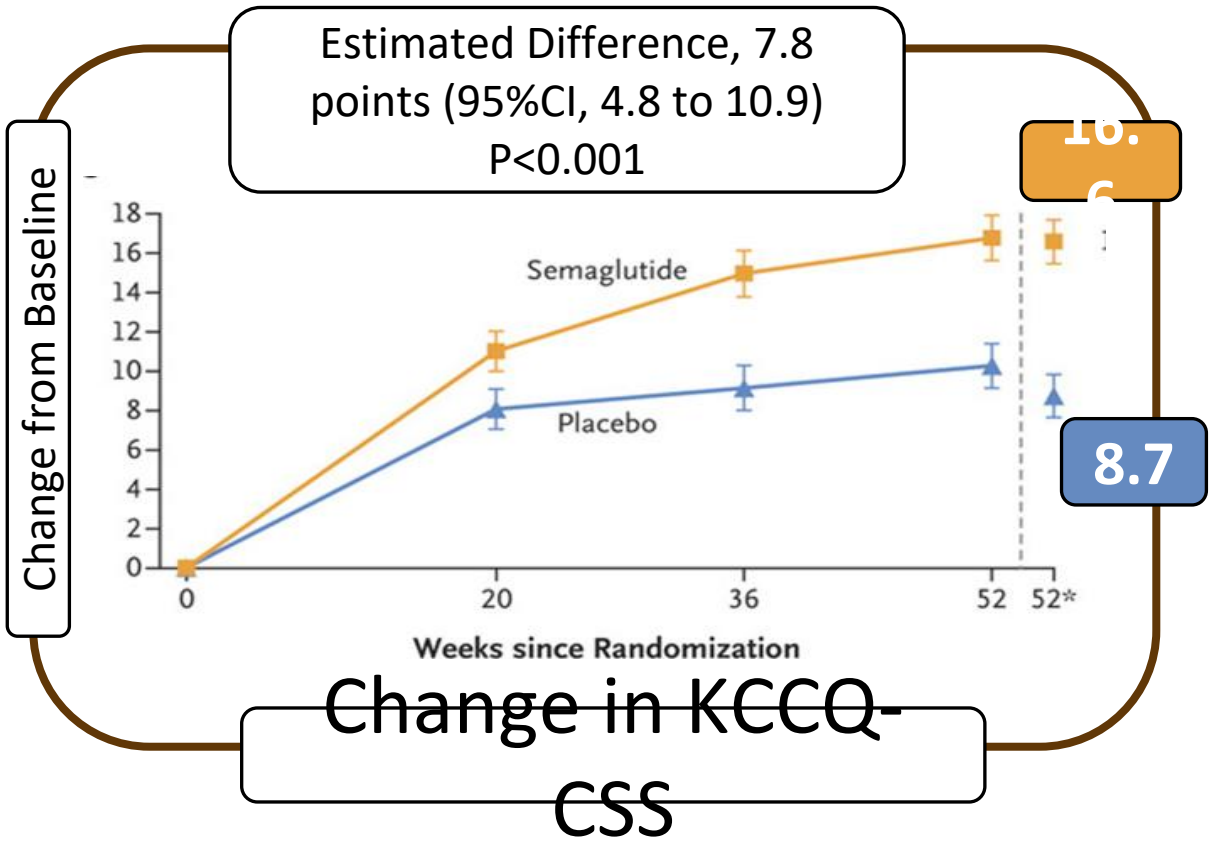
## SUMMIT (TIRZEPATIDE)

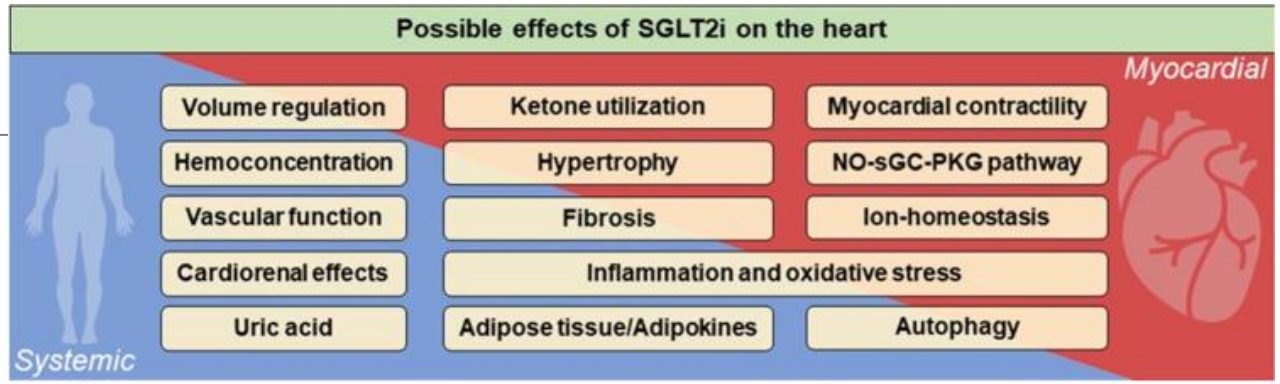
- **Adults with HF (EF at least 50%) and BMI at least 30**, randomized to tirzepatide or placebo
- Primary end points: composite of death from CV causes or worsening HF and change in KCCQ-CSS score after 52 weeks
  - Composite: 36 patients (9.9%) in the tirzepatide group vs 56 patients (15.3%) in the placebo group. HR 0.62; [CI], 0.41 to 0.95; P=0.026
  - Mean (±SD) change in the KCCQ-CSS was 19.5±1.2 in the tirzepatide group as compared with 12.7±1.3 in the placebo group P<0.001

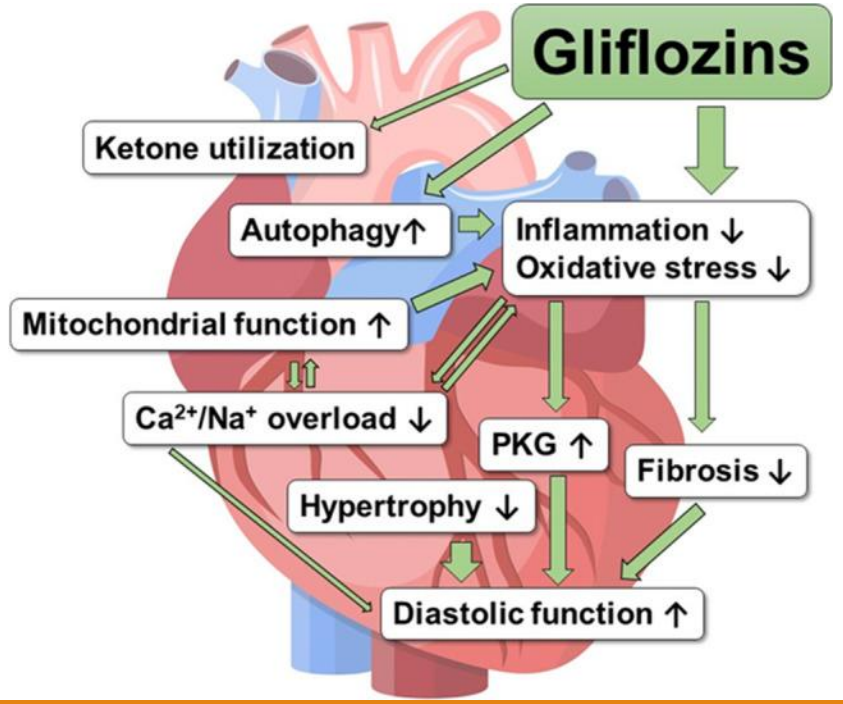
KCCQ-CSS - Kansas City Cardiomyopathy Questionnaire clinical summary score

Kosiborod MN, et al. N Engl J Med 2023;389:1069-1084
Packer M, et al. N Engl J Med 2025;392:427-437

# SGLT2i vs GLP - Heart Failure Benefits



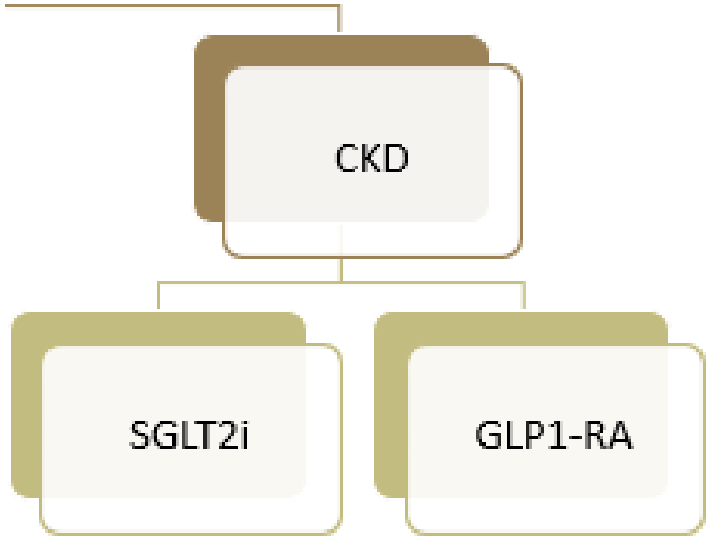




Pabel S et al. Curr Heart Fail Rep. 2021 Oct;18(5):315-328.
N Engl J Med 2023; 389:1069-1084

# Chronic Kidney Disease

In adults with type 2 diabetes who have chronic kidney disease (CKD) (with confirmed estimated glomerular filtration rate [eGFR] 20–60 mL/min/1.73 $m^2$ and/or albuminuria), an SGLT2 inhibitor or GLP-1 RA with demonstrated benefit in this population should be used for both glycemic management and for slowing progression of CKD and reduction in cardiovascular events (irrespective of A1C) **A**

The glycemic benefits of SGLT2 inhibitors are reduced at eGFR <45 mL/min/1.73 $m^2$



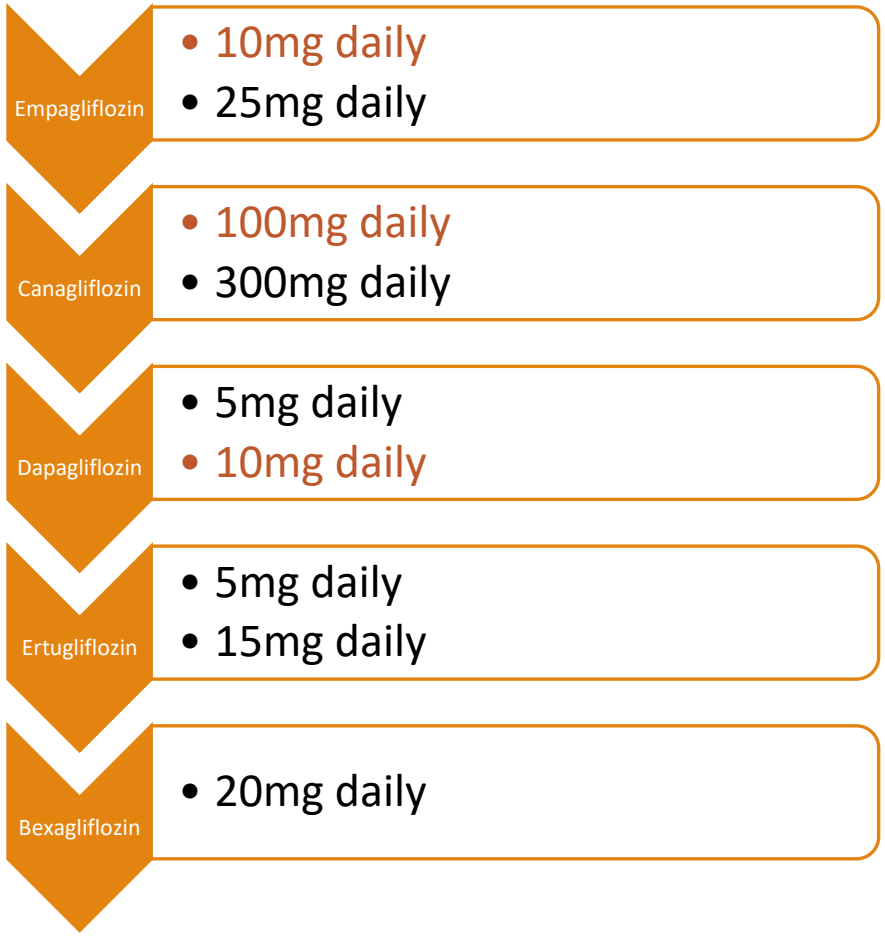

Adapted from Figure 9.4 *Diabetes Care* 2026;49(Supplement_1):S183–S215

# Renal Outcomes Trials – SGLT2i

| | CREDENCE N=4401 | DAPA-CKD N=4304 | EMPA-Kidney N=6609 |
|---|---|---|---|
| Intervention | Canagliflozin | Dapagliflozin | Empagliflozin |
| Inclusion Criteria | T2DM and albuminuric kidney disease | Albuminuric kidney disease with or without T2DM | eGFR 20-<45 regardless of albuminuria OR eGFR 45-<90 with UACR ≥200 |
| Mean Age (yrs) | 63 | 61.8 | 64 |
| Diabetes Duration (yrs) | 15.8 | - | - |
| Median Follow-up (yrs) | 2.6 | 2.4 | 2.0 |
| Prior CVD/CHF (%) | 50.4/14.8 | 37.4/10.9 | 26.1 |
| Primary Outcome | ESRD, doubling of Cr, death from renal or CV cause 0.7 (0.59-0.82) | ≥50% decline in eGFR, ESKD, death from renal or CV cause 0.61 (0.51-0.72) | ESKD, eGFR <10, ≥40% decline in eGFR, death from renal or CV cause 0.72 (0.64-0.82) |

Adapted from Diabetes Care, Table 10.3c. *Diabetes Care* 2024;47(Supplement_1):S179–S218

# SGLT2i Dosing and indications













Colored text indicates dose studied in CV and Renal Outcomes Trials

*indicates MACE benefit in T2DM

# FLOW Trial

## Baseline

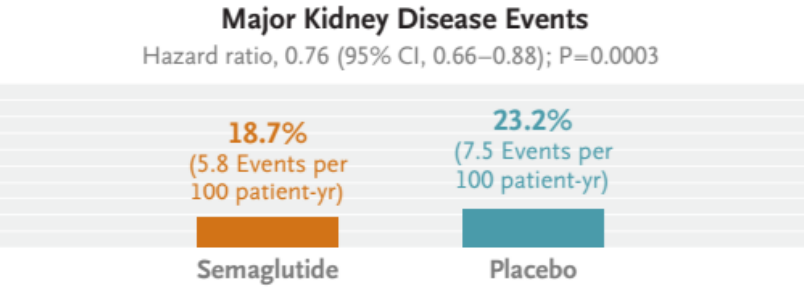
| | |
|---|---|
| 67 yrs old | 70% males |
| 65% white | A1c 7.8% |
| EGFR 47 | UACR: 567 |

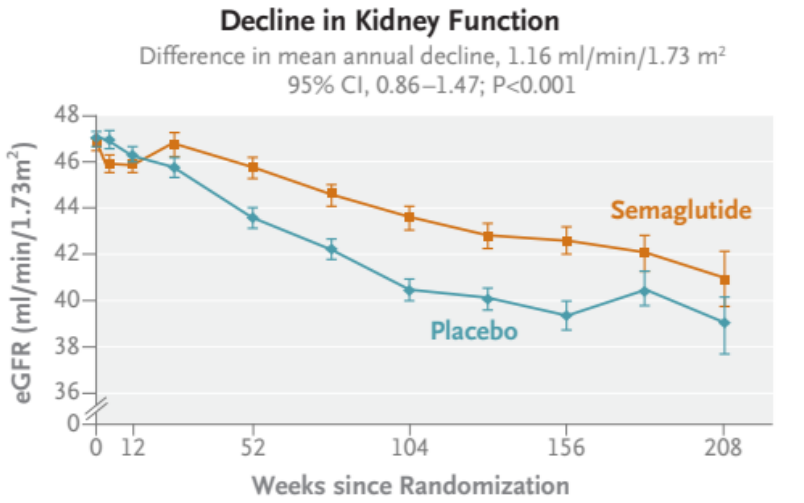
**RESULTS**

The trial was stopped early at a median follow-up of 3.4 years after an interim analysis showed efficacy. The semaglutide group had fewer primary-outcome events than the placebo group, equivalent to a 24% lower risk with semaglutide.

Kidney function declined more slowly in the semaglutide group than in the placebo group.

Serious adverse events were less common in the semaglutide group than in the placebo group.




**KIDNEY OUTCOMES**

Twenty people would need to be treated with semaglutide over a 3-year period to prevent one major kidney disease event.




N Engl J Med 2024;391:109-121

# Back to Juan



63 year old Hispanic male

PMH: T2DM, HTN, obstructive sleep apnea, gout, obesity, CKD, and depression.

Current Diabetes Regimen:

- Dulaglutide (Trulicity) 3mg SC weekly
- Glipizide XL 5mg with breakfast

Pertinent labs/vitals:

Weight: 126.1 kg (BMI 43.54)

BP: 133/70

A1c 8.6%

UMA: 998.3

Scr 1.20 (EGFR 68)

LDL-c 56 mg/dL

What should we do to optimize Juan's diabetes regimen?

# CKD Staging

| GFR Categories (ml/min/1.73m$^2$) | | | | Albuminuria categories | | |
|---|---|---|---|---|---|---|
| | | | | A1 | A2 | A3 |
| | | | | Normal to mildly increased | Moderately increased | Severely increased |
| | | | | <30 mg/g | 30-300 mg/g | >300 mg/g |
| | G1 | Normal or high | ≥90 | | | |
| | G2 | Mildly decreased | 60-89 | | | |
| | G3a | Mildly to moderately decreased | 45-59 | | | |
| | G3b | Moderately to severely decreased | 30-44 | | | |
| | G4 | Severely decreased | 15-29 | | | |
| | G5 | Kidney Failure | <15 | | | |

- Green: low risk
- Yellow: moderately increased risk
- Orange: high risk
- Red: very high risk
- Monitoring:
  - Annually for green and yellow
  - Q6 months: orange
  - 3-4 times/year: red
- Referral to Nephrology:
  - Stage 4/5 CKD
  - UMA > 300 mg/g

Adapted from: Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. Kidney Int Suppls. 2013;3:1-150

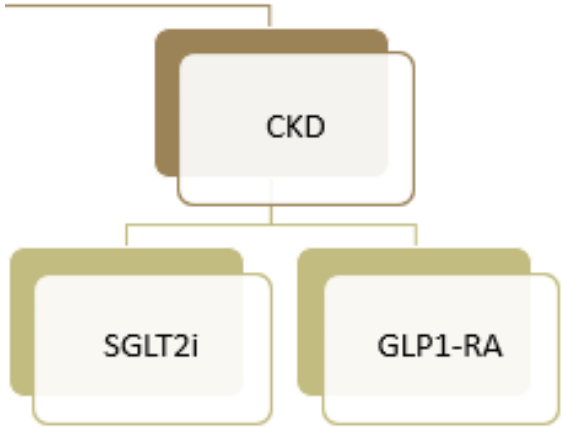
# Juan – Medication Management

Stopped glipizide

Initiated empagliflozin 10mg once daily

Continued dulaglutide 3mg weekly

What labs should we monitoring at next follow-up after starting SGLT2i?

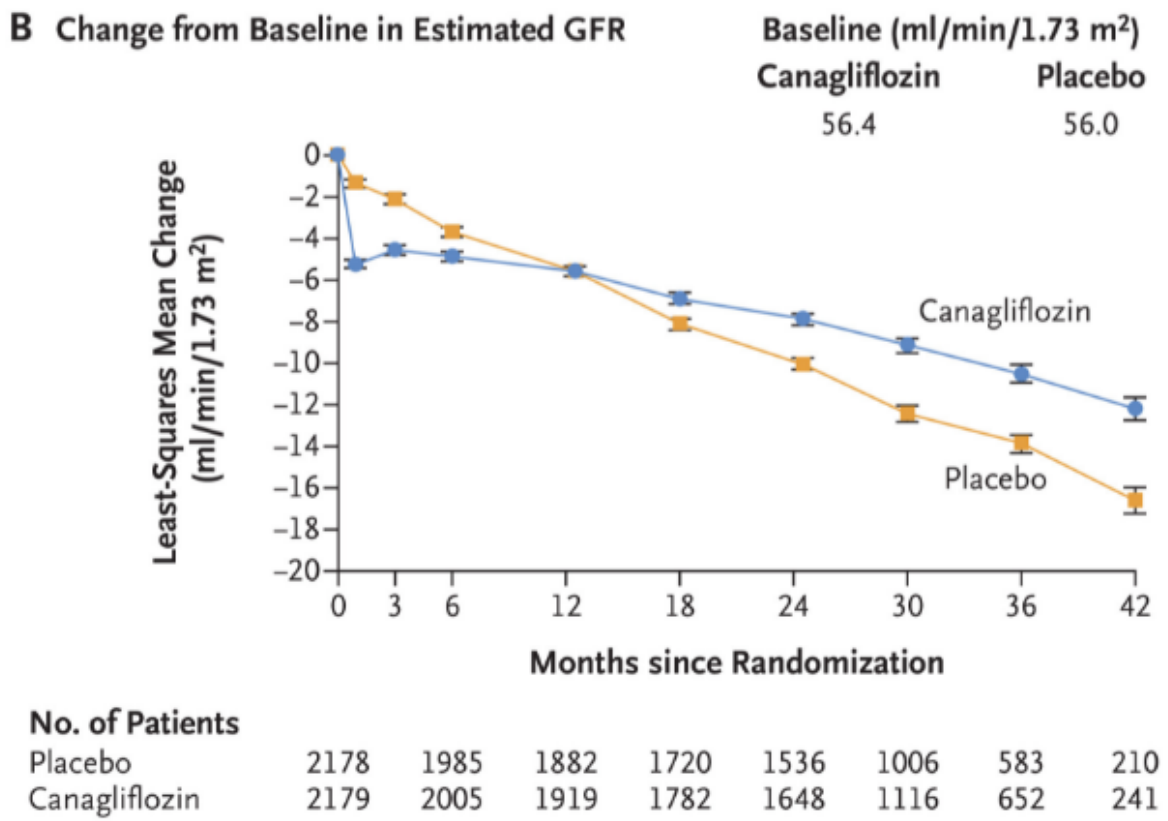



Adapted from Figure 9.4 *Diabetes Care* 2026;49(Supplement_1):S183–S215

# Monitoring – SGLT2i

- Symptoms of genitourinary side effects
- eGFR – check baseline and following initiation
- UACR
- A1c / SMBG
  - Reduce SU/insulin prior to initiation if A1c at or near goal
  - Check following initiation and reduce SU/insulin based on response

# CREDENCE Trial




N Engl J Med 2019; 380:2295-2306
DOI: 10.1056/NEJMoa1811744

# Patient Case - Juan

## REFERRAL TO PHARMD

Weight: 126.1 kg (BMI 43.54)

A1c 8.6%

UACR: 998.3

Dulaglutide 3mg SC weekly

Glipizide XL 5mg with breakfast

## 6 MONTHS LATER

Weight: 124.7 kg (BMI 43.07)

A1c 6.9%

UACR: 468.5

Dulaglutide 3mg SC weekly

Empagliflozin 10mg daily

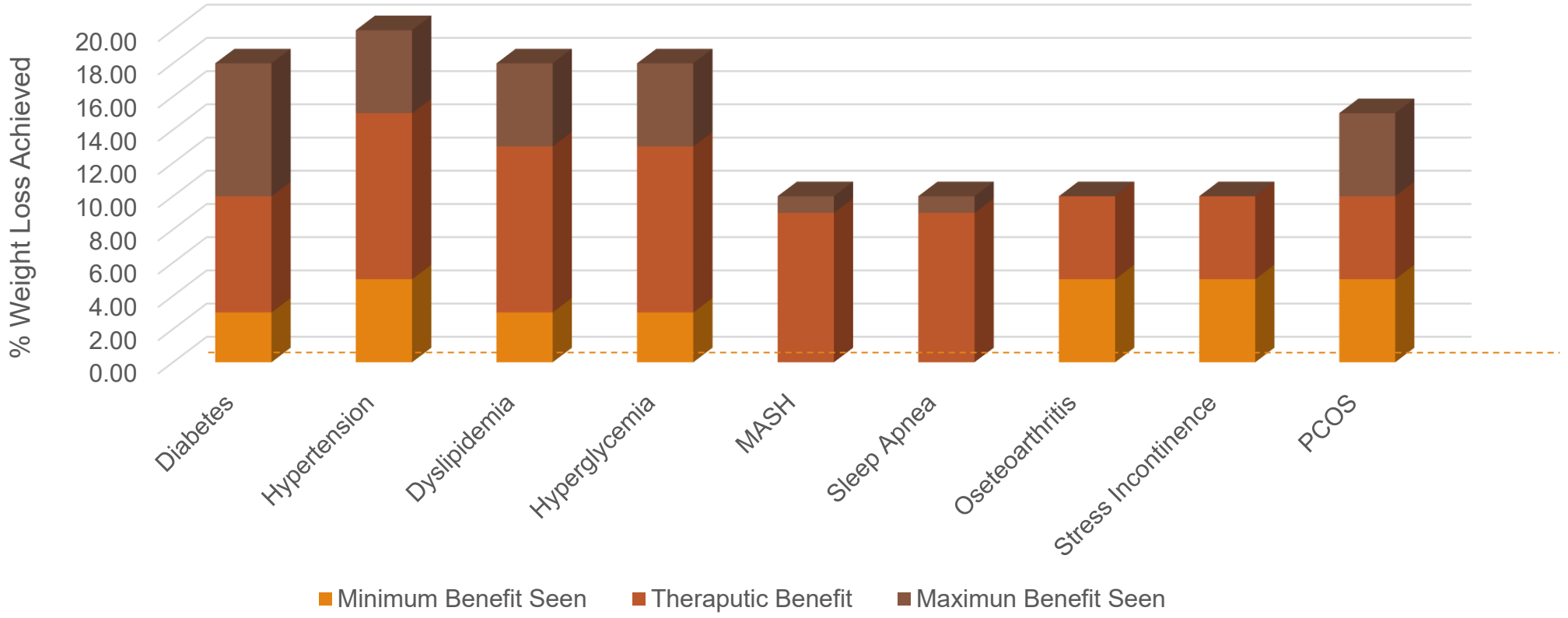
# Achieving Weight Management Goals

In people with type 2 diabetes and overweight or obesity, weight management should represent a primary goal of treatment along with glycemic management. **A**

Provide weight management treatment, aiming for any magnitude of weight loss.

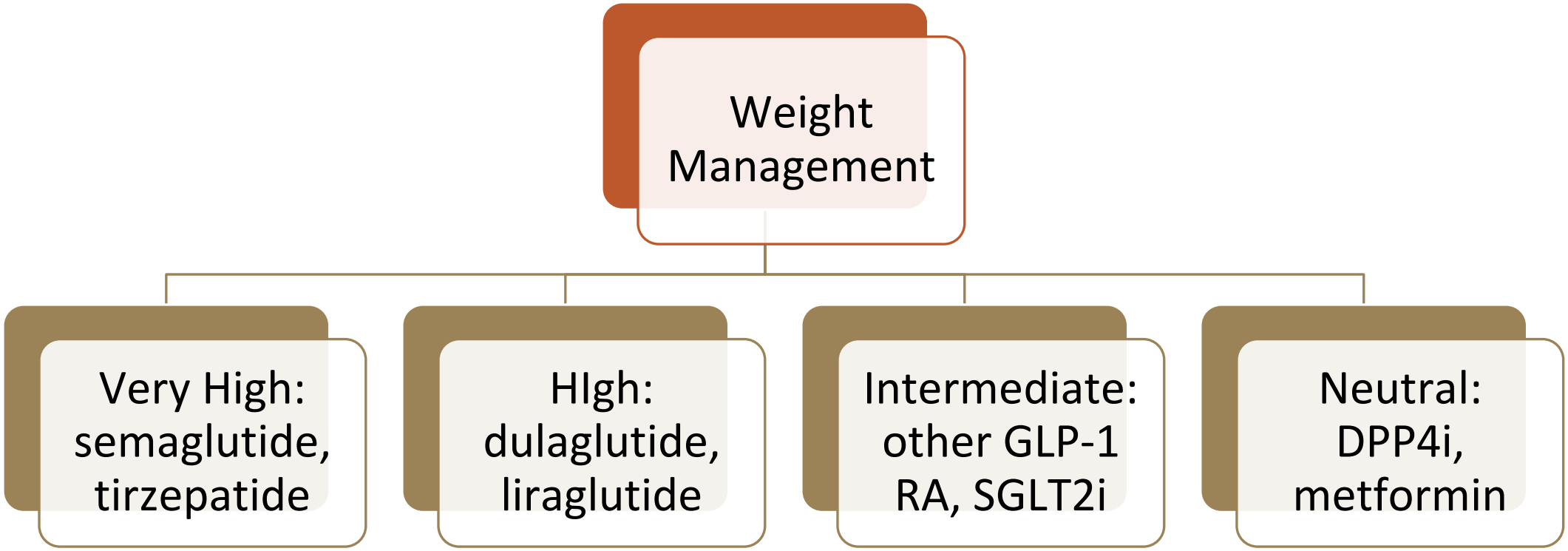
- Weight loss of 5–7% of baseline weight improves glycemia and other intermediate cardiovascular risk factors. **A**
- Sustained loss of >10% of body weight usually confers greater benefits, including disease-modifying effects and possible remission of type 2 diabetes **A** and may improve long-term cardiovascular outcomes and mortality. **B**

# Weight Reduction Needed to Reduce Complications

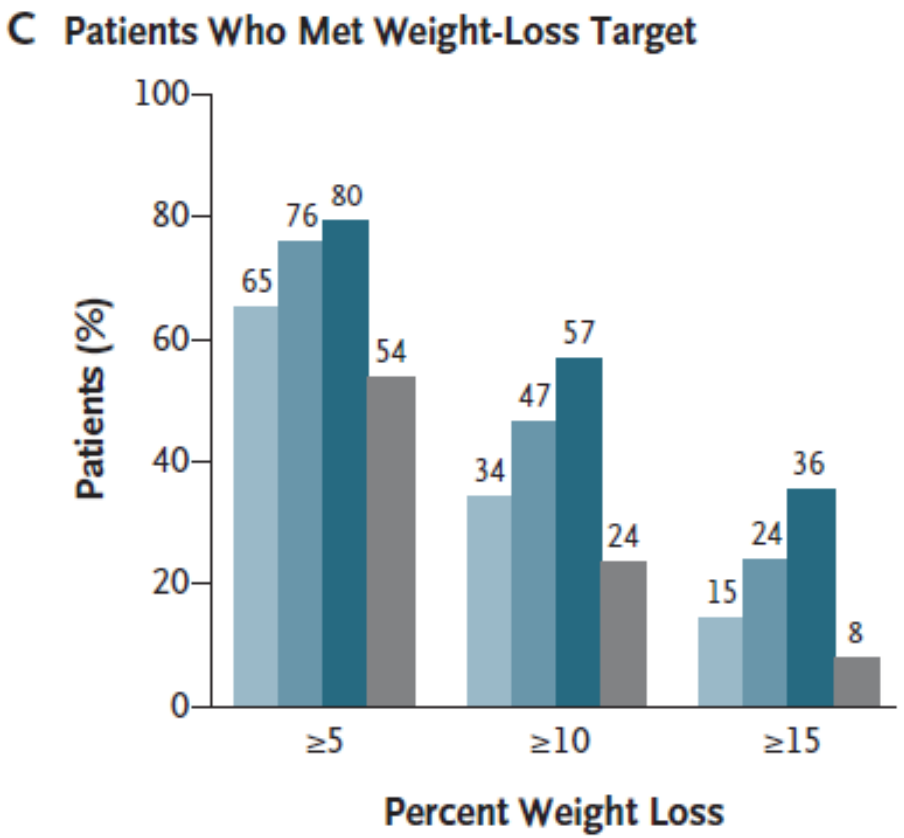


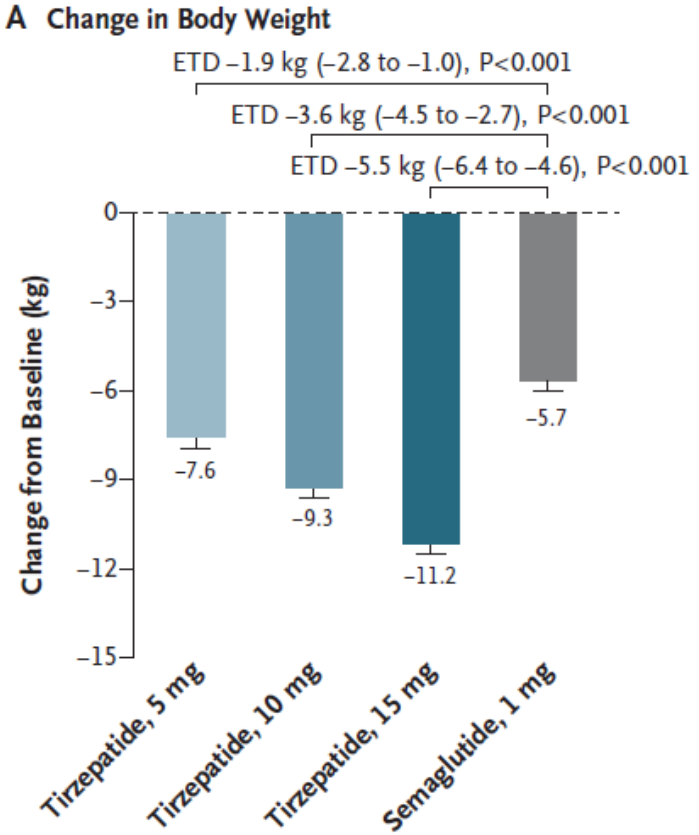

Diabetes Care 2015;38(8):1567–1582

# Pharmacotherapy Considerations Around Weight Management




Adapted from Figure 9.4 *Diabetes Care* 2026;49(Supplement_1):S183–S215




# Semaglutide vs Tirzepatide in T2DM – SURPASS 2

FRIAS JP, ET AL. NEJM 2021

# MASLD/MASH

In adults with type 2 diabetes, metabolic dysfunction–associated steatotic liver disease (MASLD), and overweight or obesity, consider using a GLP-1 RA with demonstrated benefits in metabolic dysfunction–associated steatohepatitis (MASH) **A** or a dual GIP and GLP-1 RA with potential benefits in MASH **B** for glycemic management and as an adjunctive therapy to interventions for weight loss.

In adults with type 2 diabetes and biopsy-proven MASH or those at high risk for liver fibrosis (based on noninvasive tests), a GLP-1 RA is preferred for glycemic management due to beneficial effects on MASH. **A** Pioglitazone or a dual GIP and GLP-1 RA **B** can be considered for glycemic management due to potential beneficial effects on MASH. **B**

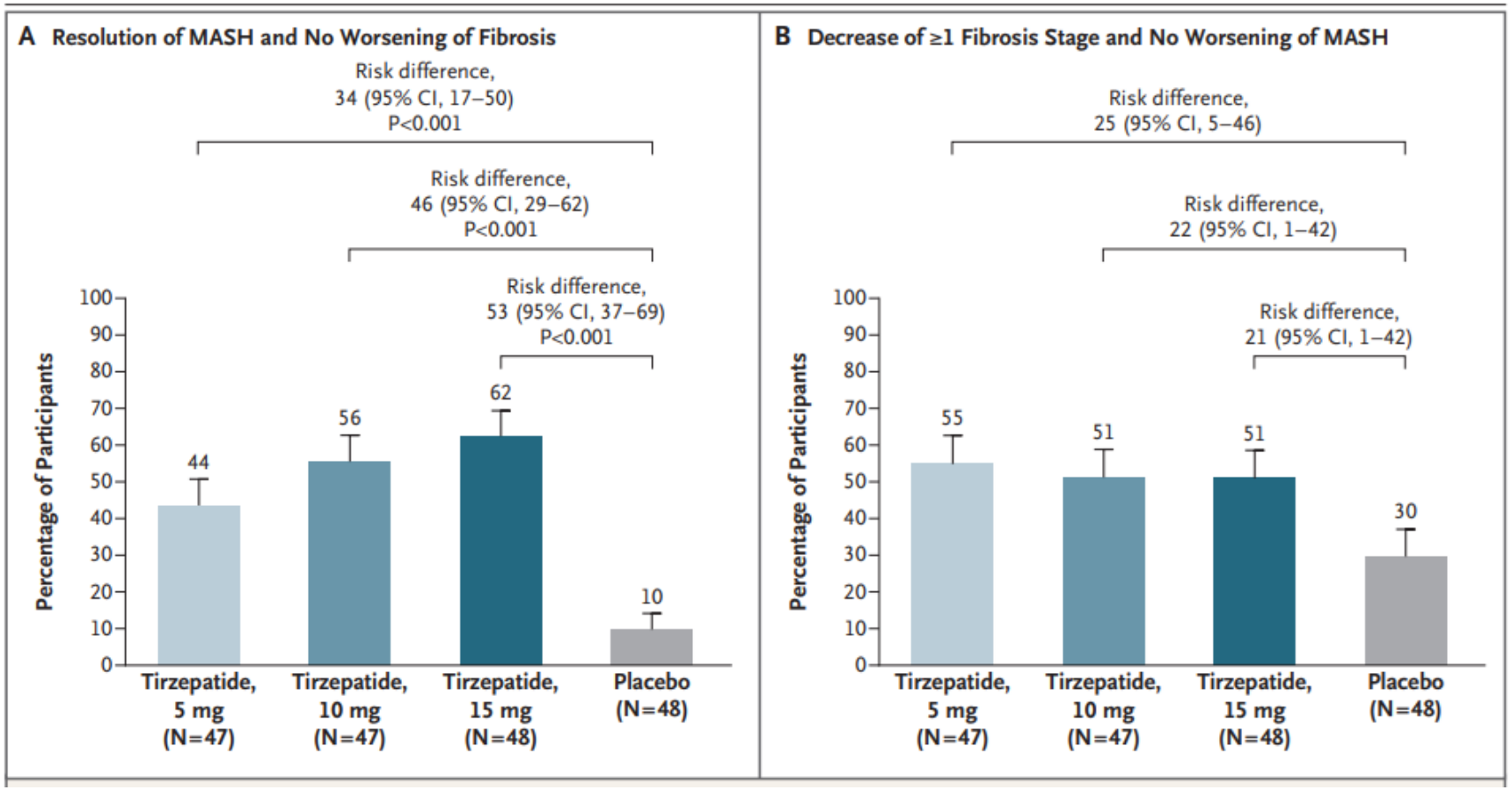
Combination therapy with pioglitazone plus a GLP-1 RA can be considered for the treatment of hyperglycemia in adults with type 2 diabetes with biopsy-proven MASH or those at high risk of liver fibrosis (identified with noninvasive tests) due to potential beneficial effects on MASH. **B**

# ESSENCE

| | Sanyal AJ, et al (2025) |
|---|---|
| Design | Phase 3, RCT, double-blind, placebo-controlled trial |
| Population | 1197 patients with biopsy proven MASH and stage 2 or 3 fibrosis |
| Intervention | 2:1 Randomization to once weekly subcutaneous semaglutide 2.4mg or placebo for 240 weeks |
| Primary Outcome | Resolution of steatohepatitis without worsening of liver fibrosis and reduction in liver fibrosis without worsening of steatohepatitis at week 72 (part 1) |
| Results | Resolution of steatohepatitis without worsening of fibrosis occurred in 62.9% of the 534 patients in the semaglutide group and in 34.3% of the 266 patients in the placebo group (estimated difference, 28.7%; 95% confidence interval [CI], 21.1 to 36.2; P<0.001).<br>A reduction in liver fibrosis without worsening of steatohepatitis was reported in 36.8% of the patients in the semaglutide group and in 22.4% of those in the placebo group (estimated difference, 14.4%; 95% CI, 7.5 to 21.3; P<0.001). |
| Conclusion | In patients with MASH and moderate or advanced liver fibrosis, once-weekly semaglutide at a dose of 2.4 mg improved liver histologic results. |

N Engl J Med 2025;392:2089-2099

# Synergy NASH




N Engl J Med 2024;391:299-310

# Pioglitazone

<table>
<tr><th colspan="2">Cusi K et al. (2016)</th></tr>
<tr><td>Design</td><td>Randomized, double-blind, placebo-controlled</td></tr>
<tr><td>Population<br>(N=101)</td><td>Histologically confirmed NASH and either prediabetes or T2DM<br>Mean age: 51; Male: 70%; Mean BMI: 34; T2DM diagnosis: 51%</td></tr>
<tr><td>Intervention</td><td>Reduced calorie diet and either pioglitazone 45 mg/day or placebo for 18 months</td></tr>
<tr><td>Primary Outcome</td><td>≥2 point reduction in NAFLD activity score (sum of scores for steatosis, inflammation, and hepatocyte injury) without worsening fibrosis</td></tr>
<tr><td>Results</td><td>
<table>
<tr><th>Outcomes</th><th>Pioglitazone</th><th>Placebo</th><th>Treatment difference<br>(95% CI, p-value)</th></tr>
<tr><td>Primary</td><td>58%</td><td>17%</td><td>41 (23–59%; P < 0.001)</td></tr>
<tr><td>NASH resolution</td><td>51%</td><td>19%</td><td>32 (13–51%; P < 0.001)</td></tr>
<tr><td>Progression of any fibrosis</td><td>12%</td><td>28%</td><td>-16 (−34–0%; P = 0.039)</td></tr>
</table>
All improvements persisted over 36 months of therapy
</td></tr>
<tr><td>Conclusion</td><td>Pioglitazone reverses steatohepatitis and improves fibrosis, altering the natural history of NAFLD.</td></tr>
</table>

# Patient Case

Mr. Jean Francois is a 66 year old male with T2D on metformin 500mg BID and his A1c today is 8.1%. He has HTN, HF, CKD-3b, and is overweight (BMI 26.4). He has a family history of NSTEMI and T2D. He is a non smoker.

What therapy might you consider for this patient?

# Patient Case

Mr. Jean Francois is a 66 year old male with T2D on metformin 500mg BID and his A1c today is 8.1%. He has HTN, HF, CKD-3b, and is overweight (BMI 26.4). He has a family history of NSTEMI and T2D. He is a non smoker.

| | | | | Albuminuria categories | | |
|---|---|---|---|---|---|---|
| | | | | A1 | A2 | A3 |
| | | | | Normal to mildly increased | Moderately increased | Severely increased |
| | | | | <30 mg/g | 30-300 mg/g | >300 mg/g |
| GFR Categories (ml/min/1.73m$^2$) | G1 | Normal or high | ≥90 | | | |
| | G2 | Mildly decreased | 60-89 | | | |
| | G3a | Mildly to moderately decreased | 45-59 | | | |
| | G3b | Moderately to severely decreased | 30-44 | | | |
| | G4 | Severely decreased | 15-29 | | | |
| | G5 | Kidney Failure | <15 | | | |

# Summary

- Emphasis should be placed on cardiovascular, kidney and metabolic conditions when selecting medication therapies for the treatment of T2DM
- SGLT2i have benefit in heart failure and delaying the progression of diabetic kidney disease
- GLP1-RA and SGLT2i have benefit in patients with ASCVD
- GLP1-RA and GLP1/GIP medications have significant effect on weight reduction
- SGLT2i can be used in combination with incretin therapies for additive effects

# Incretin FDA Approved Indications

= Diabetes indication

= Obesity indication

| Drug | Diabetes Indication | Obesity Indication | CVD Indication | Kidney Indication | MASH | OSA |
|---|---|---|---|---|---|---|
| Semaglutide inj | ☑ | ☑ | ☑ ☑ | ☑ | ☑ | |
| Liraglutide | ☑ | ☑ | ☑ | | | |
| Tirzepatide | ☑ | ☑ | ☑ | | | ☑ |
| Lixisenatide | ☑ | | | | | |
| Exenatide | ☑ | | | | | |
| Dulaglutide | ☑ | | ☑ | | | |
| Semaglutide oral | ☑ | ☑ | ☑ ☑ | | | |

1. Ozempic. Novo Nordisk; 2025. Accessed June 2, 2025. https://www.novo-pi.com/ozempic.pdf 2. Victoza. Novo Nordisk; 2025. https://www.novo-pi.com/victoza.pdf 3. Mounjaro. Lilly; 2024. Accessed June 2, 2025. https://uspl.lilly.com/mounjaro/mounjaro.html#pi 4. Zepbound. Lilly; 2024. Accessed June 2, 2025. https://uspl.lilly.com/zepbound/zepbound.html#pi 5. Adlyxin. sanofi-aventis; 2022. Accessed June 2, 2025. https://products.sanofi.us/adlyxin/adlyxin.pdf 6. Byetta. AstraZeneca; 2024. Accessed June 2, 2025. https://drd9vrdh9yh09.cloudfront.net/50fd68b9-106b-4550-b5d0-12b045f8b184/ce8afab9-2b45-436d-957c-a73978d09e93/ce8afab9-2b45-436d-957c-a73978d09e93_viewable_rendition__v.pdf 7. Trulicity. Lilly; 2024. Accessed June 2, 2025. https://uspl.lilly.com/trulicity/trulicity.html#pi 8. Rybelsus. Novo Nordisk; 2024. Accessed June 2, 2025. https://www.novo-pi.com/rybelsus.pdf

# Thank You



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