Welcome to Dallas Obesity Society!

Download Sample Meal Plan and Recipes for tonight's presentation at www.dallasobesity.com

Thank you to our sponsor Novo Nordisk!

Hybrid Session Reminders

- We will be recording this session.
- Please keep your mics on MUTE for the presentation portion.
- Enter your questions and comments for speakers into the Zoom chat box. You are welcome to unmute at the Q&A session.
- We will answer Zoom questions first in our Q&A

DOS presents Chronic Kidney Disease and Obesity Management

Event speakers:

Dr. Diana Mahbod is a Nephrologist based in the Dallas-Fort Worth metroplex. Clinically, she is interested in treating glomerular disease and providing evidence-based care to patients with a variety of kidney-related conditions. She serves on the Board of the National Kidney Foundation (NKF) Serving Texas and aims to collaborate with organizations and other professionals, as well as with patients and families, to improve awareness and treatment of kidney disease.

Dr. Gates Colbert is a practicing Nephrologist with Kidney and Hypertension Associates of Dallas and an Assistant Clinical Professor with Texas A&M College of Medicine. Dr. Colbert also serves as the Nephrology Program Co-Director at Baylor University Medical Center in Dallas. He is triple board-certified in Internal Medicine, Nephrology and Hypertension.

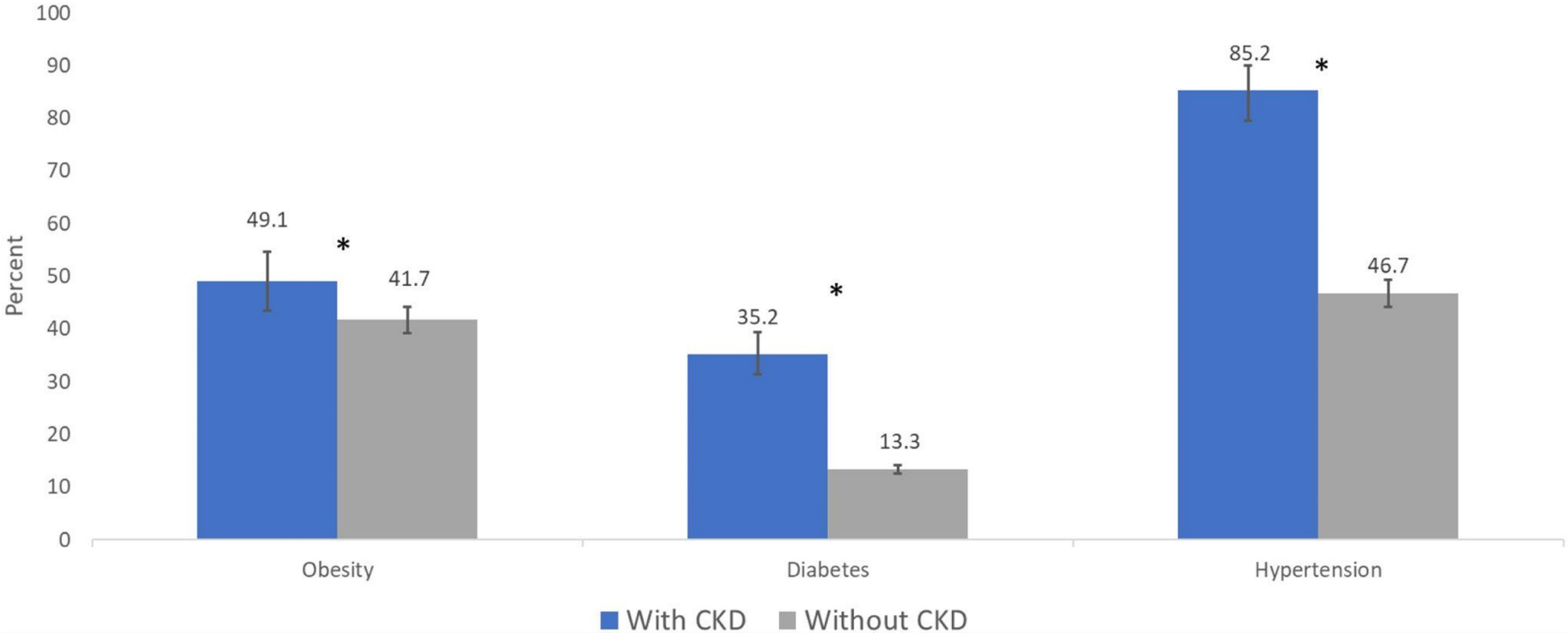
Dr Sarah Khan is board certified in Internal Medicine and Obesity Medicine. She is an Assistant professor of Internal Medicine at UT Southwestern Medical Center and an Obesity Medicine specialist at Weight Wellness Clinic. Dr Khan was a Hospitalist at Parkland Hospital for six years prior to transitioning to Obesity Medicine.

Obesity and Kidney Disease

Diana Mahbod, MD, CPE, FASN, FNKF

August 15, 2024

Prevalence of Obesity and CKD Among Adults in the United States, 2017-2020

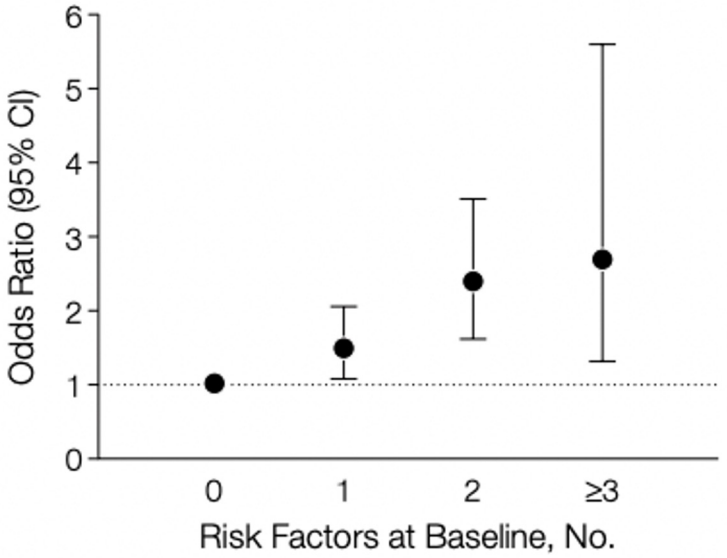


Friedman et al., 2022

Obesity is an independent risk factor for developing kidney disease

Odds ratios:		
DM		2.6
Age		2.4 per 10 years
HTN		1.6
Smoking		1.4
Obesity	**1.3**	
High HDL		0.8

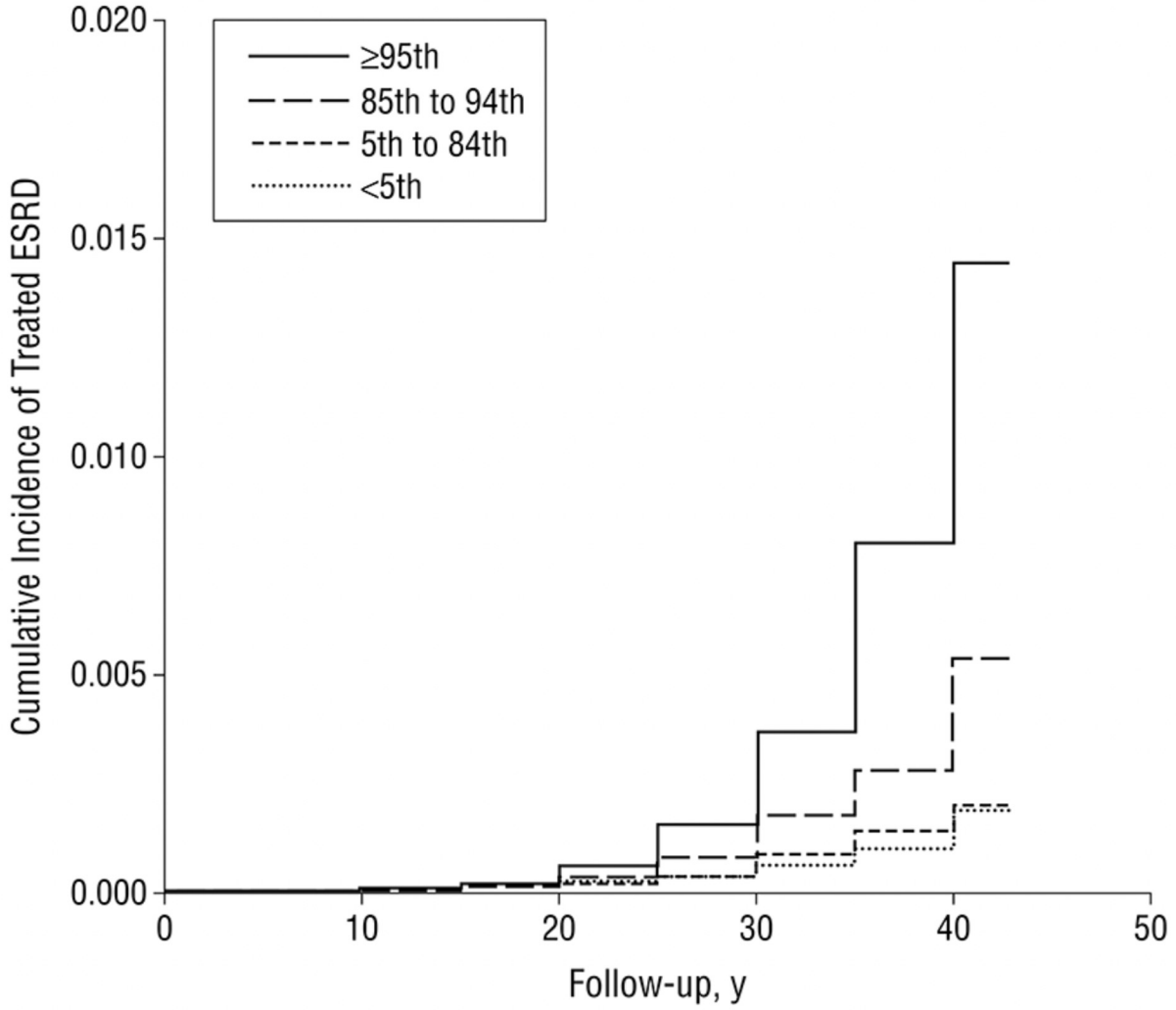
Figure 2. Relationship Between Number of Risk Factors at Baseline and the Odds of Developing Kidney Disease



CI indicates confidence interval. Risk factors considered included hypertension, diabetes, obesity (body mass index >30), and current tobacco use; results are age-adjusted and sex-adjusted.

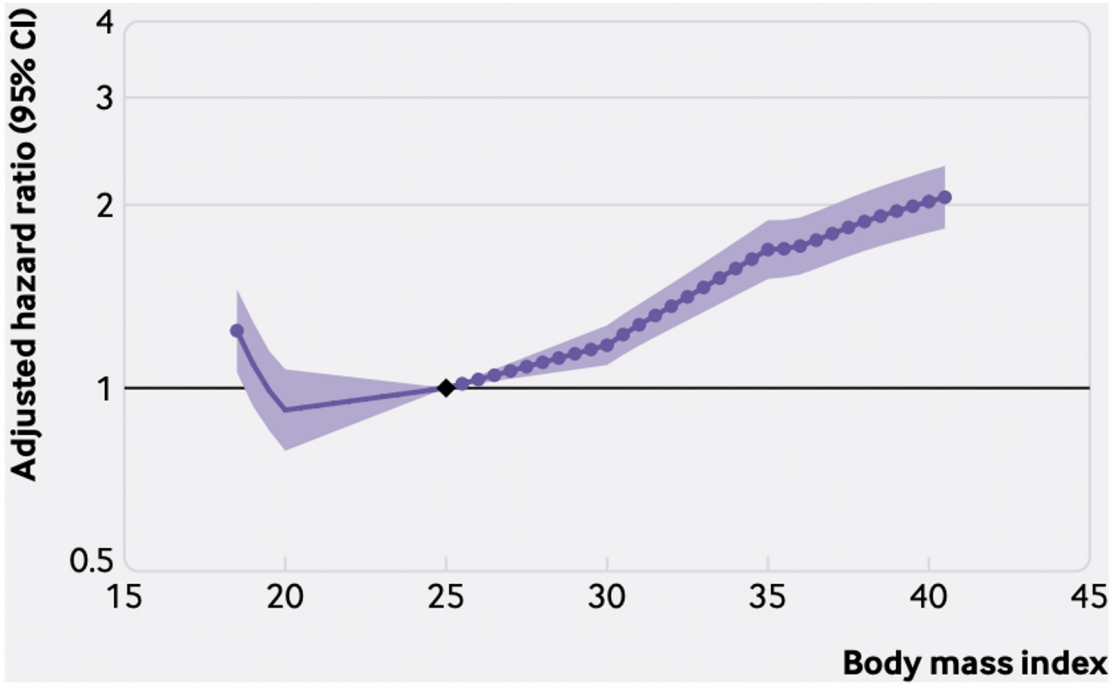
Fox et al., 2004

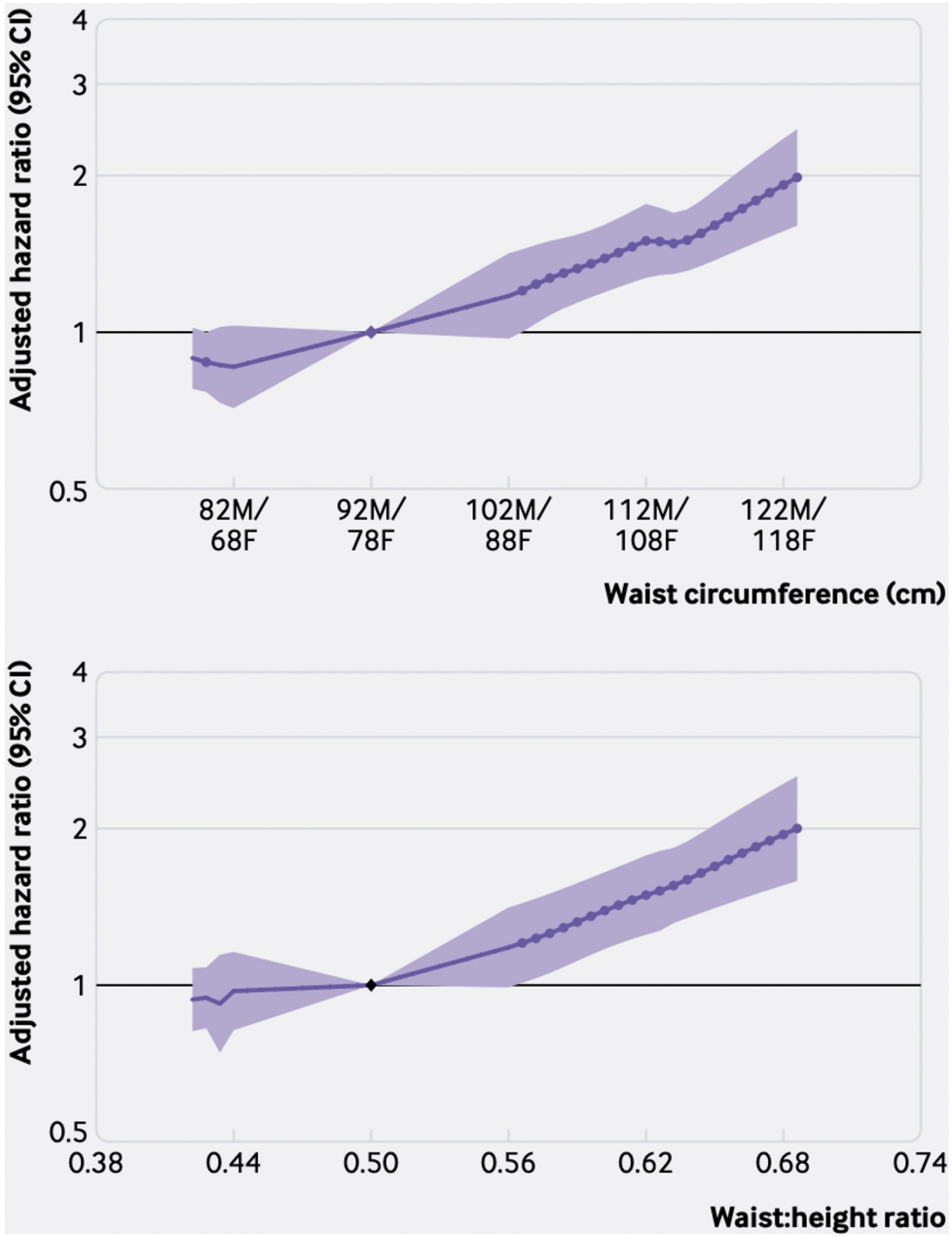
Obesity is an independent risk factor for developing kidney disease



Vivante et al., 2012

Obesity is an independent risk factor for developing kidney disease





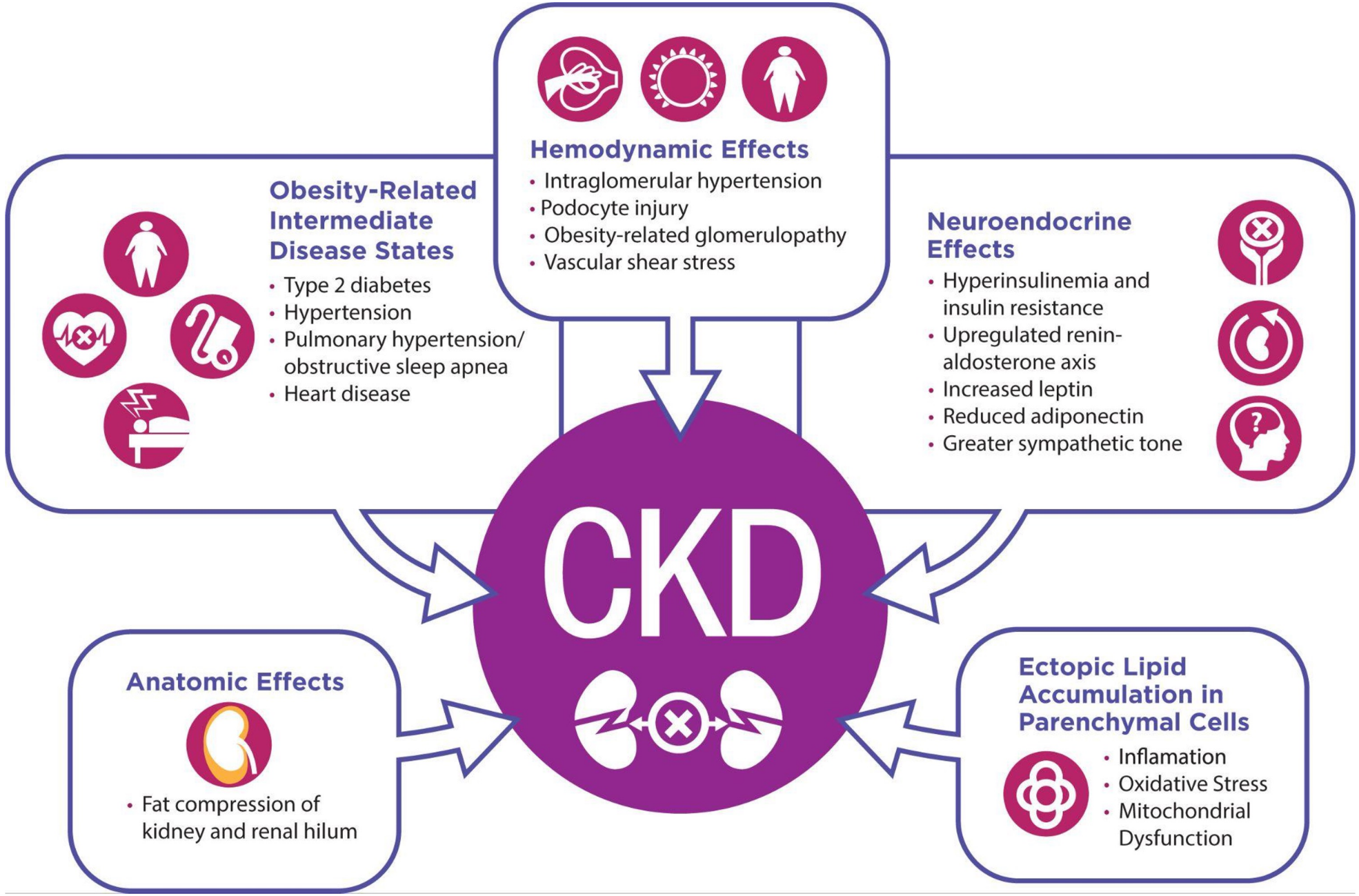
Chang et al., 2019

Obesity is an independent risk factor for developing kidney disease

	Population	Findings
Kramer et al. 2005	Large cohort (5,897) of white and black adults with hypertension in the US [Hypertension Detection and Follow-Up Program (HDFP)]	Overweight and obesity were associated with the development of CKD over a 5 year period Similar association with exclusion of baseline DM
Ejerblad et al. 2006	Swedish National Population Register, 1996-1998	Overweight at age 20 was associated with 3x excess risk for moderate renal failure Obesity (BMI>30) among men, and morbid obesity (BMI>35) among women anytime during lifetime was associated with 3-4x increase in risk for moderate renal failure
Yun et al. 2018	1,940 participants from the Korean Cohort Study for Outcome in Patients With Chronic Kidney Disease (KNOW-CKD)	Obese patients WITHOUT metabolic abnormality displayed higher risk of developing CKD. Obesity alone was significantly associated with adverse outcomes.

Pathophysiology of obesity and kidney disease

Effect	Implication
Effects of diseases caused and/or worsened by obesity	DM, HTN → CKD Cardiorenal processes (heart failure, pHTN, OSA) → CKD
Direct adverse metabolic effects	Inflammation Increased apolipoprotein B Insulin resistance Increased abdominal pressure Fat infiltration of the kidney → lipotoxicity of kidney parenchymal cells → CKD
Induction of glomerular hyperfiltration	Increase in single-nephron GFR → glomerular shear-related stress → Loss of kidney function over time → CKD Activation of RAAS and sympathetic systems → tubular sodium avidity → altered hemodynamics
Podocyte damage	→ segmental sclerosis → proteinuria, focal segmental glomerulosclerosis (FSGS)
Adipocyte secretary products	Sympathetic activation Direct nephrotoxicity



Friedman et al., 2022

Limitations of BMI in chronic kidney disease

BMI cannot differentiate

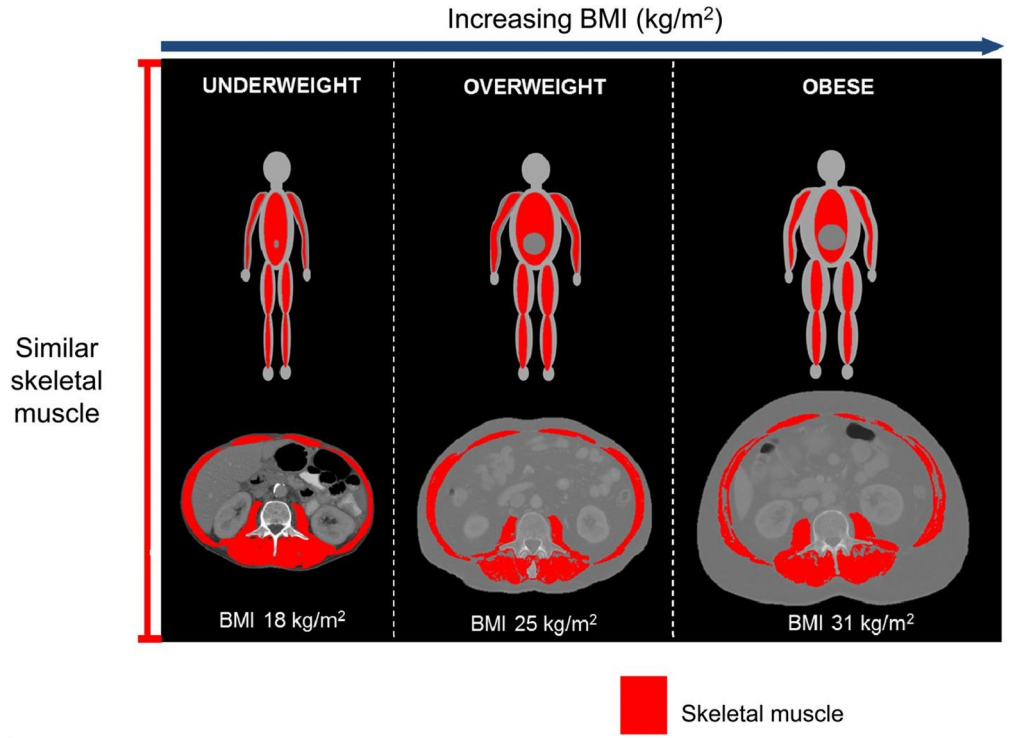
- body composition compartments (fat, muscle, bone)
- body fat distribution (abdominal versus peripheral)
- differences relaxed to age, sex, ethnicity, physical fitness

In the setting of kidney disease, fluid retention may be an additional confounder

Waist circumference more accurately reflects abdominal visceral adiposity
- less practical to assess in the clinic
- less accurate in BMI>40 due to variations in abdominal pannus distribution

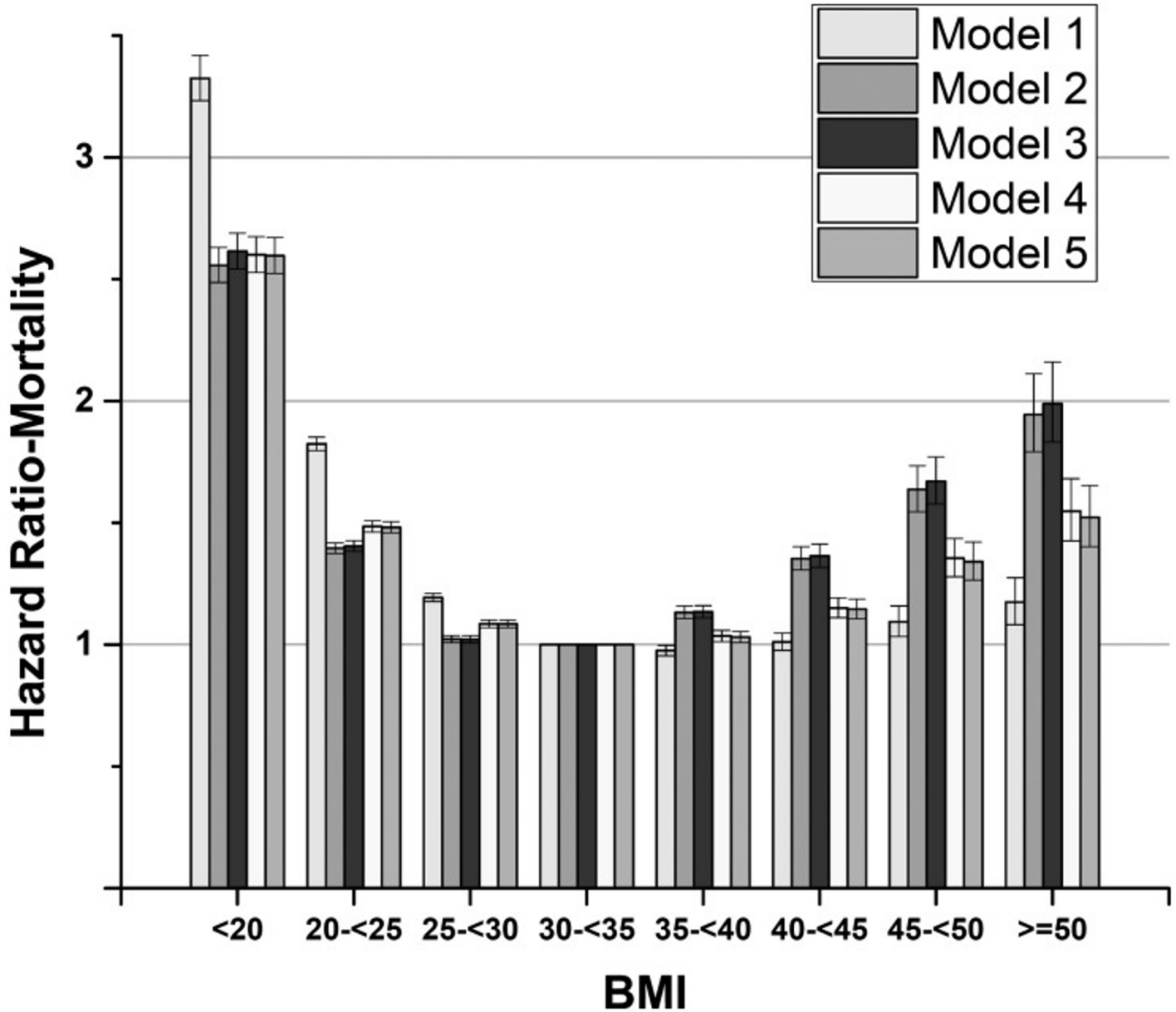
Limitations of BMI in chronic kidney disease

Sharma et al., 2014
- through all eGFRs, the true prevalence of obesity as measured by DEXA body fat percentage is LARGER than assessed by BMI
- many patients had obese sarcopenia (high body fat percentage and low muscle mass)



Prado et al., 2016

The Obesity Paradox



Lu et al., 2014

Limitations of GFR equations in obesity

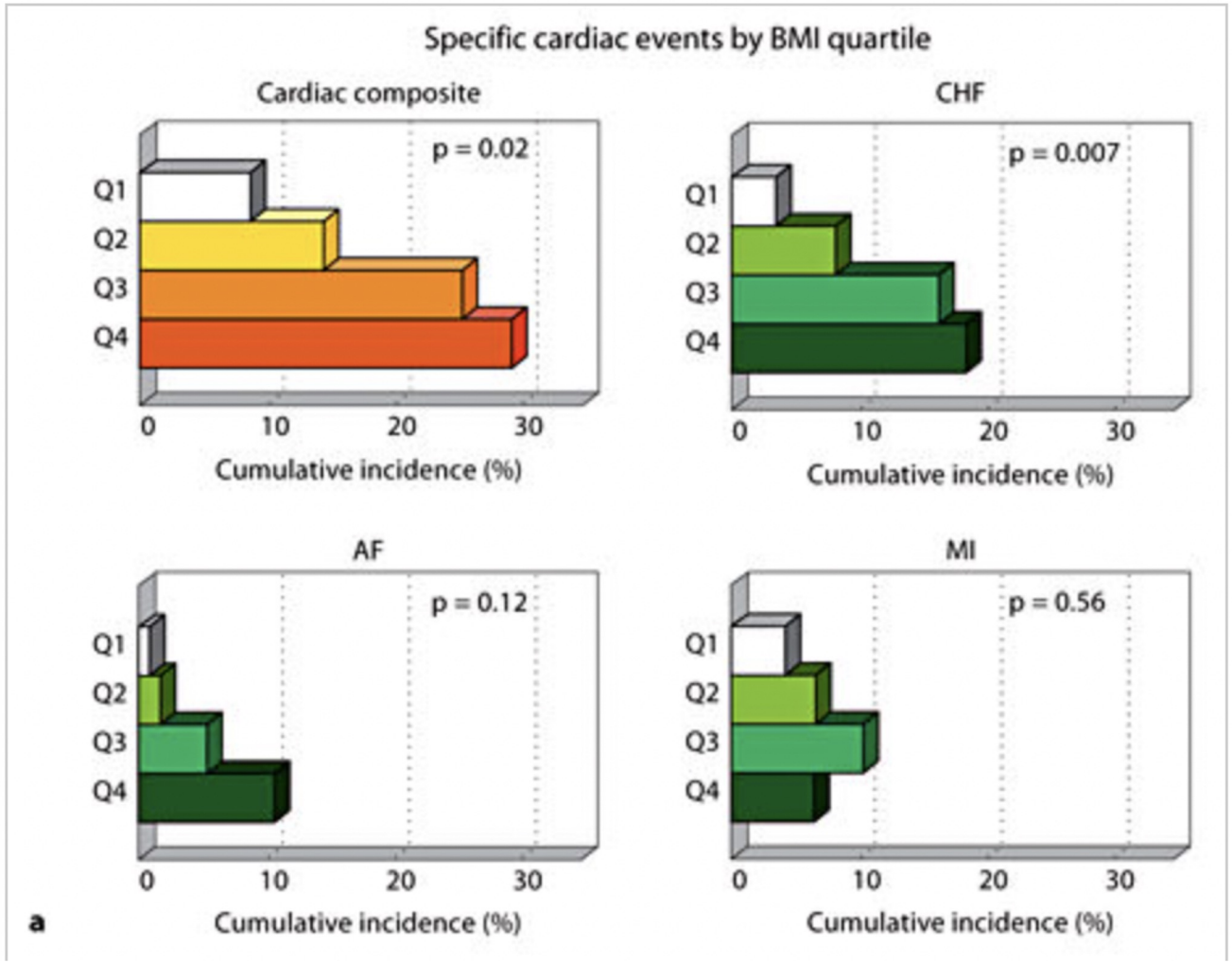
GFR equations were not derived in patients with obesity

→ Consider combining GFR and cystatin C or direct GFR measurement

Obesity can negatively impact optimal care of CKD

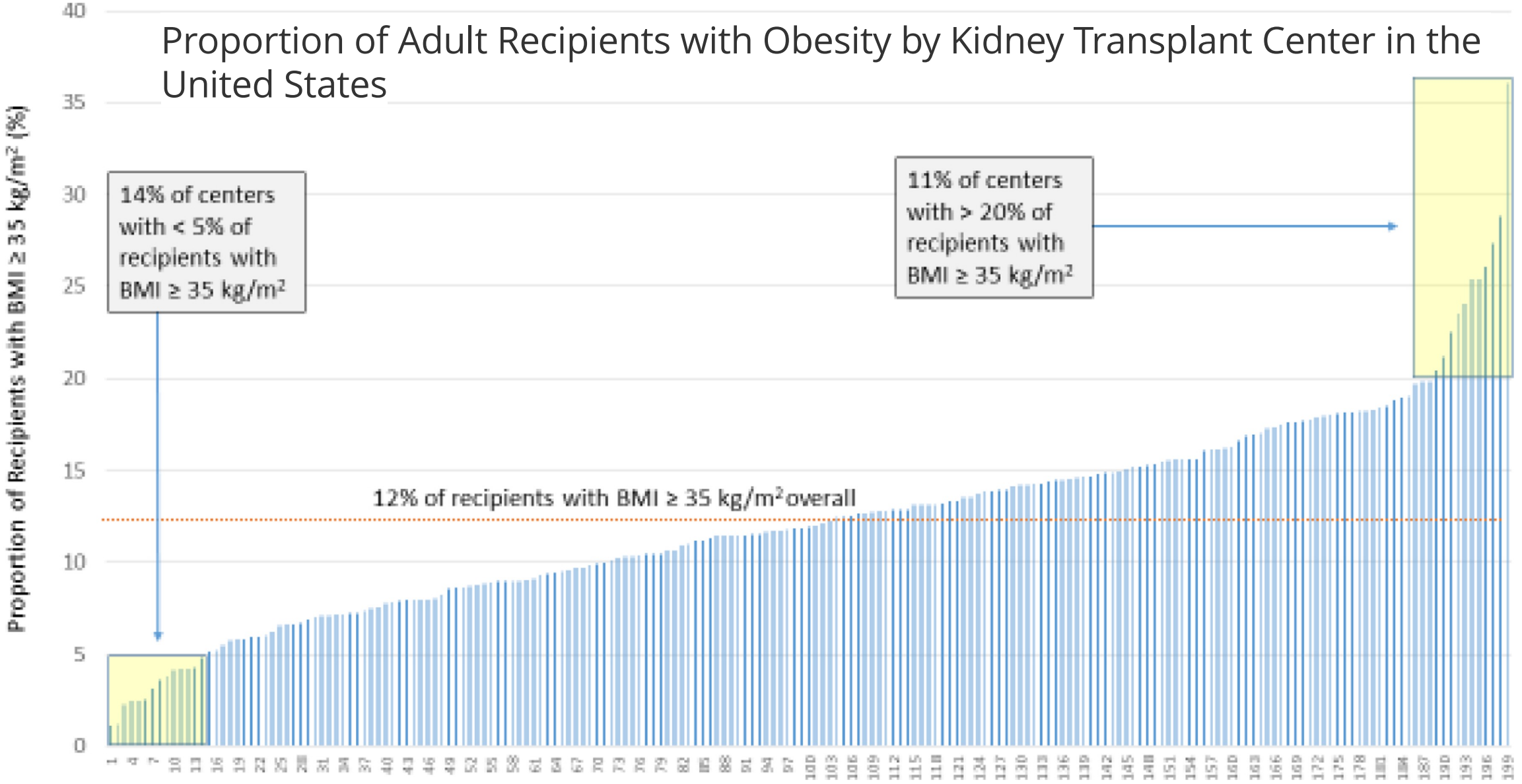
- Can make **placement of AVFs** more challenging and complex
- May reduce **access to outpatient HD**
  - difficulty with ambulation
  - weight limitations affecting chair size and transportation
- In PD, may predispose to more (and more severe) episodes of **peritonitis**
- Impedes **access to transplant** in many centers

Five-year cumulative incidence estimates of post-transplant cardiac events at one center according to BMI rank



Lentine et al., 2012

Proportion of Adult Recipients with Obesity by Kidney Transplant Center in the United States



Huml et al., 2021

Strategies to optimize obesity management in CKD

Educate nephrologists on
- the importance of obesity as a pivotal risk factor for kidney disease
- the available weight reduction treatments and their efficacy, benefits, and risks
- how to communicate this information effectively to patients

Introduce these concepts into **nephrology training curricula**

Establish referral networks with local obesity medicine and metabolic surgery practices

Actively **involve renal dietitians**

Develop practice **guidelines**
- in collaboration with professional societies focused on obesity
- identify gaps in evidence
- improve quality and consistency of care
- support quality improvement
- empower patients
- **influence public policy**

Friedman et al., 2021

Table 3. - Research gaps related to obesity management in CKD

Techniques to more accurately measure clinically meaningful excess adiposity
Updated obesity trends in the CKD population
Understanding the pathophysiologic pathways linking obesity and CKD
Explaining the individual predisposition to obesity-related kidney disease and its prevalence
Developing consensus on weight-related contraindications to kidney transplantation
Determining the effect of obesity on mortality and other nonkidney-related clinical outcomes
Understanding the contribution of uremia to the defense of fat
Defining the precise relationship between weight loss and renoprotection
Comparing renoprotective effects of various weight loss strategies
Establishing evidence-based indications for antiobesity therapy

Friedman et al., 2021

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Yun HR, Kim H, Park JT, Chang TI, Yoo TH, Kang SW, Choi KH, Sung S, Kim SW, Lee J, Oh KH, Ahn C, Han SH; Korean Cohort Study for Outcomes in Patients With Chronic Kidney Disease (KNOW-CKD) Investigators. Obesity, Metabolic Abnormality, and Progression of CKD. Am J Kidney Dis. 2018 Sep;72(3):400-410.

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Krista L. Lentine, Rowena Delos Santos, David Axelrod, Mark A. Schnitzler, Daniel C. Brennan, Janet E. Tuttle-Newhall; Obesity and Kidney Transplant Candidates: How Big Is Too Big for Transplantation?. *Am J Nephrol* 1 December 2012; 36 (6): 575–586.

Huml AM, Schold JD. Kidney Transplantation and Candidate BMI: Viability Is in the Eye of the Beholder. Am J Kidney Dis. 2021 Oct;78(4):484-486.

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DALLAS OBESITY SOCIETY

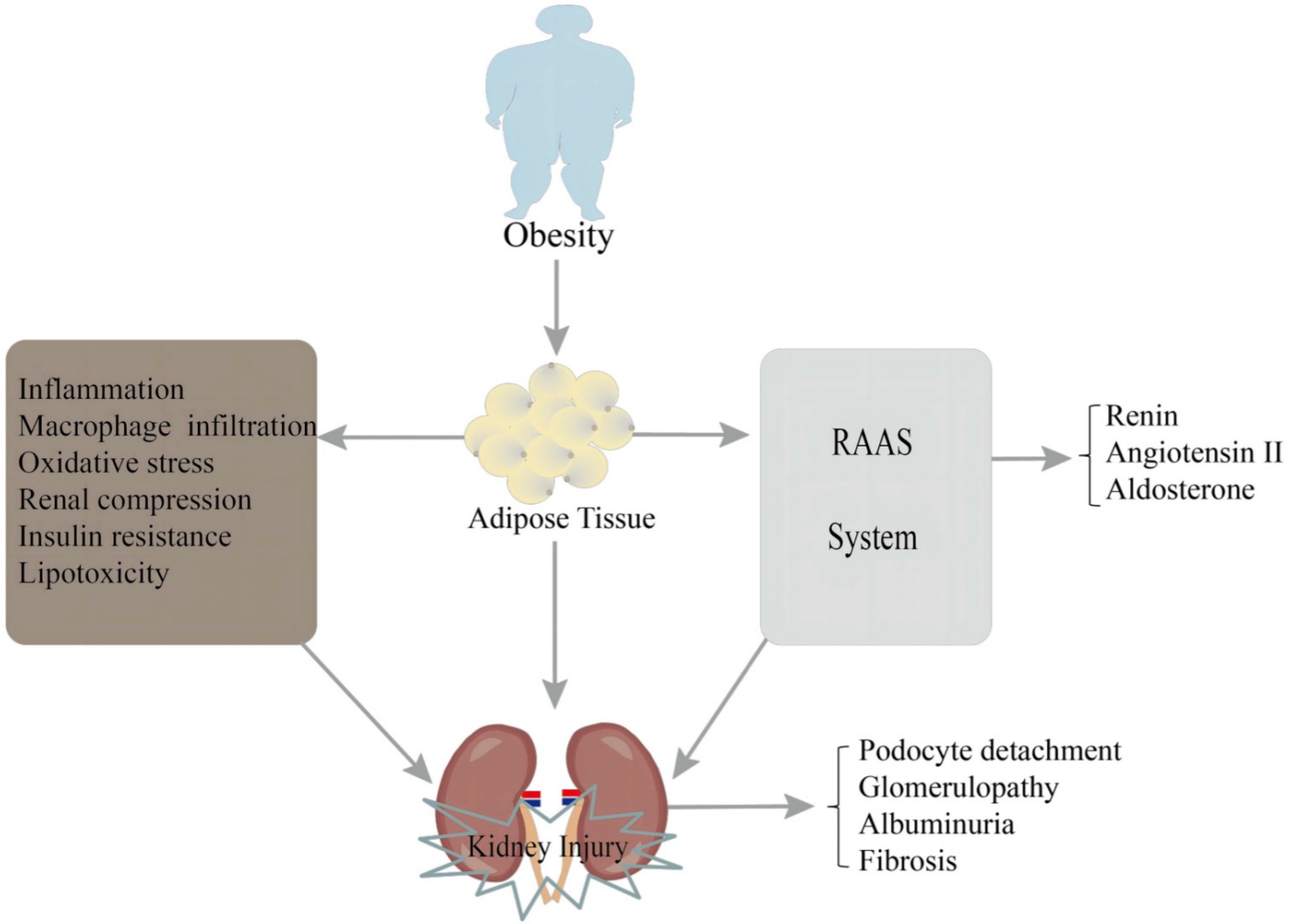
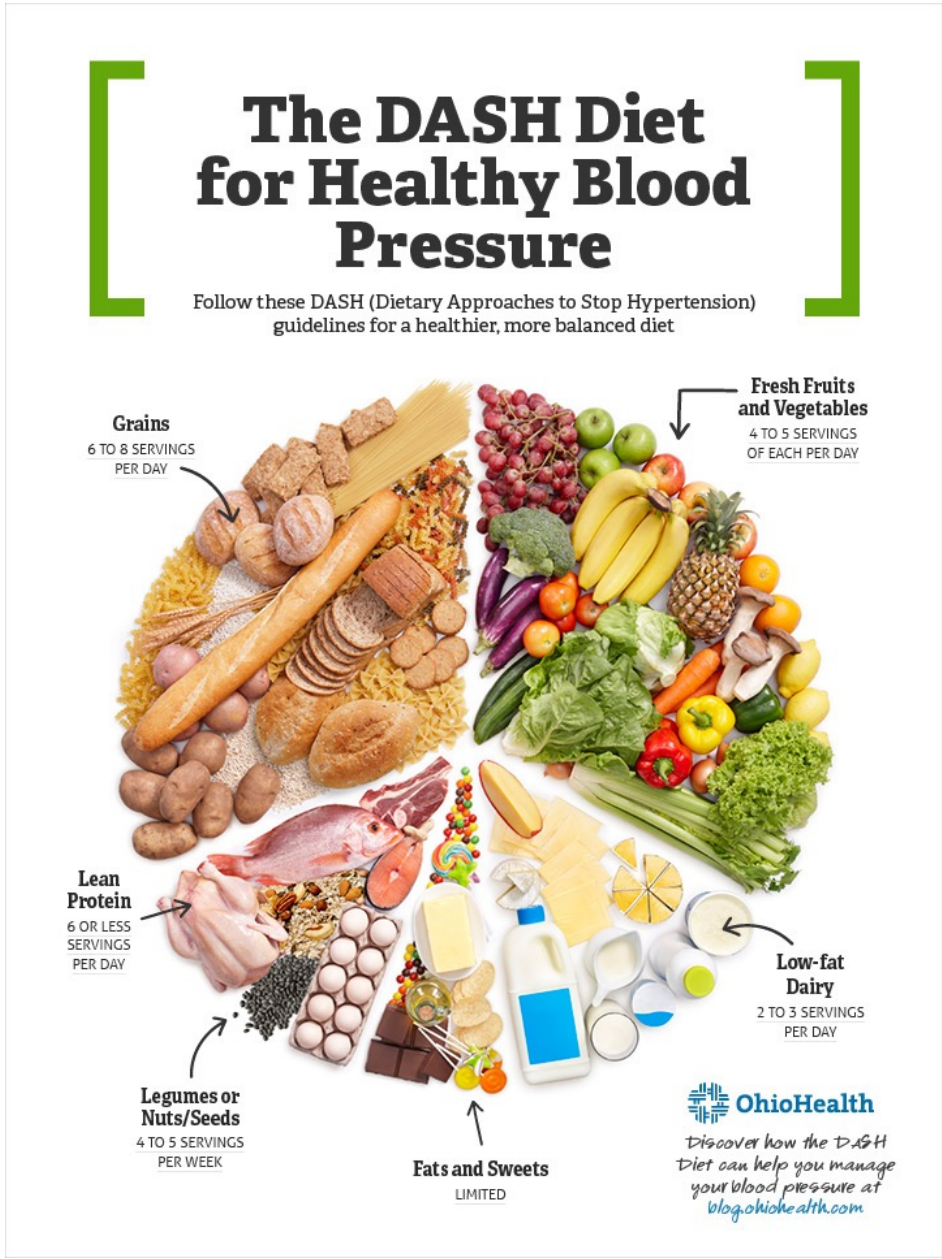


Figure 1 Obesity-induced kidney injury.


The DASH Diet for Healthy Blood Pressure
Follow these DASH (Dietary Approaches to Stop Hypertension) guidelines for a healthier, more balanced diet
Grains
6 TO 8 SERVINGS PER DAY
Fresh Fruits and Vegetables
4 TO 5 SERVINGS OF EACH PER DAY
Lean Protein
6 OR LESS SERVINGS PER DAY
Low-fat Dairy
2 TO 3 SERVINGS PER DAY
Legumes or Nuts/Seeds
4 TO 5 SERVINGS PER WEEK
Fats and Sweets
LIMITED
OhioHealth
Discover how the DASH Diet can help you manage your blood pressure at blog.ohiohealth.com

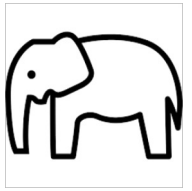
DASH Diet[1]

Table-1: Daily Nutrient Goals used in salt-reductive DASH.

Total fat	27% of calories
Saturated fat	6% of calories
Protein	18% of calories
Carbohydrate	55% of calories
Cholesterol	150 mg
Sodium	1500 mg
Potassium	4,700 mg
Calcium	1,250 mg
Magnesium	500 mg
Fiber	30 g

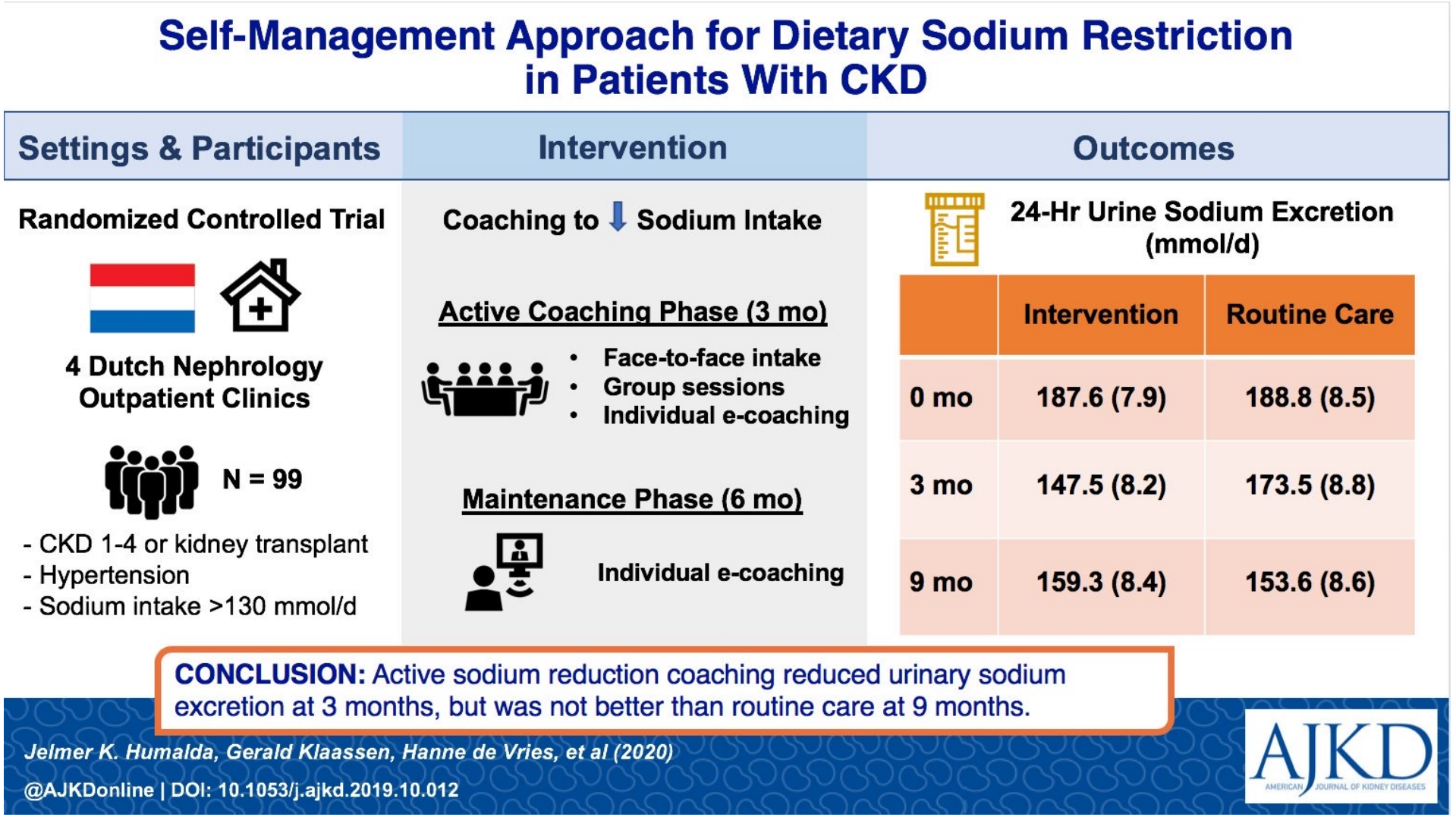
DASH: Dietary Approaches to Stop Hypertension.

- Adherence to the DASH and Mediterranean diets was significantly associated with a decreased risk of CKD in a majority of observational studies[2]
- Among 1,110 adults aged ≥20 years with hypertension and CKD enrolled in NHANES (1988-1994), low accordance to a DASH diet was associated with greater risk of ESKD in adults with moderate CKD and hypertension, particularly in non-Hispanic blacks and persons with diabetes[3]
- US Diet 3400+ mg Sodium daily



1. US Department of Health and Human Services. Your guide to lowering your blood pressure with DASH. NIH publication No. 06-4082. https://www.nhlbi.nih.gov/files/docs/public/heart/new_dash.pdf. Revised April 2006. Accessed August 18, 2020. **2.** Ajjarapu AS, et al. *Nutrients*. 2019;11(8):1877. **3.** Banerjee T, et al. *Kidney Int*. 2019;95(6):1433-1442.

Achieving a Low Na Diet in 2020s? **Nope**



KDIGO 2020 Recommendations for Sodium

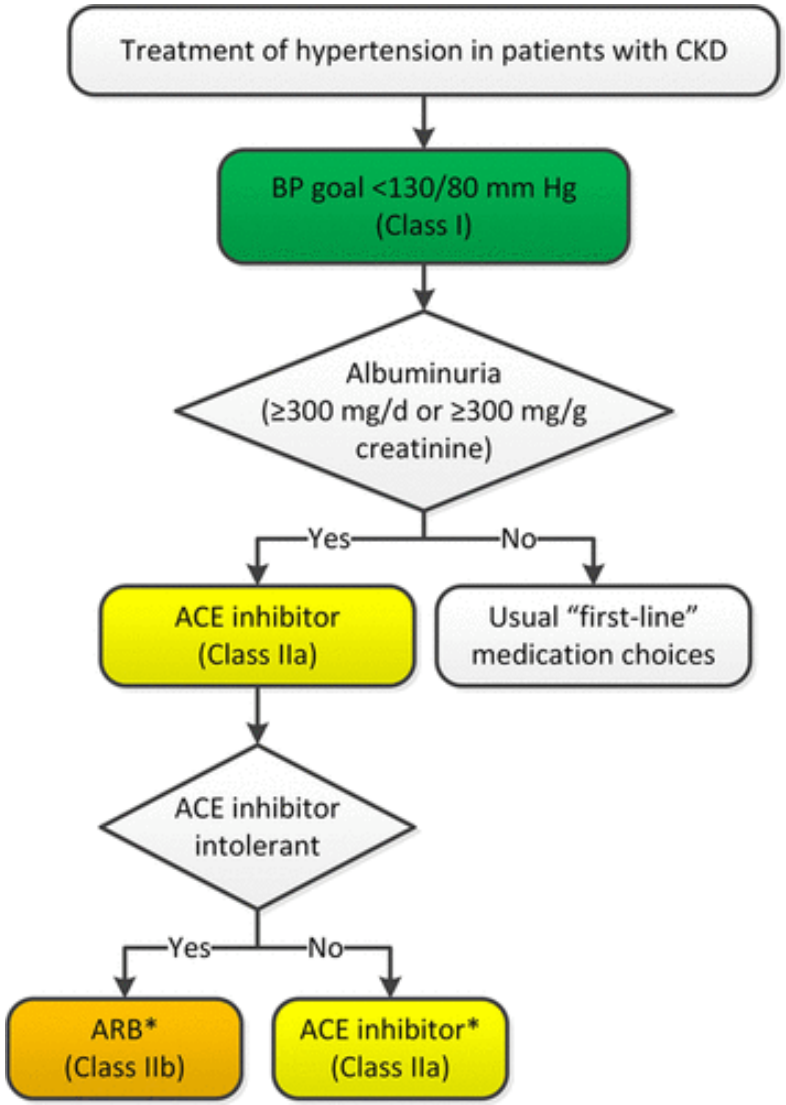
Figure 14 | Ten ways to cut out salt.

Kidney International (2020) 98, 839–848; https://doi.org/10.1016/ j.kint.2020.06.024

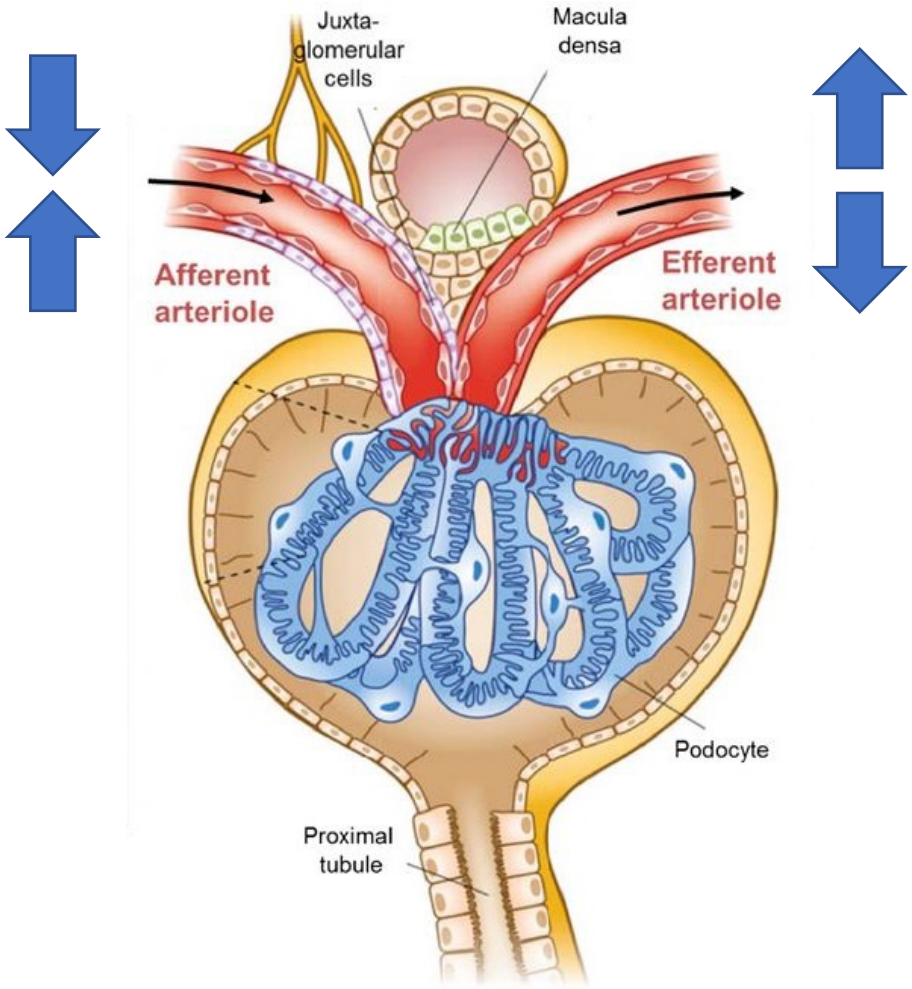
Blood Pressure Control

Paul K. Whelton.

Hypertension. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines, Volume: 71, Issue: 6, Pages: e13-e115.



SGLT2i + RAASi = BFFs



JASN 2017, 28 (4) 1023-1039; **DOI:** 10.1681/ASN.2016060666

SGLT2 Inhibitors and Renal Outcomes : A comparison of RCTs

Infographic by-: Priti Meena, M.D @Priti899

CREDENCE

Double-blind, Placebo-controlled,
Multicentric RCT
(N=4401)

Inclusion:
Type 2 DM
eGFR: ≥30-90
and UACR: >300-≤5000 mg/g

Canagliflozin VS placebo

2019

Median follow-up: 2.62 yrs

Renal-specific composite of ESKD, 2* S. Cr or death from renal causes:
HR 0.66; (0.53 to 0.81)

CV death, MI, or stroke:
HR 0.80 (0.67 -0.95)
Hospitalization for heart failure:
HR 0.61; (0.47 to 0.80)

DAPA-CKD

Double-blind, Placebo-controlled,
Multicentric RCT
(N=4304)

Inclusion:
eGFR: ≥25-75 and
UACR: ≥200-≤5000 mg/g

With or without DM

Dapagliflozin VS placebo

2020

Median follow up : 2.4 yrs

Composite of sustained decline in eGFR of at least 50%, ESKD, or death from renal causes:
HR 0.56; (0.45 to 0.68)

Composite of death from CV causes or hospitalization for heart failure:
HR 0.71; (0.55 to 0.92)

EMPA-KIDNEY

Double-blind, Placebo-controlled,
Multicentric parallel group RCT
(N=6609)

Inclusion:
eGFR: ≥20-45 or
eGFR ≥45 to <90 with UACR ≥200 mg/g

With or without DM

Empagliflozin VS placebo

2022

Median follow-up: 2 yrs

Progression of kidney disease or death from CV causes:
HR 0.72; (0.64 to 0.82)

Rate of hospitalization from any cause:
HR 0.86; (0.78 to 0.95)

CV: cardiovascular, ESKD: End-stage kidney diseases, eGFR: estimated glomerular filtration rate in ml per minute per 1.73 m^2, HR: Hazard ratio, MI: Myocardial infarction, RCT: Randomized Controlled Trials, S.Cr: Serum creatinine, SGLT2: Sodium-glucose Cotransporter-2 (SGLT2) Inhibitors, UACR: urinary albumin-to-creatinine ratio

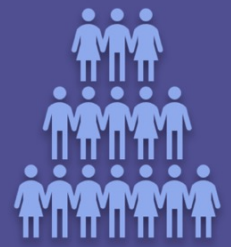
Does finerenone slow progression of CKD and reduce cardiovascular mortality in patients with type 2 diabetes?

#NephJC

PHASE 3, DOUBLE-BLIND, MULTICENTER, RANDOMIZED, CONTROLLED TRIAL

5674

Patients with type 2 diabetes and CKD



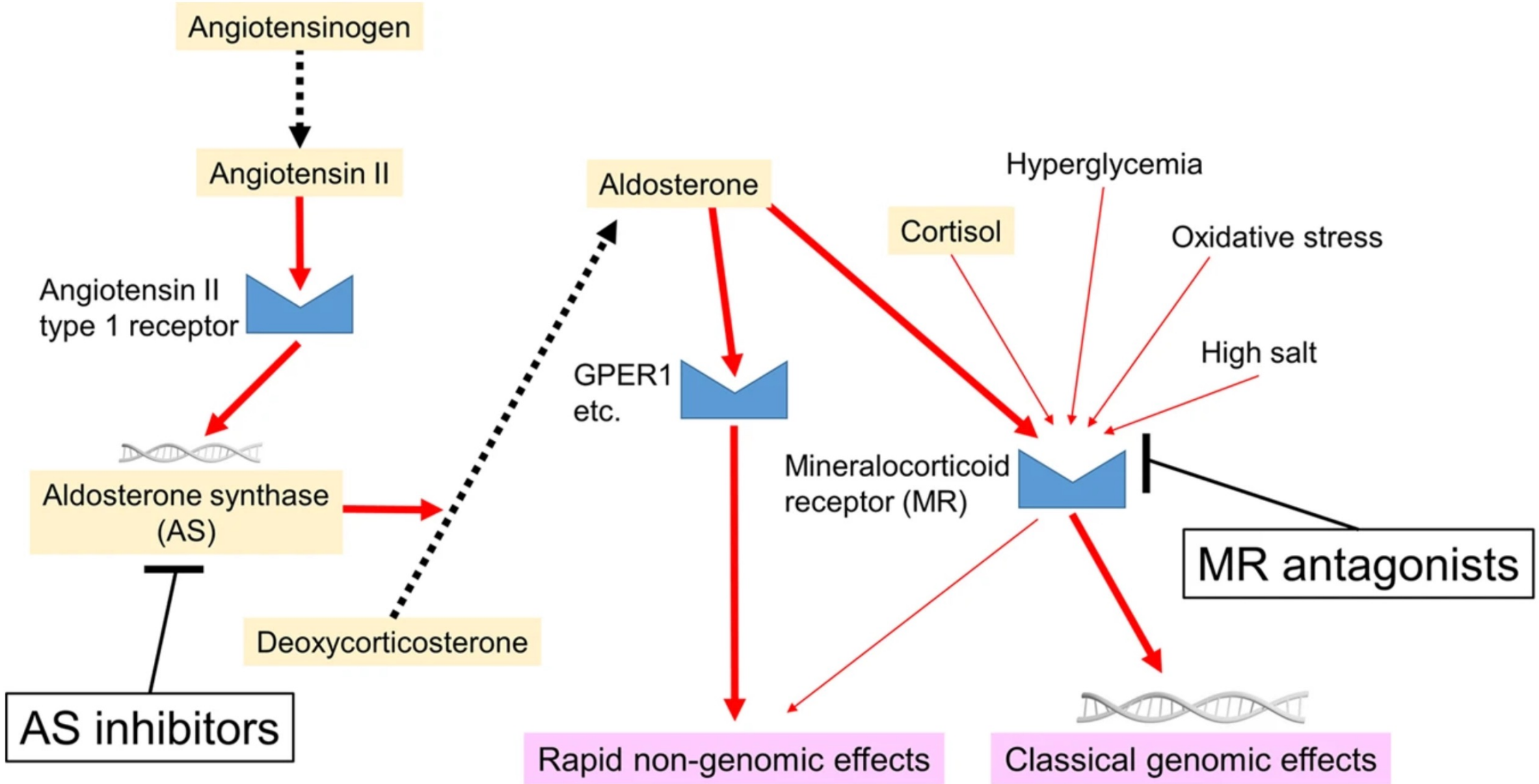
	Finerenone (10 mg or 20mg daily)		Placebo	
	n = 2833		n = 2841	
2.6 year median follow up				
Primary Composite Outcome: Kidney Failure with >40% decrease in eGFR over 4-week period or death from renal causes	17.8% (504/2833)	HR 0.82 (0.73 – 0.93) p = 0.001	21.1% (600/2841)	
Secondary Composite Outcome: Death from cardiovascular causes or hospitalization for any cause	13.0% (367/2833)	HR 0.86 (0.75 – 0.99) p = 0.03	14.8% (420/2841)	

In patients with CKD and type 2 diabetes, treatment with finerenone resulted in lower risk of CKD progression and cardiovascular events than placebo.

Reference: Bakris GL, Agarwal R, Anker S, Pitt B, et al. Effect of Finerenone on Chronic Kidney Disease Outcomes in Type 2 Diabetes. NEJM

VA by Dhwanil Patel @iheartkidneys

From: [Inhibition of aldosterone synthase: Does this offer advantages compared with the blockade of mineralocorticoid receptors?]



The different mechanisms of action of mineralocorticoid receptor (MR) antagonists and aldosterone synthase (AS) inhibitors

Efficacy and safety of aldosterone synthase inhibition with and without empagliflozin for chronic kidney disease: a randomised, controlled, phase 2 trial

#NephJC

- Multinational
- eGFR 30 to < 90 mL/min/1.73 m2
- UACR of 200 to < 5000 mg/g
- serum potassium of < 4.8 mmol/L
- Taking an ACEi or ARB

BI 690517: Aldosterone Synthase Inhibitor

586 patients randomised to 14 weeks of treatment (1:1:1:1)

	placebo	3mg	10mg	20mg
First morning void UACR*	–3% (95% CI, -19 to 17)	–22% (95% CI, -36 to -7)	–39% (95% CI, -50 to -26)	–37% (95% CI, -49 to -22)

*Similar UACR reductions when added to empagliflozin

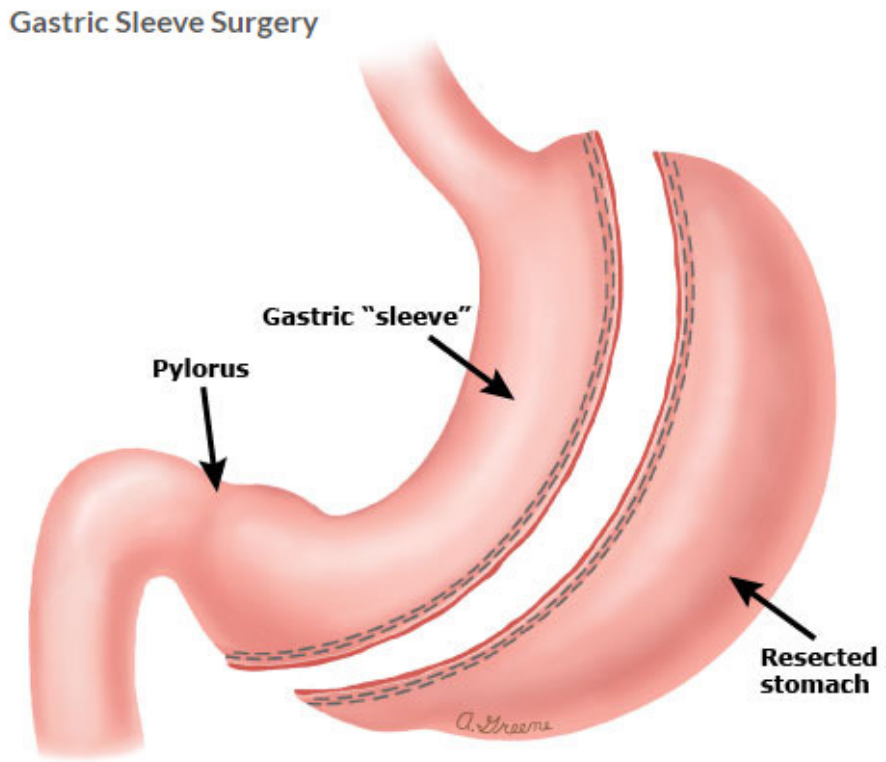
Adrenal insufficiency reported in 2% of study drug participants
No treatment-related deaths occurred during the study

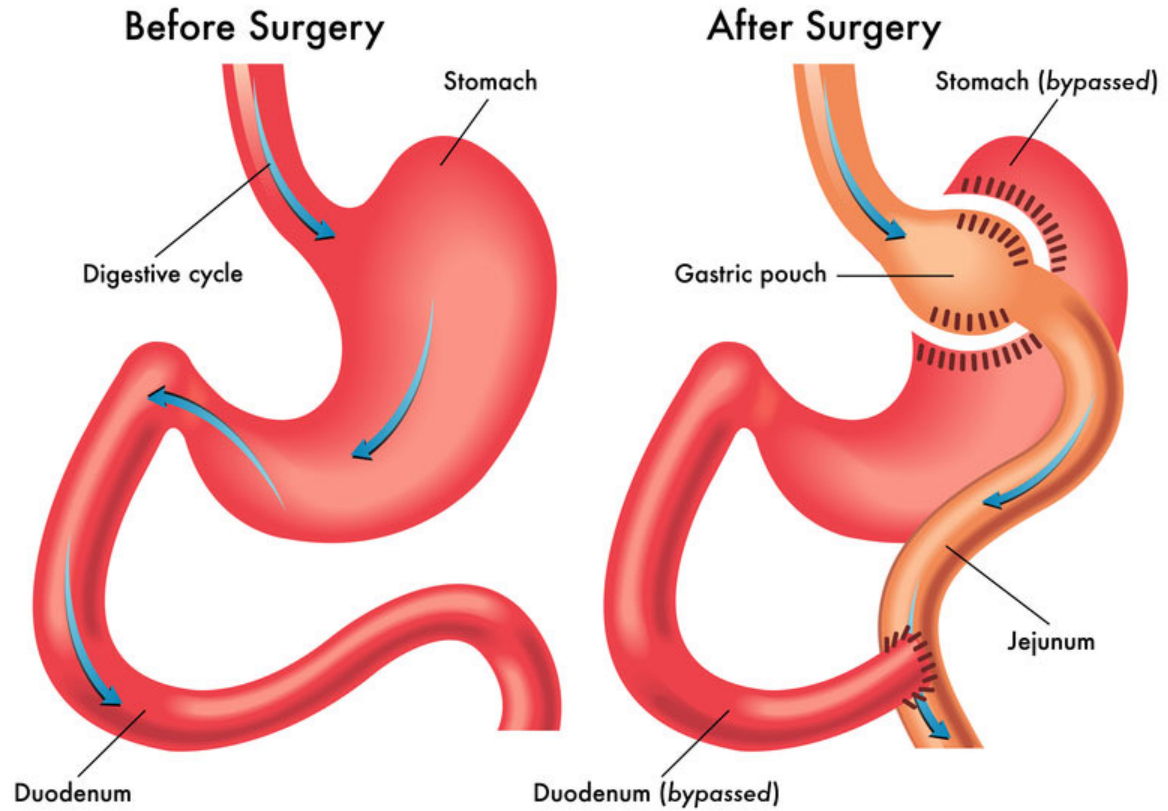
UACR: urine albumin to creatinine ratio, ACEi: angiotensin-converting enzyme inhibitor, ARB: angiotensin receptor blocker

Reference: Tuttle KR, Lancet 2023
Visual abstract by:
Brian Rifkin, MD
@brian_rifkin

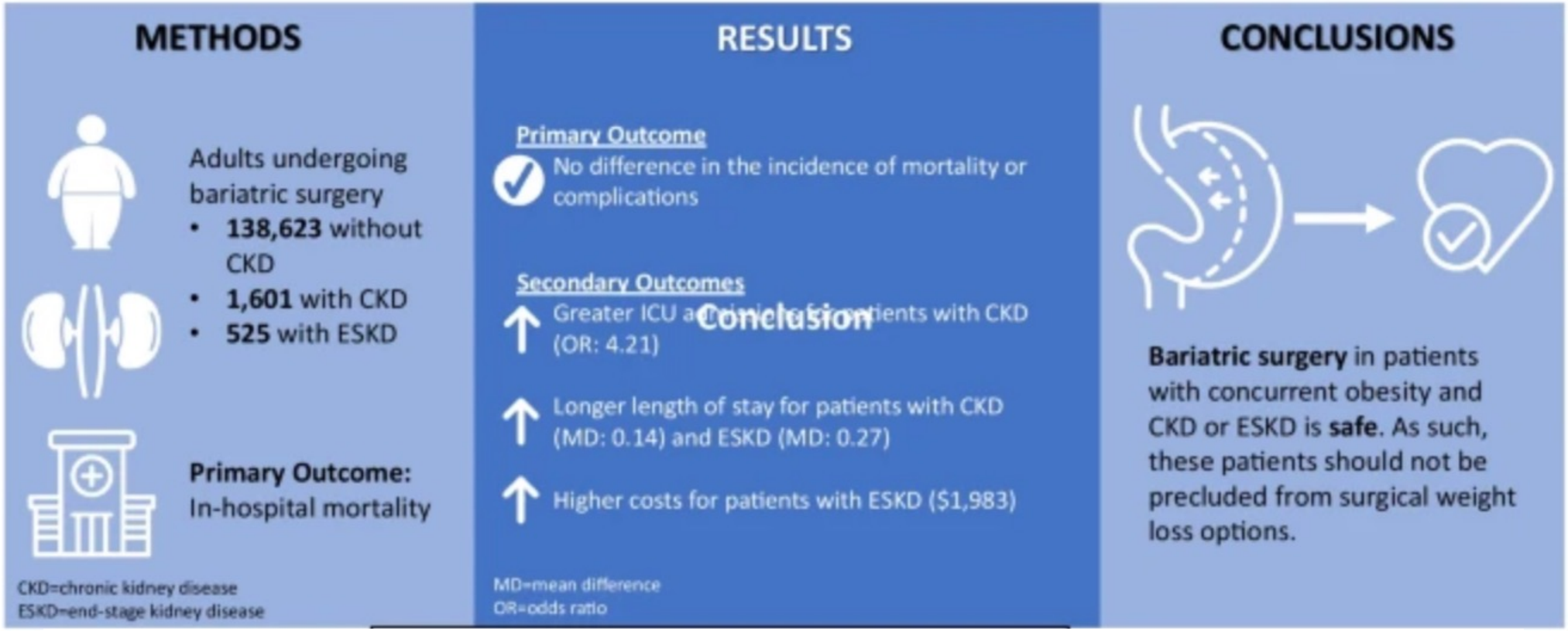
Conclusion: BI 690517 dose-dependently reduced albuminuria with concurrent renin–angiotensin system inhibition and empagliflozin, suggesting an additive efficacy for chronic kidney disease treatment without unexpected safety signals.

Metabolic surgery offers the most effective treatment for obesity





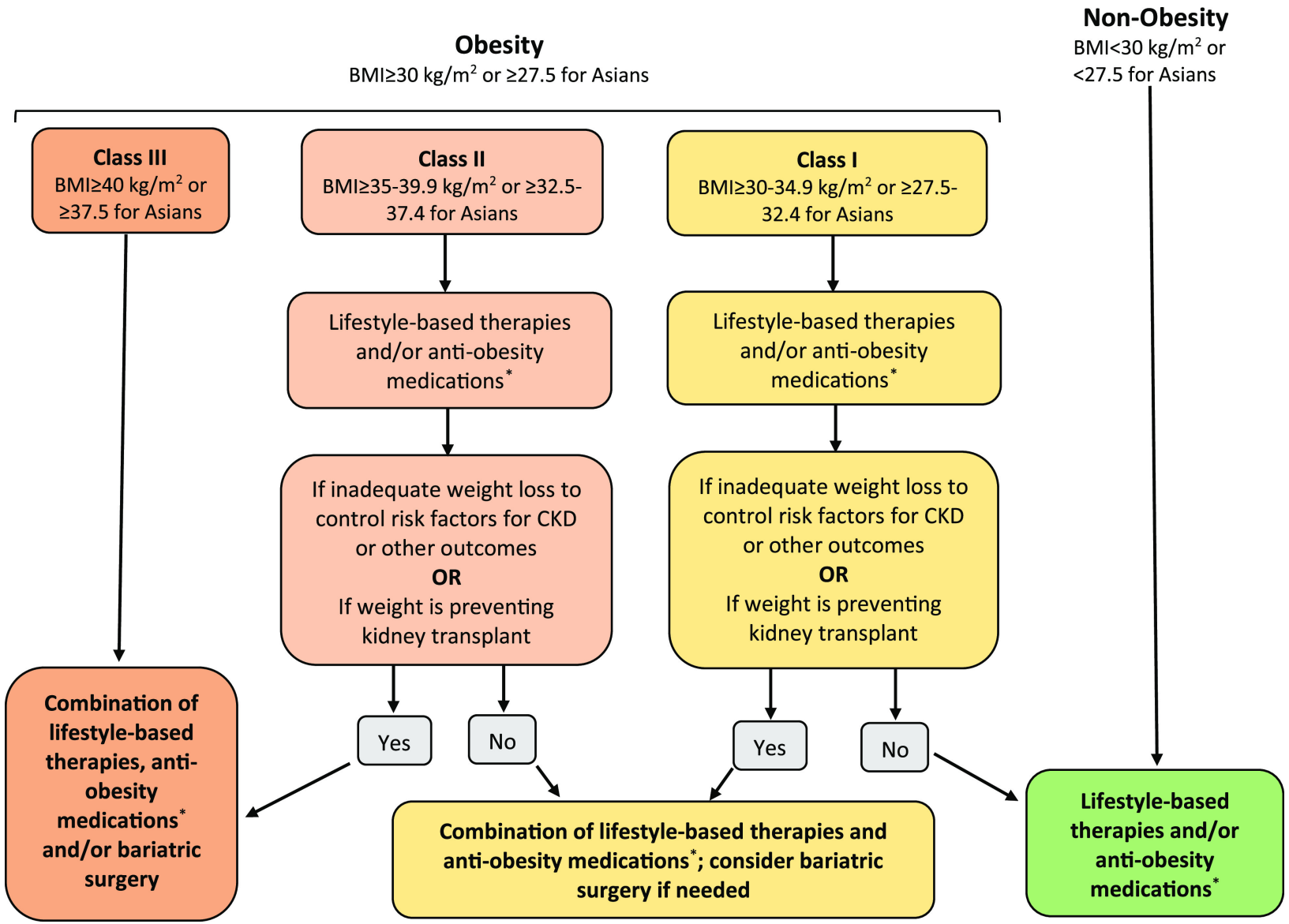
The Effect of Chronic Kidney Disease or End-Stage Kidney Disease on Perioperative Outcomes and Healthcare Utilization in Patients Undergoing Bariatric Surgery



Obesity Surgery (2023) 33:1476–1485
https://doi.org/10.1007/s11695-023-06542-1

ORIGINAL CONTRIBUTIONS

Suggested algorithm for obesity management in persons with CKD



J Am Soc Nephrol. 2021 Apr; 32(4): 777–790. doi: 10.1681/ASN.2020101472

Thank you

GatesColbertMD.com

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Rosemary Beach, Florida

Obesity in patients with Advanced kidney disease

Learning Objectives

- Brief overview of Obesity epidemiology, pathophysiology
- Cardiorenal benefits of treating obesity in patients with diabetes
- Barriers to renal transplant and post transplant complications
- Stratification of obesity medications for a patient with obesity and CKD.
- Nutrition strategies for patients with obesity and CKD on obesity medications

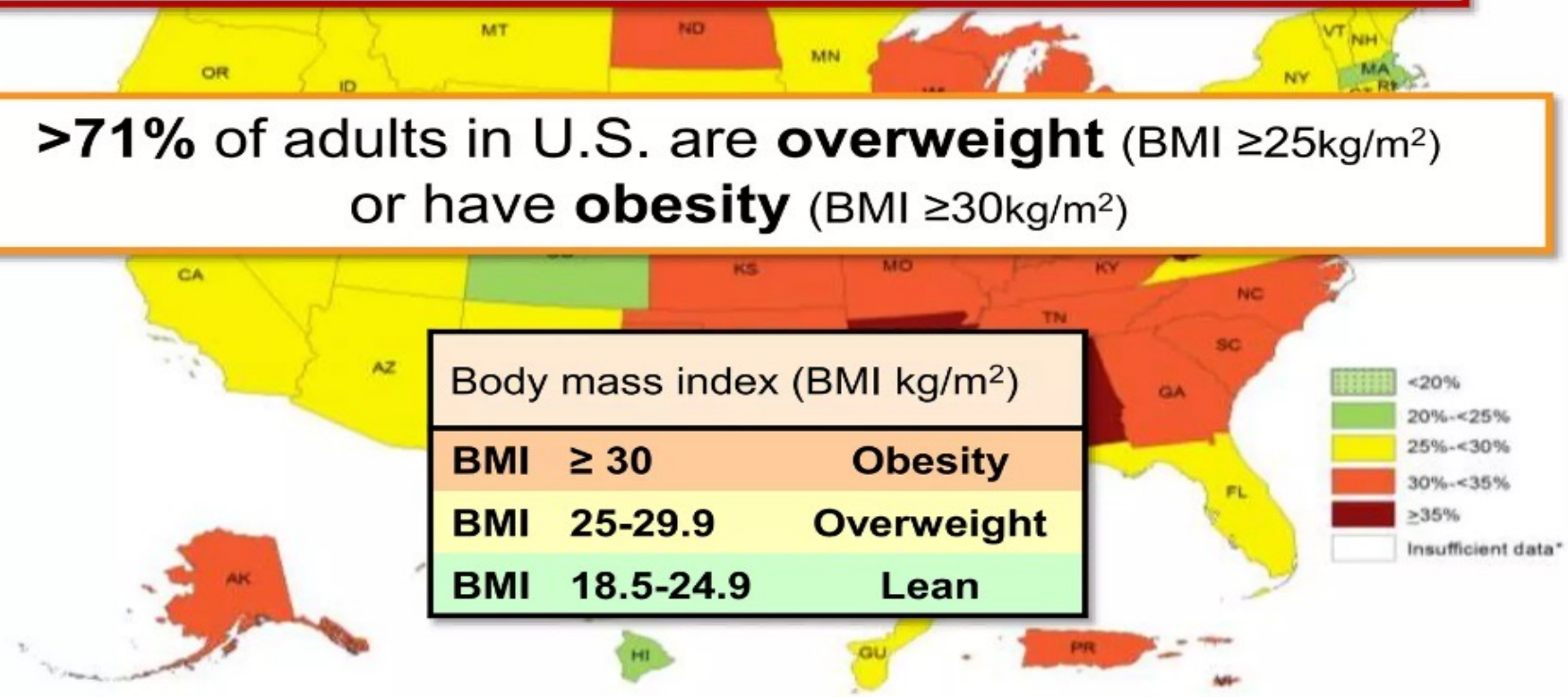
Sarah Khan MD ABOM

DOS DALLAS OBESITY SOCIETY

Prevalence **of Obesity**

> 42% of adults in U.S. have **obesity** (BMI ≥30kg/m²)

>71% of adults in U.S. are **overweight** (BMI ≥25kg/m²) or have **obesity** (BMI ≥30kg/m²)



Body mass index (BMI kg/m²)		
BMI	**≥ 30**	**Obesity**
BMI	**25-29.9**	**Overweight**
BMI	**18.5-24.9**	**Lean**

NCHS Data Brief, No 288, October 2017

Energy **Balance Dysregulation**

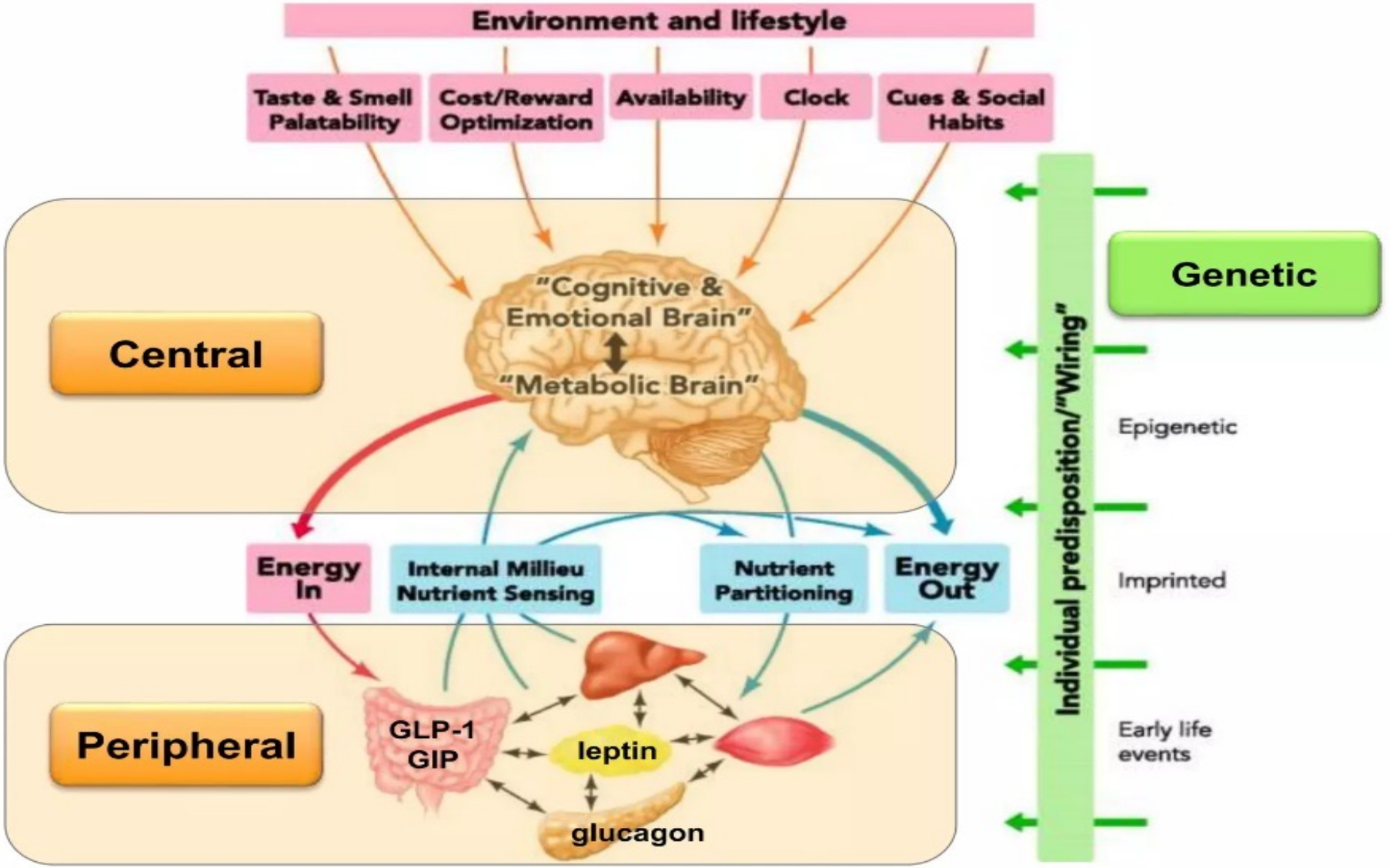
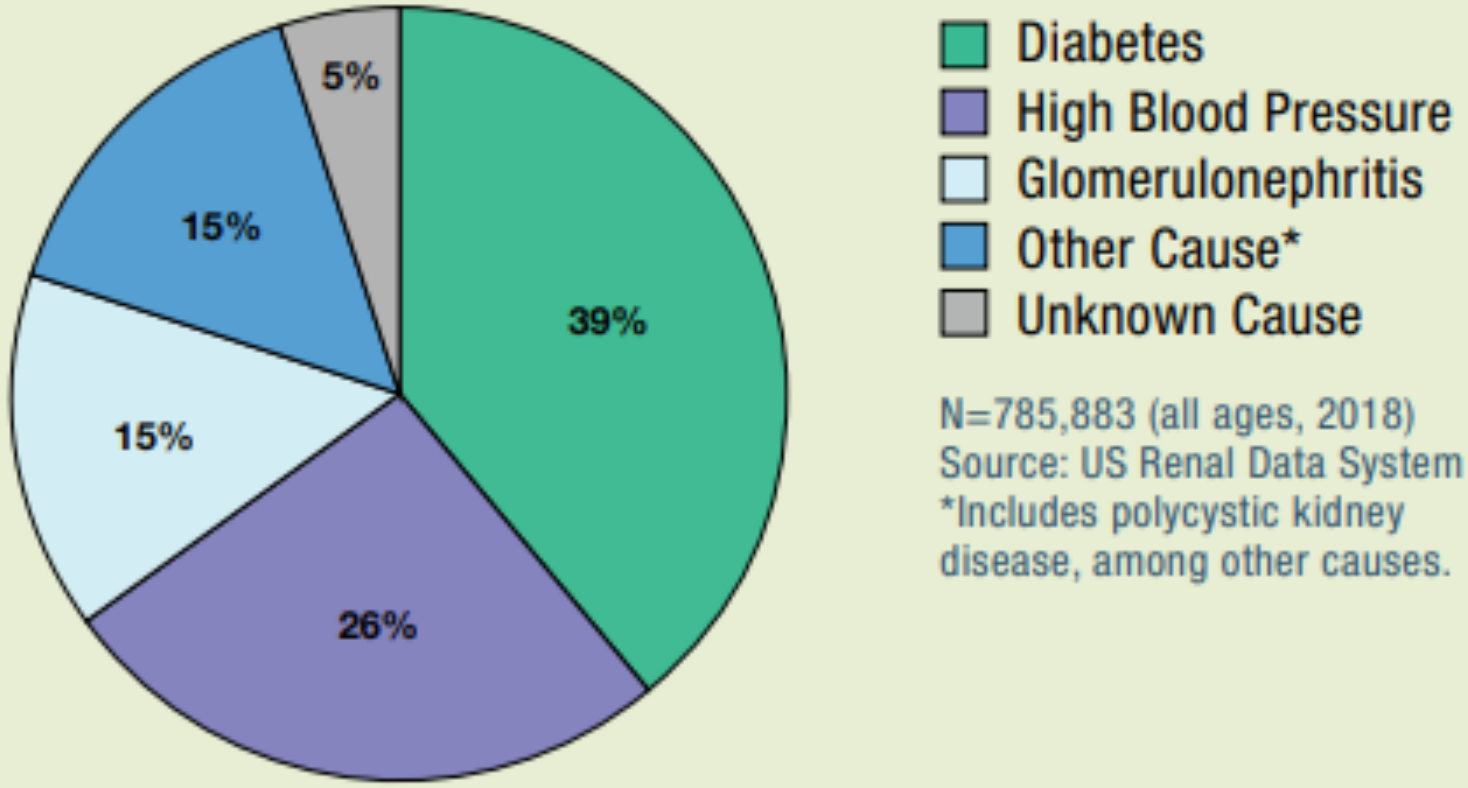


Figure Adapted from Zheng & Berthoud et al. *Physiology*. 2008;23 75-83.

Reported Causes of End-Stage Renal Disease in the United States



N=785,883 (all ages, 2018) Source: US Renal Data System *Includes polycystic kidney disease, among other causes

Diabetes **Management in CKD patients**

American Diabetes Association®

From: **Standards of Care in Diabetes—2023 Abridged for Primary Care Providers**

Clin Diabetes. 2022;41(1):4-31. doi:10.2337/cd23-as01

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

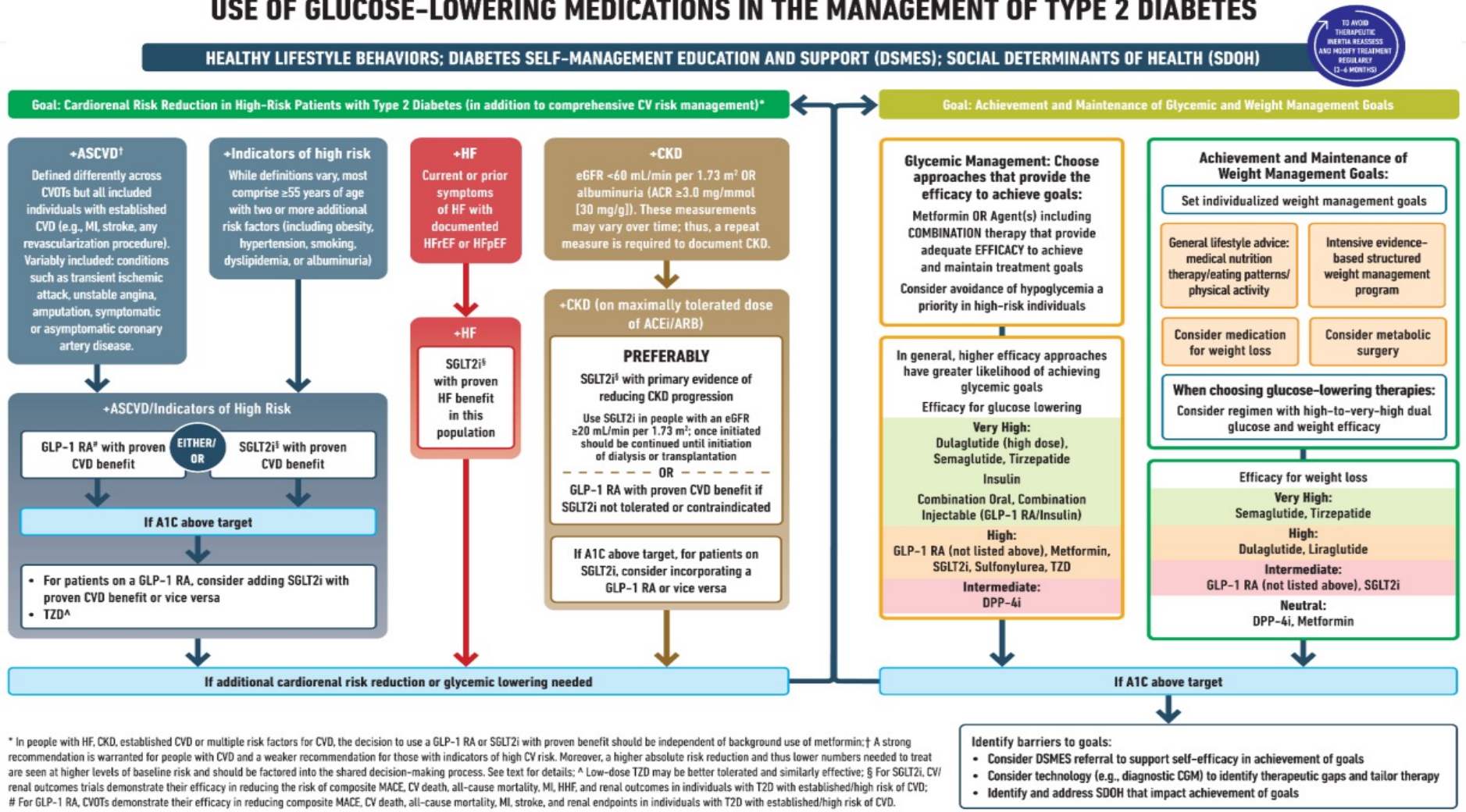
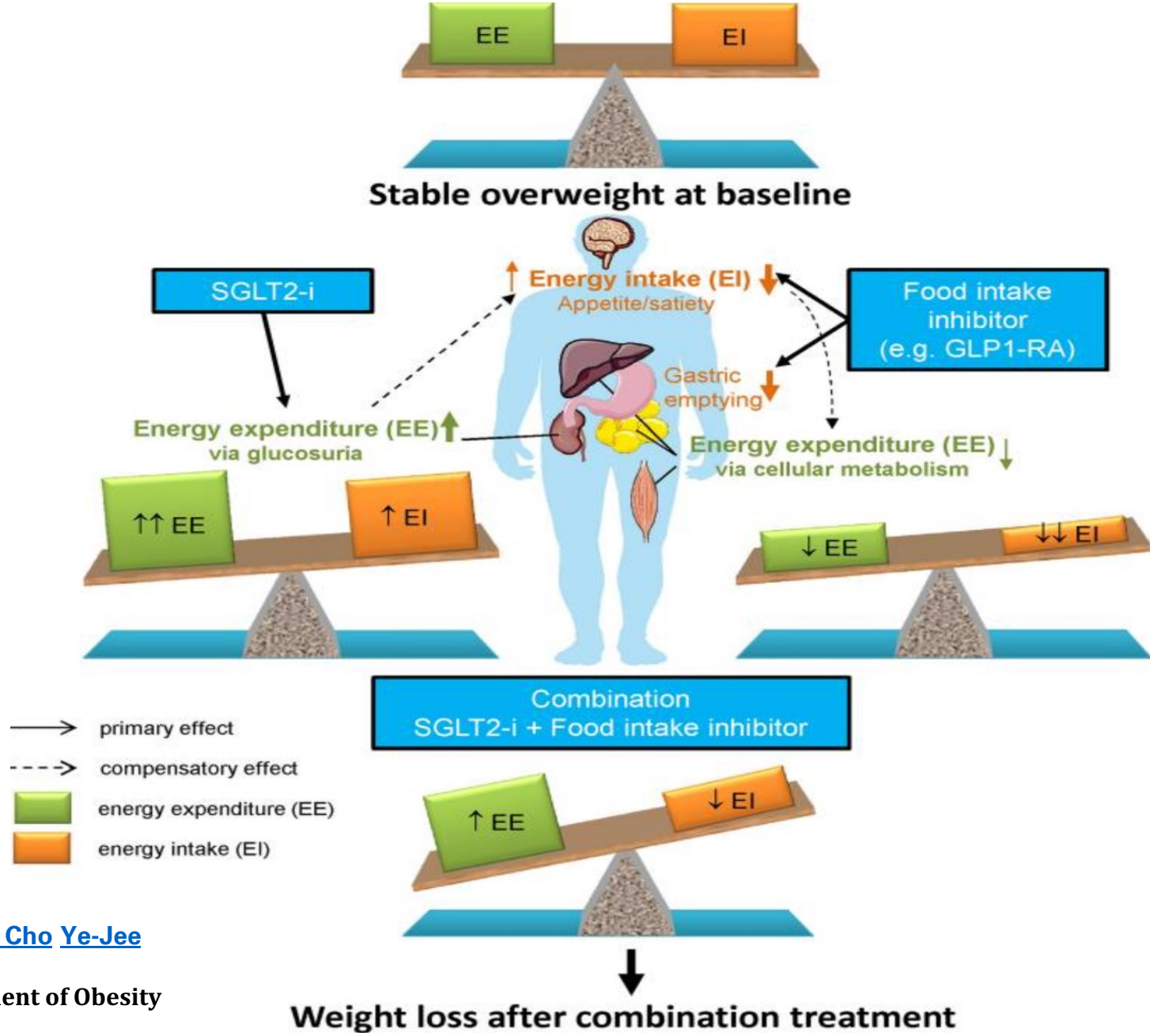


Figure Legend:

Use of glucose-lowering medications in the management of type 2 diabetes. ACEi, ACE inhibitor; ACR, albumin-to-creatinine ratio; CVOT, cardiovascular outcomes trial; DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1 RA, glucagon-like peptide 1 receptor agonist; HHF, hospitalization for heart failure; SGLT2i, sodium-glucose cotransporter 2 inhibitor; T2D, type 2 diabetes. Adapted from Davies MJ, Aroda VR, Collins BS, et al. Diabetes Care 2022;45:2753–2786.

Effect of Sodium-Glucose Cotransporter 2 Inhibitors on Weight Reduction in patients with and without Diabetes and Obesity



A Systematic Review and a Meta-Analysis [Yun Kyung Cho](#) [Ye-Jee Kim](#) [Chang Hee Jung](#)

Emerging Role of SGLT-2 Inhibitors for the Treatment of Obesity

[Maria J. Pereira](#) and [Jan W. Eriksson](#)

Kidney transplant and obesity

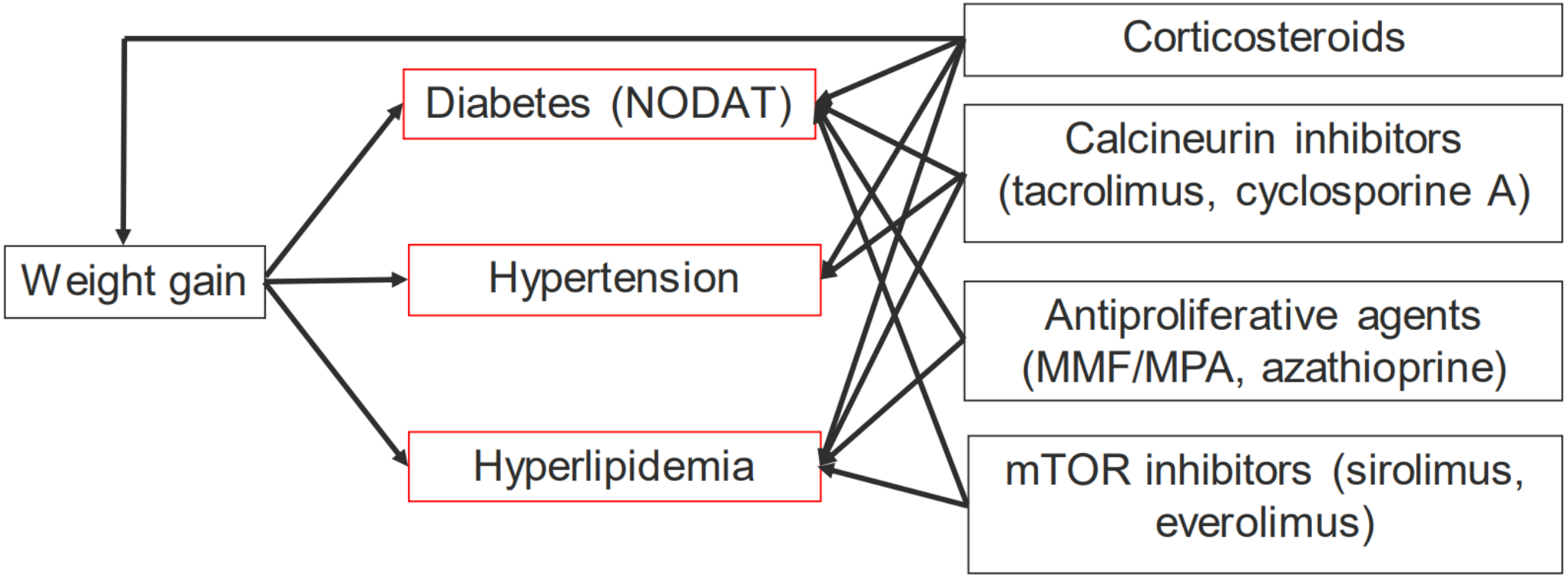
Patients with obesity on the kidney transplant waitlist are less likely to be transplanted

66 of 67 surveyed kidney transplant centers use a BMI cutoff ranged from 35-45 kg/m2 Currently no consensus guidelines for kidney transplant

Nearly 40,000 incident U.S. dialysis patients from 2012–2014 had obesity as the sole contraindication waitlisting for kidney transplant.

Compared to patients with BMI<35, those with BMI 35–39.9, 40–44.9, and ≥45 were 15%, 45%, and 71% less likely to be listed for kidney transplant.

Obesity as an Isolated Contraindication to Kidney Transplantation in the End-Stage Renal Disease Population: A Cohort Study Babak J. Orandi,



- **There is a 34% increased rate of Obesity after 48.5 months of transplant**
- **Incident of New onset diabetes is up to 40%**
- **11.1% of kidney transplant recipients have an MI within 3 years of transplant**

Post-Transplant Complications

Complications of longterm immunosuppression

Strategies to treat obesity in patients with CKD

LIFESTYLE MODIFICATION INTERVENTIONS FOR WEIGHT LOSS IN CKD

ROLE OF OBESITY MEDICATIONS IN CKD

ROLE OF BARIATRIC SURGERY IN CKD

Lifestyle Modification Interventions for Weight Loss in CKD

Diet interventions

Hypocaloric diet; (1000 to 1200 Kcal) Praga et al (1995), Morales et al (2003)

- BMI decreased in diet arm (37.1 to 32.6 kg/m^2) 5 points change in BMI
- Proteinuria decreased in diet arm (2.9 to 0.4 g/d)
- eGFR remained stable

Low-fat vegan diet; Nicholson et al (1999)

- Vegan arm had greater 12-wk weight loss vs control (low fat diet)(−7.2 vs −3.8 kg) and change in fasting glucose (−28% vs −12%)
- No significant difference in albuminuria in vegan arm (434.8 to 155.2 mg/d) vs control (82.9 to 169.2 mg/d)

Calorie-restricted low-carb / calorie-restricted Mediterranean; arm /calorie-restricted low-fat diet Tirosh et al (DIRECT), (2013)

- Microalbuminuria subgroup decreased in combined intervention arms

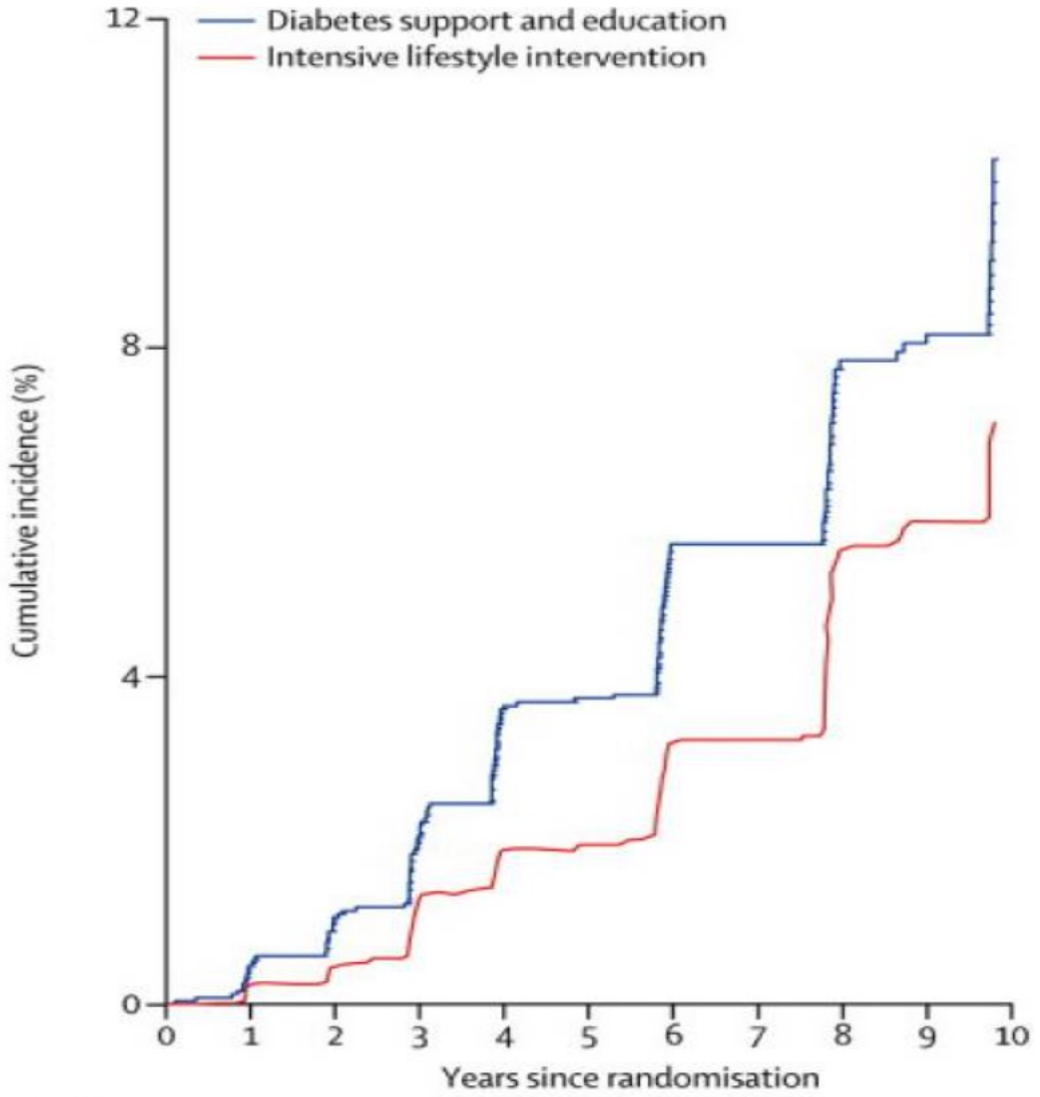
Fruits & Vegetables Goraya et al (2014)

- $eGFR_{cys}$ decline (primary) slower as well reduction in albuminuria.

Diet and moderate-intensity physical activity intervention

Post-hoc analysis “The Action for Health in Diabetes (Look AHEAD)”

Individuals in the intensive arm had 31% reduced risk for “very high risk”
KDIGO (Kidney Disease: Improving Global Outcomes) category CKD



Number at risk						
Diabetes support and education	2408	2325	2203	2092	1914	854
Intensive lifestyle intervention	2423	2371	2275	2180	1987	889

Role of Anti-Obesity medications in CKD patients

Overview of AOMs

Generic (Brand)	Use	MOA	Effect	Taken how	Weight loss
Phentermine Lomaira, Adipex	>12 weeks / obesity management	sympathomimetic amine	Appetite suppressant	PO / up to TID	3-7%
Orlistat Xenical, Alli	Chronic obesity management	Gastrointestinal lipase inhibitor	Fat absorption inhibitor	PO/ up to TID	3-4%
Phentermine and Topiramte ER Qsymia	Chronic obesity management	Sympathomimetic amine/ anticonvulsant, GABAergic /carbonic anhydrase inhibitor	Appetite suppressant	PO / once daily	3-7%
Bupropion ER/Naltrexone ER Contrave	Chronic obesity management	Dopamine-norepinephrine reuptake inhibitor /opioid receptor antagonist	Appetite suppressant	PO/Twice Daily	3-5%
Liraglutide Saxenda, Victoza (DM)	Chronic obesity management	GLP -1 receptor agonist	Appetite suppressant	Sq/ once daily	5-7%
Semaglutide Wegovy, Ozempic (DM)	Chronic obesity management	GLP-1 receptor agonist	Appetite suppressant	Sq/once weekly	10-20%
Tirzepatide Zepbound weight loss, Mounjaro (DM)	Chronic obesity management	GLP/GIP receptor agonist	Appetite suppressant	Sq/once weekly	12-25%

Phentermine-Topiramate

- Both phentermine and topiramate are cleared by the kidney,
- The product label for phentermine-topiramate recommends a maximum dose of 7.5 mg/46 mg daily for moderate or severe kidney impairment
- Avoiding its use in kidney failure

Bupropion-Naltrexone

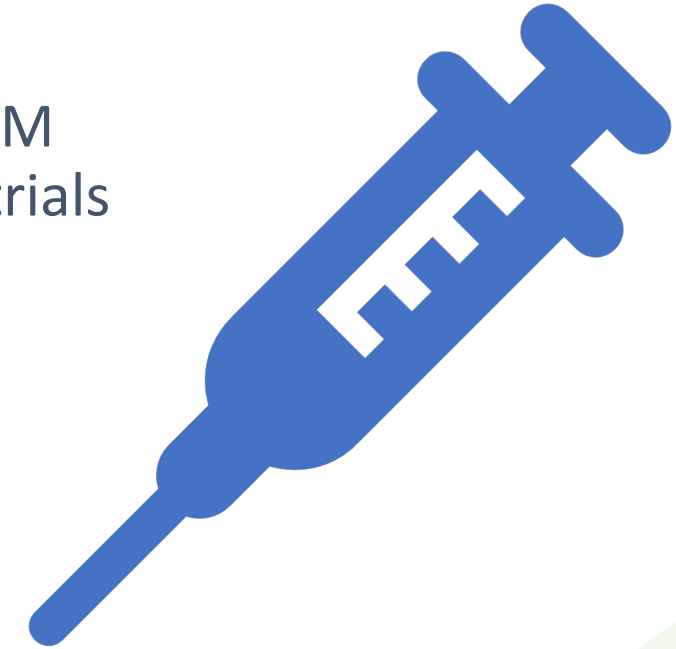
In a JAMA article by Steven E. Nissen, MD[1]; Kathy E. Wolski, MPH[1]; Lisa Prcela, RN[1]; et al bupropion-naltrexone resulted in higher increase in blood pressure and heart rate, also MACE benefits could not be determined. The study concluded that cardiovascular safety of this treatment remains uncertain and will require evaluation in a new adequately powered outcome trial.

In COR 1-year trial the creatinine and creatinine doubling rates were higher in patients with Bupropion/Naltrexone. Hence this combination is not recommended in patients with CKD.

Glucagon-Like Peptide 1 Receptor Agonists

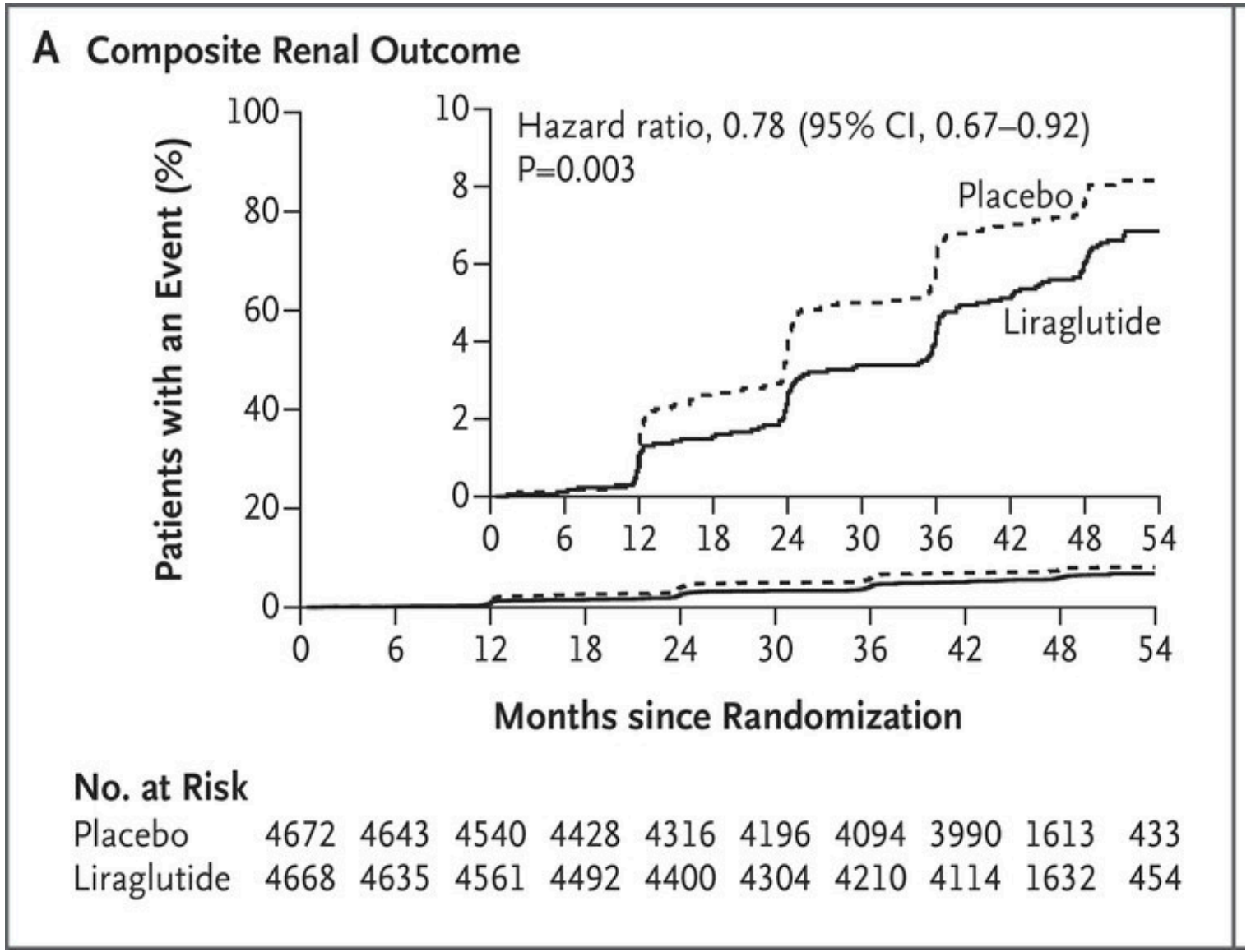
- The efficacy and safety of several GLP-1 RAs in patients with T2DM and CKD have been established in several trials, although these trials were not designed as weight loss trials

- These trials focused on prevention of CKD disease progression as measured by rapid eGFR decline > 40% and or 50%, increased microalbuminuria, initiation of HD and or transplant

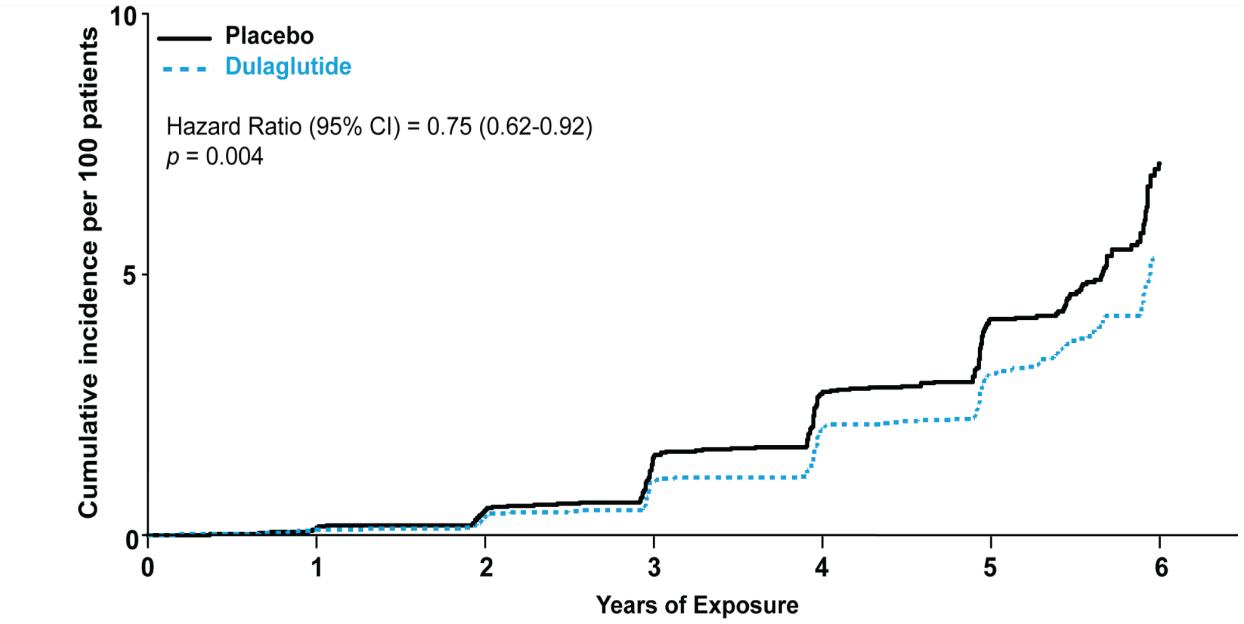


Liraglutide

The (LEADER) Post-hoc analysis revealed Primary outcome as slower rate of new onset microalbuminuria for liraglutide

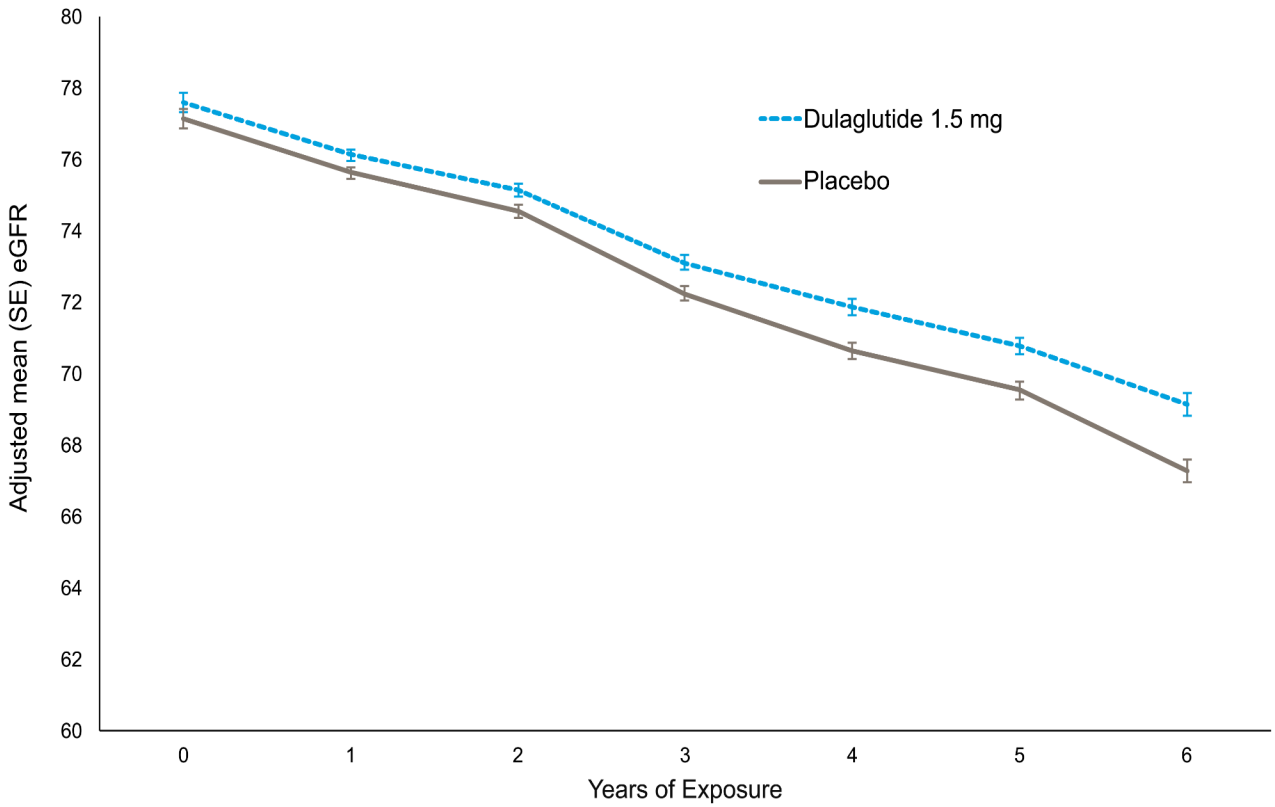


Dulaglutide



Number of Participants at Risk

DU 1.5 mg	4,949	4,863	4,761	4,627	4,480	3,789	779
Placebo	4,952	4,851	4,730	4,555	4,388	3,679	762

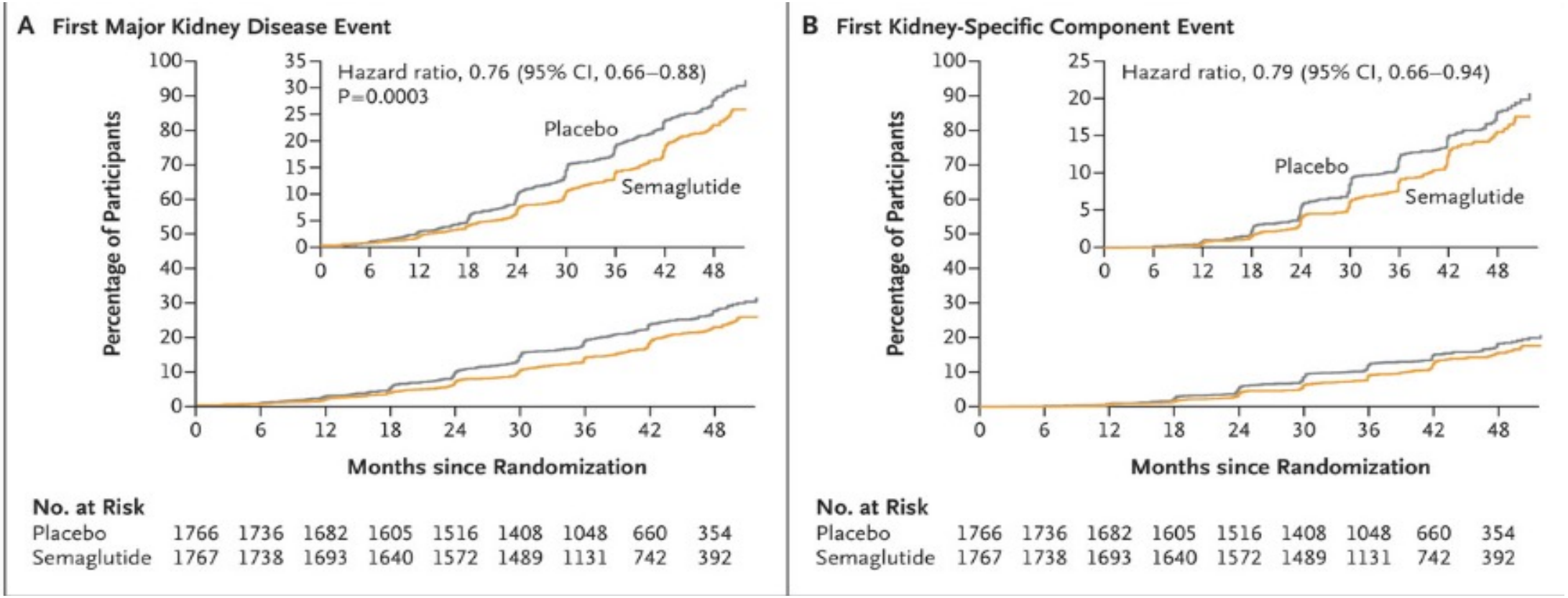


Number of participants at risk

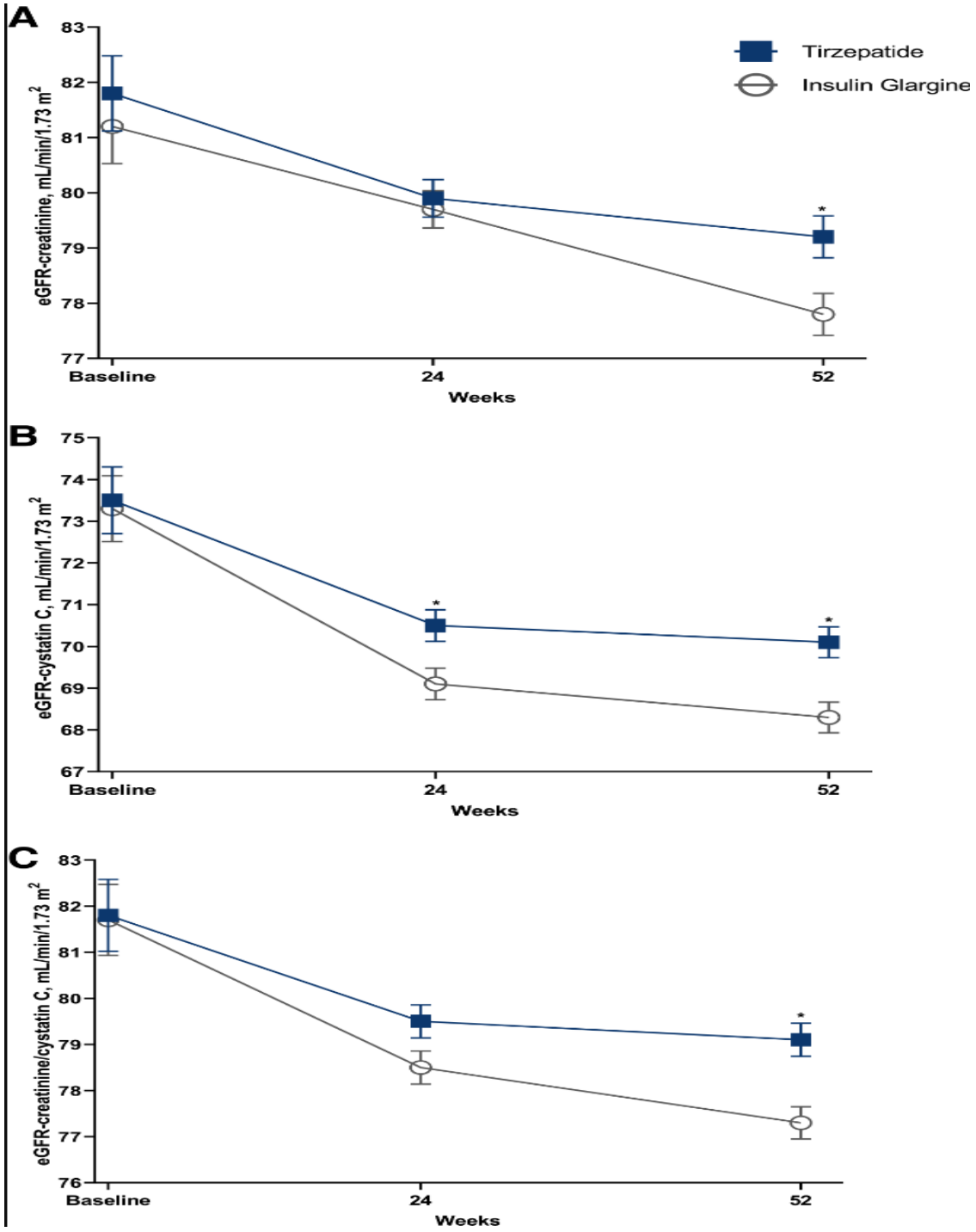
DU 1.5 mg	4,848	4,440	4,293	4,099	3,938	3,797	1,202
Placebo	4,858	4,399	4,202	4,005	3,858	3,650	1,174

The results concluded that patients on Dulaglutide have a 25% reduced hazard of kidney function related outcome, this highlights a potential for delaying or slowing the development of diabetic kidney disease in people with type 2 DM.

Effects of Semaglutide on CKD in Patients with Type 2 Diabetes The FLOW trial



The risk of a primary-outcome event was 24% lower in the Semaglutide group than in the placebo group (331 vs. 410 first events; hazard ratio, 0.76; 95% confidence interval [CI], 0.66 to 0.88; P=0.0003). Results were similar for a composite of the kidney-specific components of the primary outcome (hazard ratio, 0.79; 95% CI, 0.66 to 0.94)

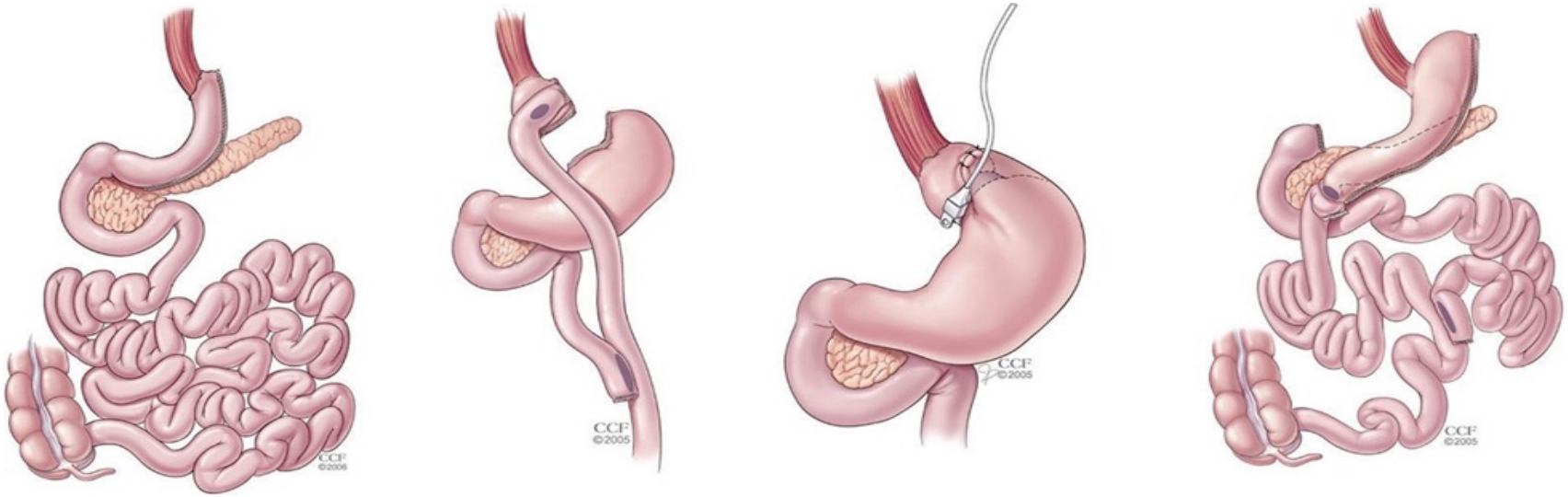


Effects of Tirzepatide Versus Insulin Glargine on Cystatin C–Based Kidney Function: A SURPASS-4 Post Hoc Analysis

In conclusion, the effect of Tirzepatide to slow eGFR decline was confirmed whether eGFR was estimated by creatinine, cystatin C, or both.

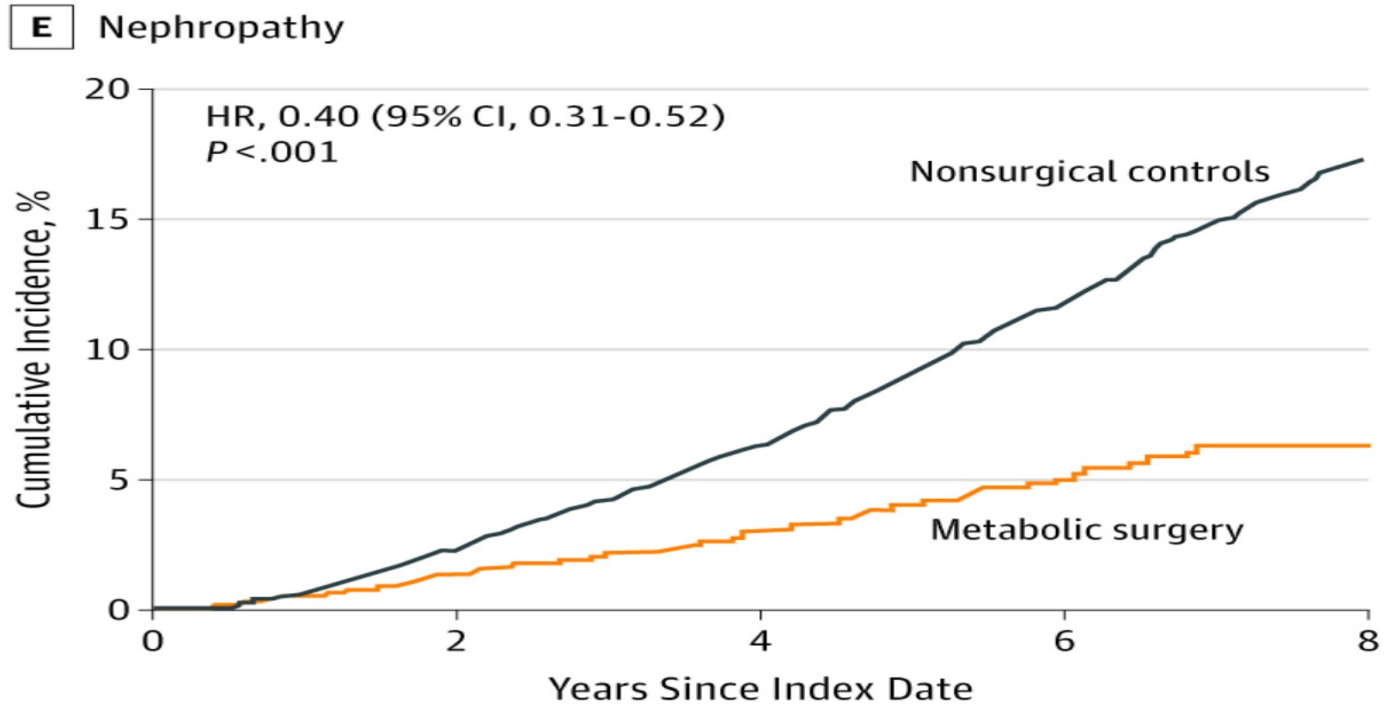
Bariatric Surgery and CKD

Metabolic surgery offers better evidence of reducing risk of ESRD and HD as well as cardiorenal benefits. The remission rates of Albuminuria are also much higher than standard Best Medical Management.



Association of Metabolic Surgery With Major Adverse Cardiovascular Outcomes in Patients With Type 2 Diabetes and Obesity

JAMA. 2019;322(13):1271-1282.

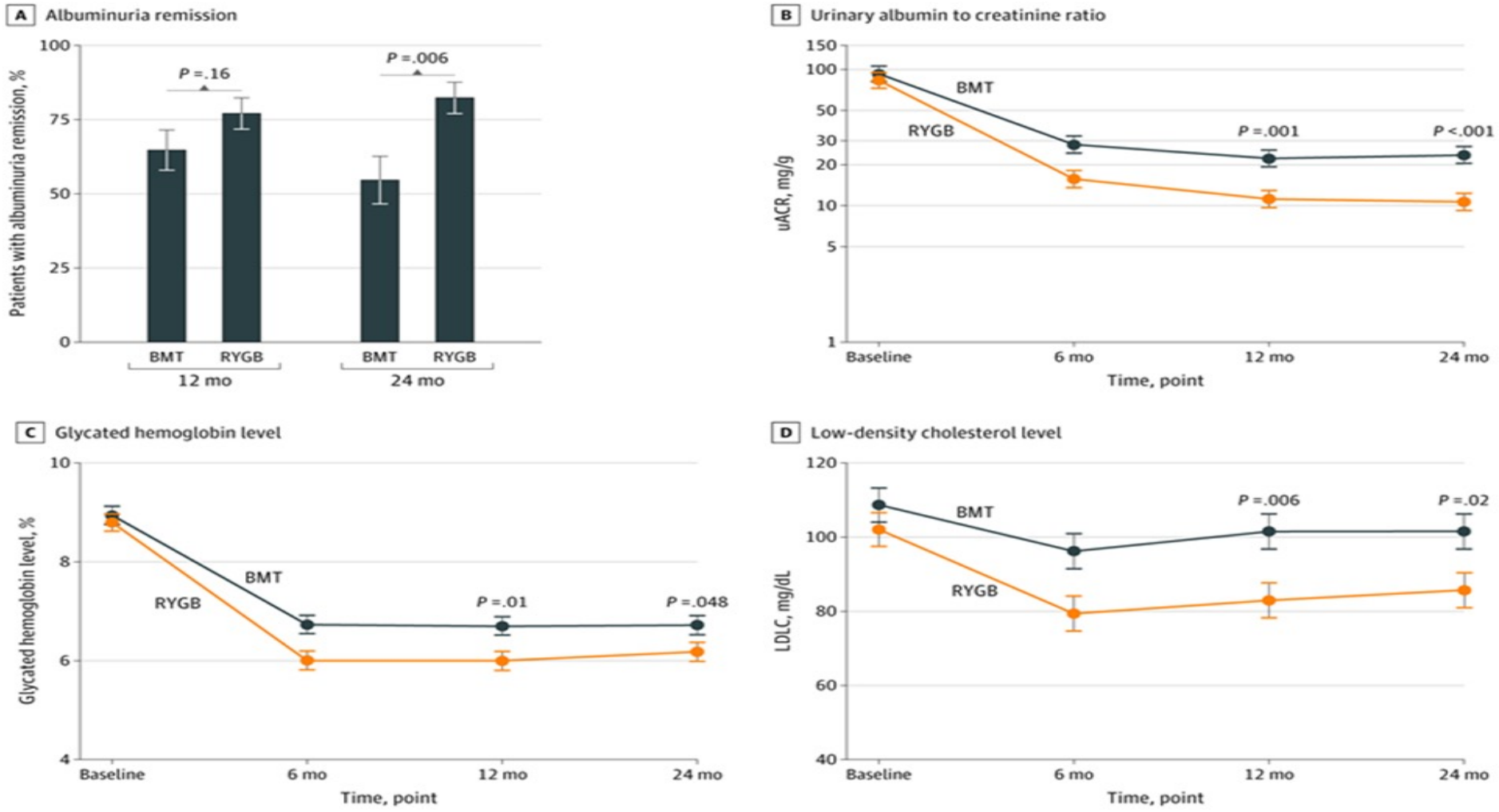


No. at risk					
Nonsurgical controls	9190	7056	4515	2262	893
Metabolic surgery	1937	1216	838	506	293

Among patients with type 2 diabetes and obesity, metabolic surgery, compared with nonsurgical management, was associated with a significantly lower risk of incident MACE. The findings from this observational study must be confirmed in randomized clinical trials.

Effect of Gastric Bypass vs Best Medical Treatment on Early-Stage Chronic Kidney Disease in Patients With Type 2 Diabetes and Obesity A Randomized Clinical Trial

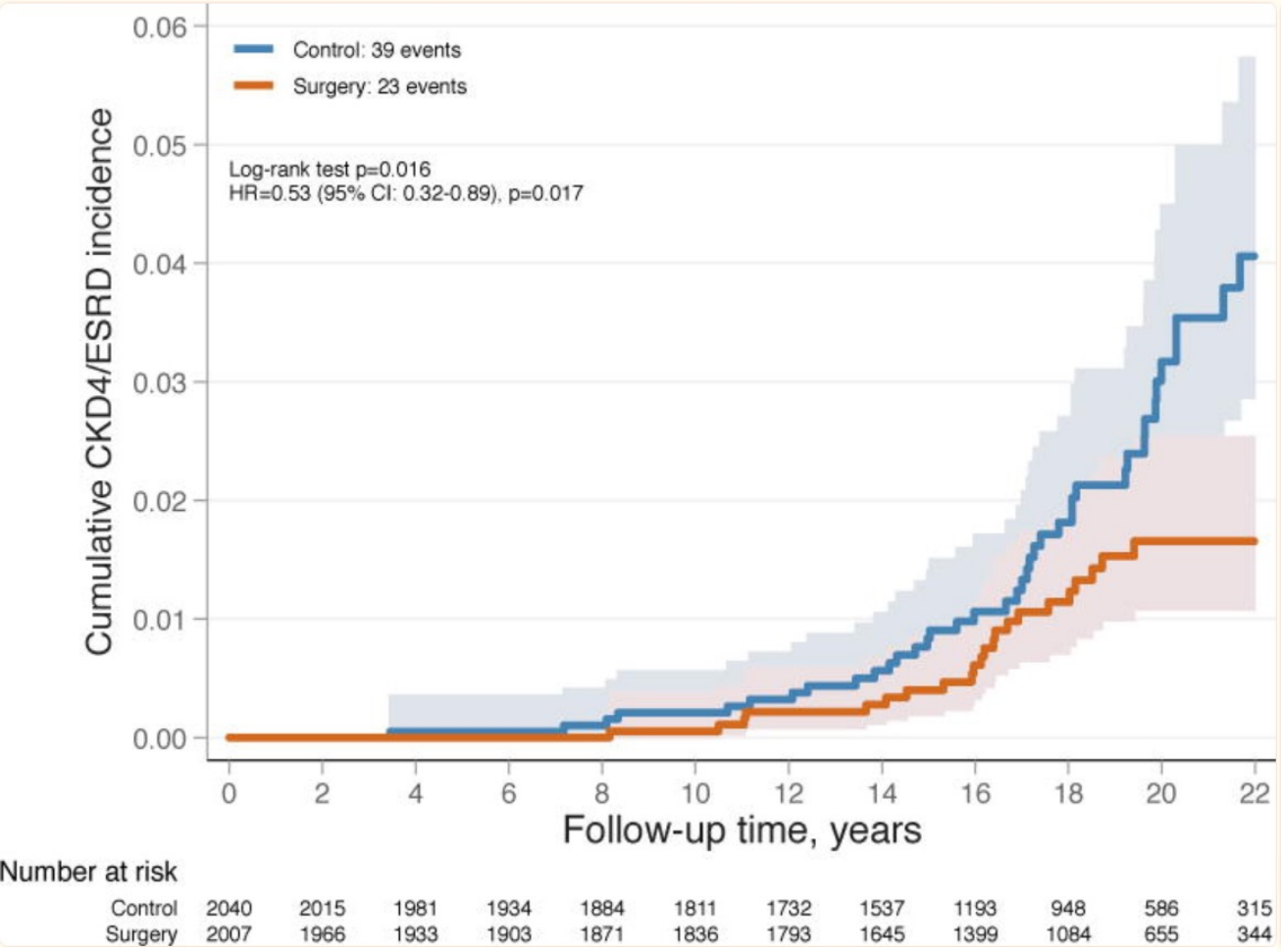
JAMA Surg. 2020;155(8)

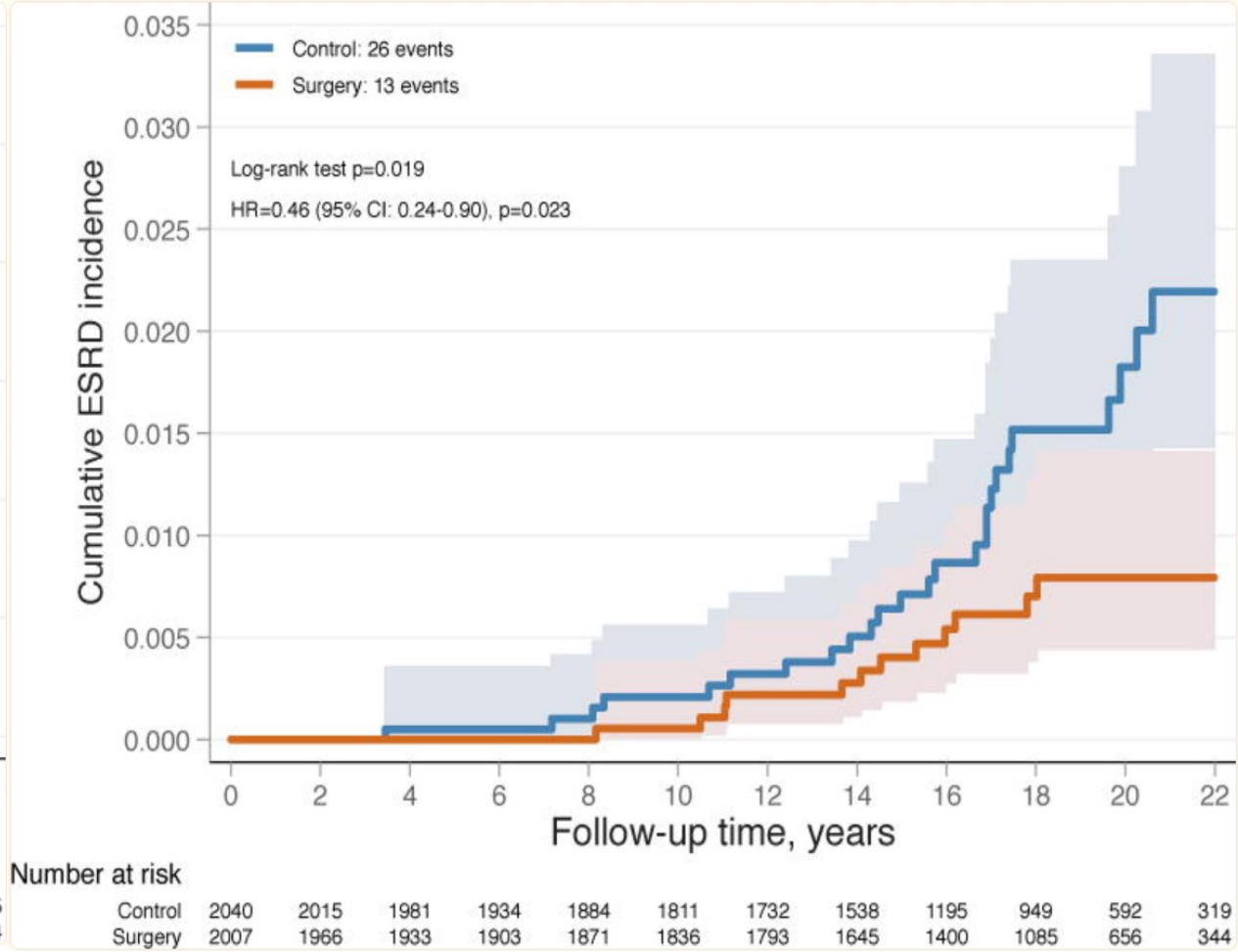


Remission of albuminuria occurred in 55% of patients after best medical treatment and 82% of patients after RYGB (P = .006), resulting in CKD remission rates of 48% after best medical treatment and 82% after RYGB (P = .002). The geometric mean uACRs were 55% lower after RYGB than after best medical treatment. No difference in the rate of serious adverse events was observed.

Incidence of End-Stage Renal Disease Following Bariatric Surgery in the Swedish Obese Subjects Study

The study showed for the first time that bariatric surgery is associated with a long-term protection against ESRD and CKD4/ESRD.

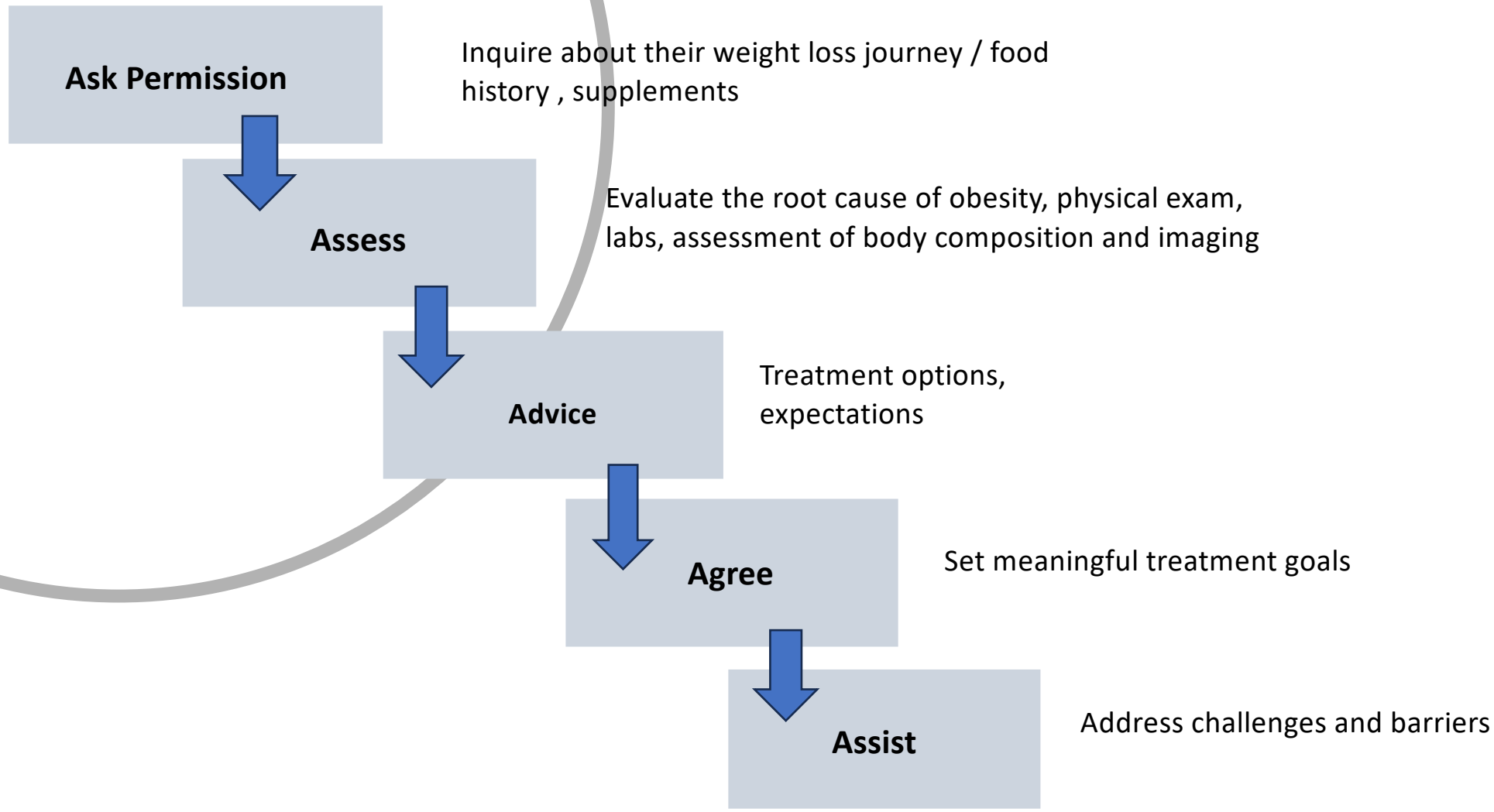




Renoprotective Effects of Metabolic Surgery Versus GLP1 Receptor Agonists on Progression of Kidney Impairment in Patients with Established Kidney Disease Annals of Surgery , June 11, 2024

Among patients with T2DM, obesity, and established CKD, metabolic surgery, compared with GLP-1RA, was significantly associated with a 60% lower risk of progression of kidney impairment and a 44% lower risk of kidney failure or death. Metabolic surgery should be considered as a therapeutic option for patients with CKD and obesity.

Clinical application of obesity management in patients with CKD



Nutritional considerations with anti-obesity medications a review Jaime P. Almandoz and colleagues

Daily nutrition needs for patients on AOMs

Nutritional Assessment

- Nutrition focused History
- 24-hour recall
- Assess nutrient deficiencies

Monitor Treatment Response

- Assess monthly during AOM escalation and 3 months
- Address GI symptoms
- Monitor for mood disorders
- Ensure emotional and social support

Advice on Recommendations

- Fluids 2-3 liters
- Protein ≥ 60 gm a day
- Dietary fiber 21g/day (women)
  30g/day (men)
- Energy 1200-1500 Kcal (women)
  1500-1800 Kcal (men)
- Micronutrient consider daily multivitamin , calcium and vitamin D

Nutritional considerations with anti-obesity medications a review Jaime P. Almandoz and colleagues

Malnutrition in patients on AOMs

Risk factors for malnutrition

- Bariatric surgery
- Advanced age
- Chronic diseases, Chronic kidney disease / heart failure
- Eating disorders
- Unintended weight loss ≥5% and or ≥10%
- Food insecurity
- Substance use disorders
- Eating disorders

Management of AOM associated side effects

- Dietary modifications, smaller nutrient rich meals, avoid high fat foods, spicey carbonated drinks, alcohol
- dose reduction, slower escalation, treatment cessation and or alternate therapy
- May consider medications for symptom control
- Ensure patients meets needs for protein, fiber, fluids and micronutrients
- short term dietary supplementations

Nutritional considerations with anti-obesity medications a review Jaime P. Almandoz and colleagues

Renal Diet Across the Stages Of Kidney Disease

- Moderate Protein
- Monitor for high levels of potassium / phosphorus and calcium but restriction is not required unless high levels are observed

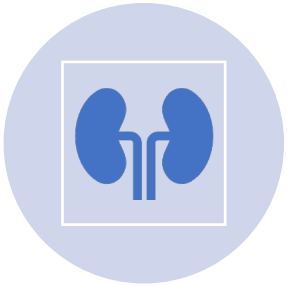
- Low Sodium
- Low/Moderate Protein
- Avoid High Potassium foods
- Avoid Phosphorus additives
- Avoid high calcium foods
- Fluid restriction

- Low Sodium
- High Protein
- Avoid High Potassium
- Avoid High phosphorus
- Avoid High calcium
- Fluid restriction

- Low Sodium
- Moderate Protein
- Monitor for High Potassium, High phosphorus and High Calcium

The 2020 KDOQI Guidelines

Take home points



There is a complex and bidirectional relationship between excess/dysfunctional adiposity and CKD

Obesity treatments (meds and surgery) appear to have benefits in attenuating deterioration in kidney function and improving outcomes, including mortality.

Nutrition interventions for people with CKD and obesity need to be tailored depending on severity of CKD and other health conditions

Treat obesity in people with CKD to improve health outcomes and access to renal replacement therapies/transplant if needed

- Zoom – please enter your questions in chat box OR unmute to ask our speakers.
- See dallasobesity.com to download ESRD meal plans and recipes from today's session.
- Please complete your post-event surveys. We thank you for your attendance and feedback to improve our educational events!

Post event survey QR Code

Thank you for attending CKD and Obesity!

Check Facebook and DOS newsletters for upcoming events!