

History in Nephrology

True Legends will be immortal through their deeds !

Cardiovascular – Kidney – Metabolic (CKM) Syndrome

Dr. Chiadi E. Ndumele

Dr. Janani Rangaswami

Living Legends



ECNG
Extracorporeal
Nephrology Group

*An Academic Forum for Nephrologists,
DM Trainees, Physicians, and
Healthcare Professionals*

PIONEERS OF THE CKM FRAMEWORK

CARDIOVASCULAR–KIDNEY–METABOLIC HEALTH

A New Paradigm for Integrated, Patient-Centered Care



Dr. Chiadi E. Ndumele,
MD, PhD, MHS

*Key Leader and Chair of the CKM
Scientific Statement Writing Committee*

- Director, Obesity and Cardiometabolic Research
Johns Hopkins University School of Medicine
- Co-Chair, AHA Cardiovascular–Kidney–
Metabolic (CKM) Health Initiative
- Led the development of the CKM framework
and Stages 0–4 classification

“CKM syndrome provides a common language and a
roadmap for earlier action, integrated care, and better
cardio–renal–metabolic outcomes.”



Dr. Janani Rangaswami,
MD, FAHA

*Vice Chair of the CKM Scientific Statement
and Co-Lead Architect*

- Professor of Medicine
George Washington University
School of Medicine & Health Sciences
- Nephrologist and Clinical Researcher
in Cardio–Kidney–Metabolic Health
- Co-Chair, AHA Cardiovascular–Kidney–
Metabolic (CKM) Health Initiative
- Contributed to defining CKM syndrome
and advancing integrated care strategies

“CKM shifts our focus from siloed diseases to the patient
and the interconnected systems we must protect together.”

THE JOURNEY OF THE CKM FRAMEWORK (2023 → 2026)



Their leadership has created a unifying framework that connects the heart, kidneys and metabolism—
transforming how we prevent disease and care for patients.



The modern Cardiovascular – Kidney – Metabolic (CKM) syndrome concept was formally defined by the American Heart Association (AHA) in 2023

A key leader behind the framework was Dr. Chiadi E. Ndumele, who chaired the AHA scientific statement writing committee that proposed the CKM stages 0-4 framework



CKM SYNDROME

A CONTINUUM OF **CARDIOVASCULAR-KIDNEY-METABOLIC** HEALTH

— Integrated care across the spectrum improves outcomes —

CKM RISK DRIVERS

- Obesity / Overweight
- Hypertension
- Diabetes / Prediabetes
- Dyslipidemia
- Smoking
- Physical Inactivity

CKM STAGE	STAGE 0	STAGE 1	STAGE 2	STAGE 3	STAGE 4
	No Risk Factors Optimal Cardiovascular-Kidney-Metabolic Health	Excess or Dysfunctional Adiposity Overweight / Obesity Central adiposity	Metabolic Risk Factors Hypertension, Prediabetes / Diabetes, Dyslipidemia	Subclinical CVD or CKD Subclinical ASCVD, Albuminuria or $\downarrow$ eGFR	Established CVD or CKD Clinical CVD or Advanced CKD
WHAT IT MEANS	No risk factors and optimal health. Prevent risk factors and maintain healthy lifestyle.	Excess body fat beginning to increase risk for future CKM disease.	Metabolic risk factors present, high risk for developing CKM disease.	Early target organ injury (heart, kidney, vessels) without clinical events.	Clinical CVD events (heart failure, MI, stroke, PAD) and/or advanced CKD.
CLINICAL CHARACTERISTICS	- Normal BP - Normal glucose - Normal lipids - Normal kidney function - No CVD	- BMI ≥ 25 kg/m² or central obesity $\uparrow$ Waist circumference - NAFLD may be present - Normal BP, glucose, kidney function	- Hypertension - Prediabetes / Diabetes - Dyslipidemia - Metabolic syndrome - Normal or mildly reduced kidney function - No clinical CVD	- Albuminuria (ACR ≥ 30 mg/g) or $\downarrow$ eGFR $\uparrow$ CAC score / carotid plaque / LVH - Diastolic dysfunction - No prior CVD event	- Prior MI, Stroke, Heart Failure, PAD - eGFR < 30 mL/min/1.73m² or dialysis - Heavy albuminuria - Recurrent CVD events
TREATMENT / MANAGEMENT GOALS	MAINTAIN HEALTH - Healthy diet (Mediterranean style) - Regular physical activity (≥ 150 min/week) - Maintain healthy weight - Adequate sleep & stress control - Avoid tobacco - Periodic screening	PREVENT PROGRESSION - Weight reduction (5–10%) - Calorie control & healthy diet - Increase physical activity - Behavioral therapy - Sleep & stress management - Consider anti-obesity medications if appropriate	RISK FACTOR CONTROL - BP control ($< 130/80$ mmHg) - Lipids control (statin or combination) - Glucose control (HbA1c $< 7.0\%$) - Weight loss - Smoking cessation - SGLT2 inhibitor (if diabetes or high risk)	EARLY ORGAN PROTECTION - ACEi / ARB for albuminuria or hypertension - Mineralocorticoid receptor antagonists (CKD, HF or DM) - GLP-1 RA in T2DM / obesity with CVD risk - Intensify lipid lowering (statin + PCSK9i) - Optimize BP, glucose & lifestyle - Regular monitoring (Kidney, Heart, Metabolic)	REDUCE EVENTS & SLOW PROGRESSION - Evidence-based therapies: ACEi/ARB, BB, MRA, SGLT2i, GLP-1 RA as indicated - Antithrombotic / Anticoagulation (if indicated) - Mechanism lipid lowering - Manage HF, CKD complications (Anemia, MBD, Acidosis) - Smoking cessation, alcohol & nutrition - Multidisciplinary care (Nephrology, Cardiology, Endocrinology, Nutrition)



EARLIER RECOGNITION • RISK FACTOR CONTROL • ORGAN PROTECTION • TEAM-BASED CARE

The earlier we act, the better the cardiovascular, kidney and metabolic outcomes.



KEY PRINCIPLES OF CKM CARE



Screen Early



Assess Comprehensively



Treat Holistically



Monitor Regularly



Engage Patients

WHY CKM MATTERS?

CKM syndrome is common, progressive and preventable. Integrated care reduces heart disease, kidney failure and improves quality of life.





The Evolution of Vaccination for Herpes Zoster (Shingles)

From scientific discoveries to powerful protection



1954
VZV isolated



1965
Link between VZV reactivation and shingles proposed



Early 2000s
First shingles vaccine (Zostavax) developed



2006
Zostavax approved



2010s
Better science led to a more effective non-live vaccine



2017
Shingrix approved >90% effective and longer lasting protection



Today: Shingrix is recommended for adults 50+ and for immunocompromised adults 19+.



Decades of discovery. Millions protected.

Vaccination is the best protection against shingles.

