

This *AJMC Stakeholder Summit* provided a multistakeholder perspective on the intersection of cardiometabolic health, including the relationship between diabetes, obesity, chronic kidney disease, and cardiovascular disease, all under the umbrella of cardiovascular-renal-metabolic syndrome.

December 2024

MODERATOR

TY J. GLUCKMAN, MD, FACC, FAHA

Medical Director
Center for Cardiovascular Analytics,
Research, and Data Science
Providence St. Joseph Health
Tigard, Oregon



PANELISTS

KEN COHEN, MD

Executive Director
of Translational Research
Optum Care
Golden, Colorado



JENNIFER B. GREEN, MD

Professor of Medicine
Duke University School of Medicine
Durham, North Carolina



MANISHA JHAMB, MD, MPH

Associate Professor of Medicine
Associate Division Chief
Director, Center for Population
Health Management, Renal-
Electrolyte Division
University of Pittsburgh
Pittsburgh, Pennsylvania



IAN NEELAND, MD

Director, Cardiovascular Prevention
Codirector, Center for Integrated
and Novel Approaches in
Vascular-Metabolic Disease
University Hospitals Harrington
Heart & Vascular Institute
Cleveland, Ohio



SCAN TO SEE THE FULL VIDEO SERIES, OR VISIT
[HTTPS://AJMC.COM/SS-CARDIOMETABOLIC-HEALTH](https://ajmc.com/ss-cardiometabolic-health)



Cardiometabolic Health and Systems Approach to Risk Factor Modification

This program was made possible by an independent grant from Boehringer Ingelheim Pharmaceuticals, Inc. and Eli Lilly and Company who provided financial support for the program.

The recognition of the interconnections among metabolic risk factors such as obesity and diabetes, chronic kidney disease (CKD), and cardiovascular disease (CVD) has led to the concept of cardiovascular-renal-metabolic (CRM) syndrome, encompassing multiple related conditions. In a recent AJMC Stakeholder Summit moderated by Ty J. Gluckman, MD, FACC, FAHA, medical director of the Center for Cardiovascular Analytics, Research, and Data Science at Providence St. Joseph Health in Tigard, Oregon, a panel of experts highlighted the need for coordinated care and early intervention for managing CRM conditions. The panel shared examples of coordinated care initiatives implemented in their institutions and recommended strategies to overcome barriers to scalable, cost-effective CRM care, with the ultimate goal of improving patient outcomes and reducing overall cost.

PREVALENCE AND INTERCONNECTIVITY OF CRM CONDITIONS IN THE UNITED STATES

An increasing understanding of how metabolic risk factors such as obesity and diabetes interplay with CKD and CVD has led to the establishment of CRM syndrome, also referred to as cardiovascular-kidney-metabolic (CKM) syndrome.^{1,2} CRM syndrome is a health disorder characterized by interconnected conditions such as obesity, type 2 diabetes (T2D), CKD, and CVD, including heart failure, atrial fibrillation, coronary artery disease, stroke, and peripheral artery disease.^{3,4}

A substantial body of epidemiological evidence from observational and clinical studies highlights the significant overlap among metabolic, cardiovascular, and renal diseases, where the onset of 1 condition increases the risk and worsens outcomes for the others.⁴ This relationship is illustrated by an analysis of National Health and Nutrition Examination Survey (NHANES) data from 2011 to 2020,

EDITORIAL

Vice President, Content
Laura Joszt, MA

Executive Editor
Mary K. Caffrey

Associate Editorial Director
Christina Mattina

Senior Editor
Maggie L. Shaw

Associate Editor
Julia Bonavitacola

COPY & PRODUCTION

Vice President, Copy
Jennifer Potash

Copy Chief
Paul Silverman

Copy Supervisors
Angie DeRosa
Nicole Canfora Lupo

Substantive Editor
Georgina Carson

Senior Copy Editors
Cheney Baltz
Marie-Louise Best
Kelly King

Copy Editor
Kim Nir

Creative Director, Publishing
Melissa Feinen

Art Director
Julianne Costello

SALES & MARKETING

Director, Sales
Ben Baruch

Senior National Accounts Managers
Robert Foti
Kevin George
Shaye Zyskowski

National Accounts Managers
Michael Bachalis, MHA, MS
James Roskowsinski

National Accounts Associates
Bryn Fitchett
Whit Walter

Senior Vice President, Strategy
Jeff Prescott, PharmD

OPERATIONS & FINANCE

Circulation Director
Jon Severn
circulation@mjhassoc.com

Vice President, Finance
Leah Babitz, CPA

Controller
Katherine Wyckoff

CORPORATE

President & CEO
Mike Hennessy Jr

Chief Financial Officer
Neil Glasser, CPA/CFE

Chief Operating Officer
Beth Buehler

Chief Data Officer
Terric Townsend

Executive Vice President, Global Medical Affairs & Corporate Development
Joe Petroziello

Senior Vice President, Corporate Development
Gil Hernandez

Senior Vice President, Content
Silas Inman

Senior Vice President, Human Resources & Administration
Shari Lundenberg

Senior Vice President, Mergers & Acquisitions, Strategic Innovation
Phil Talamo

Executive Creative Director
Jeff Brown

FOUNDER

Mike Hennessy Sr | 1960-2021

AJMC
THE AMERICAN JOURNAL OF MANAGED CARE

© 2024 Clinical Care Targeted Communications Group, LLC

Opinions expressed by authors, contributors, and advertisers are their own and not necessarily those of Clinical Care Targeted Communications Group, LLC, the editorial staff, or any member of the editorial advisory board. Clinical Care Targeted Communications Group, LLC, is not responsible for accuracy of dosages given in articles printed herein. The appearance of advertisements in this publication is not a warranty, endorsement, or approval of the products or services advertised or of their effectiveness, quality, or safety. Clinical Care Targeted Communications Group, LLC, disclaims responsibility for any injury to persons or property resulting from any ideas or products referred to in the articles or advertisements.



AN **MH** life sciences[®] BRAND

which stratified individuals by CKM syndrome stages: stage 0 (no CKM risk factors such as hypertension), stage 1 (excess or dysfunctional adiposity), stage 2 (additional metabolic risk factors or moderate- to high-risk CKD), stage 3 (very high-risk CKD or high predicted 10-year CVD risk), and stage 4 (established CVD, such as coronary artery disease).⁵ The study data showed that nearly 90% of adults in the US met the criteria for CKM syndrome (stage 1 or higher), and 15% were classified as being in advanced stages, with no improvements in these rates over the study period.⁵

“One in 7 patients [is] at risk for either CKD or diabetes.... CVD is still the No. 1 killer for patients with T2D and CKD. It’s a big issue and something we need to tackle.”

Ian Neeland, MD
University Hospitals Harrington Heart & Vascular Institute
Cleveland, Ohio

The pathophysiological consequences of CRM syndrome arise from complex interactions among metabolic risk factors, CKD, and the cardiovascular system, often initiated with excess or dysfunctional adipose tissue.¹ Visceral fat secretes proinflammatory and pro-oxidative mediators, leading to arterial, cardiac, and kidney damage, while impairing insulin sensitivity and causing glucose intolerance.¹ Once in circulation, these mediators worsen conditions such as atherosclerosis, myocardial injury, glomerulosclerosis, kidney inflammation, and fibrosis, while also contributing to metabolic risk factors.¹ Ectopic fat deposits contribute to localized damage, promoting arrhythmias, myocardial dysfunction, and coronary atherosclerosis in heart tissue, as well as hypertension and blood pressure variability around the kidneys.¹ Overall, CRM syndrome involves complex, multidirectional interactions that result in higher morbidity and

mortality, exceeding the combined effects of its individual components.¹ As a key CRM driver, central obesity leads to conditions such as hypertension, CKD, heart failure, and diabetes, which exacerbate morbidity, hospital admissions, health care costs, and mortality.⁶ With 41.9% of adults from the US being obese, population-based strategies such as lifestyle interventions and pharmacotherapy are crucial to reduce the disease burden.^{6,7}

Screening for CRM risk factors, including biological factors and social determinants of health (SDOH), is recommended to improve prevention and management in both youth and adults.³ Biological screening encompasses metabolic risks, kidney function, and subclinical cardiovascular disease, whereas SDOH screening identifies barriers to health access and self-care.³ Given the disproportionate impact of adverse SDOH, integrating these into risk prediction models and care is crucial for improving outcomes, promoting equity, and halting disease progression.³

Several therapies now offer significant benefits beyond glycemic control for metabolic, cardiovascular, and renal health.⁴ Sodium-glucose cotransporter-2 inhibitors (SGLT2i) prevent kidney failure, reduce heart failure hospitalizations, and lower cardiovascular mortality, with these benefits extending to individuals without diabetes and persisting even as renal function declines.⁴ Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) improve insulin resistance, promote weight loss, and reduce cardiovascular mortality.⁴ Finerenone provides cardiorenal protection in T2D and CKD by targeting pro-inflammatory pathways, whereas tirzepatide, a dual receptor agonist, enhances glycemic and weight control.⁴

STAKEHOLDER INSIGHTS

The Impact of CRM Diseases in the US: Burden, Prevalence, and Obesity

Ian Neeland, MD, director of cardiovascular prevention and codirector of the Center for Integrated and Novel Approaches in Vascular-Metabolic Disease at the University Hospitals Harrington Heart & Vascular Institute, discussed the burden of CRM conditions from both a morbidity and mortality perspective as well as from an economic standpoint. He noted

that 38 million Americans have diabetes, with 40% of them also having CKD, whereas 37 million people overall are affected by CKD. Neeland highlighted that “1 in 7 patients [is] at risk for either CKD or diabetes.... CVD is still the No. 1 killer for patients with T2D and CKD. It’s a big issue and something we need to tackle.” Neeland quantified the economic burden by explaining that “the costs of these conditions are extravagant and huge. In fact, 25% of Medicare spending goes to CKD, even though it’s only about 14% of the population. Similarly, there’s a \$400 billion industry in terms of paying for diabetes, [and] \$250 billion to pay for CVD.”

Manisha Jhamb, MD, MPH, associate professor of medicine, associate division chief, and director of the Center for Population Health Management, Renal-Electrolyte Division at the University of Pittsburgh, discussed the changing epidemiology of CKD in the United States. She noted that approximately 14% of the adults in the US have CKD, equating to 1 in 7 adults. Projections indicate that by 2030, this figure will rise to 1 in 6 adults. Jhamb explained, “Part of the reason for the rising epidemic of CKD is the increase in the risk factors, [with] diabetes and hypertension being the most common.”

Jennifer B. Green, MD, professor of medicine at Duke University School of Medicine, emphasized the significant role of obesity in CRM, stating, “The relationship between excess weight and T2D is very clear in the United States. Essentially everyone with T2D has either overweight or obesity, and it’s primarily obesity. And although not every person with obesity develops diabetes, it is certainly a major driver of developing the condition, and it also contributes to the progression of diabetes and the development and progression of diabetes-related complications.”

Gluckman responded that in his practice, “Multimorbidity tends to be more the norm rather than the exception.” Neeland added that CRM is “a complex confluence of disease states,” primarily driven by excess body fat, specifically visceral and ectopic fat, leading to many downstream consequences. Neeland emphasized that addressing obesity is crucial in managing these conditions. However, “once these conditions develop, it becomes very difficult and complex to take care of patients and to prevent secondary events.”

Metabolic-associated fatty liver disease is also part of the CRM spectrum, as highlighted by **Ken Cohen, MD**, executive director of translational research at Optum Health. He referenced a study from the NHANES population whose data showed that about 75% of patients with T2D had fatty liver disease, with 15% showing significant fibrosis and 8% progressing to cirrhosis. Cohen noted the cost to manage these complications could reach \$75 billion over the next decade, potentially making it the leading cause of liver transplants. Individuals with fatty liver disease have a 50% higher cardiovascular risk, which rises to 250% for those with fibrosis.

Strategies for Prevention and Screening of CRM Conditions

The complex interplay of conditions in CRM makes it essential to break down treatment silos and emphasize early screening and prevention, not only in adults but also in adolescent and pediatric populations, as Gluckman noted. Jhamb emphasized that because early-stage patients are primarily treated by primary care providers (PCPs), cohesive recom-

mendations and coordinated care are crucial to prevent patients from getting lost between specialists. “We need to work together as a team so that we are giving cohesive and holistic recommendations,” she said. Neeland stressed the importance of using artificial intelligence (AI)-driven strategies to screen electronic medical records (EMRs) for identifying patients eligible for advanced therapies, while systemwide protocols and leveraging electronic health records (EHRs) were recommended to reduce care fragmentation. Gluckman agreed, adding that underdiagnosis remains a significant issue, noting, “We’re all busy, and this is challenging, but sometimes the information is right in front of us, [like] patients with routine chemistry panels showing [CKD], yet we haven’t officially labeled them as such, and therefore haven’t considered appropriate therapies.” Green added that screening for complication risks should improve, noting that urine albumin-creatinine ratio tests are underutilized by endocrinologists.

Cohen explained that to implement an effective screening and prevention program, “the answer is to build a sophisticated population health management infrastructure. Now, that costs money, and the problem is that unless you’re in a 2-sided risk model, you don’t have the funding for that. Fee-for-service does not provide that model. It’s expensive to build, it’s expensive to maintain. The funding for that model involves getting upstream of disease processes...and those savings can then fund your population health infrastructure.” He provided several examples of programs, including a pharmacy-led program using automation to identify comorbidities in patients with diabetes and recommend personalized therapies, such as SGLT2i or GLP-1 RAs over metformin. Cohen also noted, “CMS...wants all patients in fully accountable models by the end of 2030. Today, only 12% of patients are being cared for in 2-sided risk models—fully accountable models. And those are almost all at the PCP level. Less than 6% of specialists are being paid in a true value-based care model.”

The relationship between excess weight and T2D is very clear in the United States.... And although not every person with obesity develops diabetes, it is certainly a major driver of developing the condition.

Jennifer B. Green, MD
Duke University School of Medicine
Durham, North Carolina

Management of Obesity in CRM Conditions

Gluckman emphasized the need to shift from managing end-stage disease to addressing obesity as a core issue, integrating weight management into routine care. Neeland explained, “The challenge has been that historically, we have not been set up to address and manage obesity

as a medical system...it's only recently that [we] have new therapies for obesity." He noted, "CMS does still not identify obesity as a disease... and that creates downstream consequences for therapies, coverage, and our ability to manage this as a complex chronic disease." Despite progress, including the American Heart Association's (AHA) recognition of obesity in its CKM staging system, Neeland highlighted ongoing gaps in education and coverage. He also shared success using multidisciplinary care for patients with multiple comorbidities, though he acknowledged the "obesity paradox," where weight loss may not benefit patients with advanced disease such as heart failure.

GUIDELINE RECOMMENDATIONS FROM MULTIPLE ORGANIZATIONS IN POPULATIONS WITH CRM CONDITIONS

Despite a growing recognition of the interconnectivity among cardiovascular, renal, and metabolic diseases, major gaps and conflicts persist in current clinical guidelines for the screening, prevention, and management of CRM syndrome.¹ To address this discordance, an AHA science advisory group, representing broad transdisciplinary expertise, conducted a comprehensive review of guidelines related to CRM conditions, including the KDIGO Clinical Practice Guideline for Diabetes Management in Chronic Kidney Disease, the Standards of Medical Care in Diabetes, and the American College of Cardiology/AHA Guidelines, among others.¹ This analysis led to a summary of evidence, detailing recommended approaches and treatments for each stage of CRM syndrome, including therapies such as SGLT2i, GLP-1 RAs, statins, and bariatric surgery.¹

CMS does still not identify obesity as a disease...and that creates downstream consequences for therapies, coverage, and our ability to manage this as a complex chronic disease.

Ty J. Gluckman, MD, FACC, FAHA
 Providence St. Joseph Health
 Tigard, Oregon

Early detection and management of CRM risk factors are critical to preventing disease progression. The CRM staging framework facilitates early identification of at-risk individuals, allowing for timely intervention to prevent or delay the onset of cardiovascular disease.¹ Guidelines recommend screening for modifiable risk factors such as hypertension, diabetes, and dyslipidemia, and addressing obesity early in life due to its long-term risks.¹ Collectively assessing these interrelated risk factors enables a more holistic prevention strategy.¹

Metabolic and bariatric surgery is strongly recommended for individuals with a body mass index (BMI) of 35 or higher, regardless of the presence or severity of comorbidities, and should also be considered

for individuals with metabolic disease and a BMI of 30 to 34.9.⁸ Long-term data demonstrate that metabolic and bariatric surgery is both safe and effective in treating clinically severe obesity, leading to substantial improvements or remission of comorbid conditions such as T2D, hypertension, and CVD.⁸

STAKEHOLDER INSIGHTS

Management of Comorbidities in CRM Conditions

In addressing complex CRM conditions, Green emphasized the importance of early diagnosis, data entry into the EHR, and effective management of comorbidities. She stressed that "risk management is not some sort of hot potato that you can toss around from one provider to the next," noting that traditionally, care has been fragmented, with different providers managing separate conditions. Green argued that this is an outdated approach, underscoring the need for integrated care, where providers address as many aspects of risk as possible or ensure seamless communication to avoid gaps in care. Cohen added that implementing a successful care model requires proper infrastructure funding, a consistent care algorithm across the continuum, and empowering nonphysician clinicians to take necessary actions, easing the burden on physicians while ensuring patient progress.

Implementation of New Evidence and Guidelines in Practice

The harmonization of guidelines across diabetes, kidney, and cardiovascular care has made significant progress in aligning the management of high-risk patients, Green explained. Despite this, implementing these therapies remains slow due to barriers such as patient access and clinical inertia. Green emphasized, "We can write all the guidelines that we like, but if they don't actually change therapy, it's for academic interest only," underscoring the gap between evidence-based guidelines and actual clinical practice. Jhamb highlighted progress in kidney care, particularly with the widespread adoption of the updated estimated glomerular filtration rate (eGFR) equation, which removes race as a factor. She added, "I would love to see more cohesive messaging in partnership with primary care, internal medicine, and family medicine."

Neeland discussed the challenges of implementing new evidence in clinical practice, noting, "One of the issues is that the generation of new evidence outpaces the guidelines." Neeland emphasized the importance of educating providers and health systems about new evidence without waiting for formal guideline updates, acknowledging that it takes time for new therapies to gain acceptance in clinical practice. However, he praised recent efforts by professional societies to harmonize guidelines, noting, "as we see the therapies...and evidence cross specialty, the guidelines become cross specialty, which is definitely a positive move."

Cohen highlighted the misalignment between clinical and cost-effectiveness in guidelines, citing the cost-ineffectiveness of GLP-1 RAs for cardiovascular prevention, where preventing a single event can exceed \$3 million. In contrast, he called bariatric surgery "the bargain in the health care system" due to its high effectiveness in reducing morbidity, mortality, and costs. He also pointed out adherence

challenges, with less than 25% of eligible diabetes patients receiving SGLT2i, attributing this gap to the “4 C’s”: cost, complexity, asymptomatic comorbidities, and clinical inertia. Cohen proposed solutions such as government negotiation of drug prices and integrating decision support into EMRs. Neeland added a fifth “C,” cooperation, emphasizing that SDOH affect adherence, and suggested remote monitoring, incentives, and education to improve engagement.

Jhamb discussed the significant implementation gap, noting the 17-year delay from evidence to clinical practice. Despite groundbreaking evidence on therapies such as SGLT2i, which can delay end-stage kidney disease by 15 years, barriers persist at multiple levels. Jhamb emphasized that “9 of 10 patients with kidney disease don’t know they have [CKD],” highlighting the silent nature of the disease and the failure in screening. She also noted that “almost half of our patients with diabetes don’t have a urine albumin-creatinine ratio check,” a key diagnostic test, with even lower rates for hypertensive patients without diabetes. Jhamb stressed the need for risk stratification, multidisciplinary support teams, and clinical decision tools to “make it easy for clinicians to first take ownership...we want to make them feel that they can confidently prescribe it.”

Implementing guideline-based care often faces resistance, as highlighted by Green’s experience with American Diabetes Association guidelines, where many endocrinologists were reluctant to adopt the new recommendations. She emphasized, “It is very important in each care setting that there be at least 1 or 2 champions that are fully committed to the concept of multidisciplinary, multiaspect, guideline-based care for these high-risk patients.” Green also stressed the need for simplification, noting that current guidelines are too complex, and streamlined versions would make it easier for clinicians to apply them in practice: “I could probably get the same message across with about 10 words as opposed to 1000...simplification should be paramount.” Additionally, she pointed out gaps in early intervention, such as the underutilization of metabolic surgery, and called for the integration of data regarding implementation into the guidelines to demonstrate their effectiveness.

CARE COORDINATION, PATIENT IDENTIFICATION, AND STRATEGIES FOR EARLY INTERVENTIONS FOR HIGH-RISK PATIENTS WITH CRM CONDITIONS

Coordinated care models show that patients with dedicated support for provider transitions and health care navigation achieve better outcomes.⁹ A survey conducted in the US highlighted patient misunderstandings about the interconnection of their CRM conditions, emphasizing the proactive role of primary care providers in bridging communication gaps and empowering patients.⁹ To reduce therapeutic inertia—where treatment is not adjusted despite unmet goals—regular monitoring and shared decision-making between PCPs and specialists are essential.⁹ As PCPs often diagnose CRM diseases first, they are well suited to coordinate multidisciplinary care, manage complex therapies, and reduce fragmented care.⁹ Several coordinated care initiatives employing these strategies have successfully improved patient outcomes and evidence-based therapy adoption in CRM care.¹⁰⁻¹³

The CINEMA program at University Hospitals Cleveland Medical Center implemented a patient-centered, team-based approach for managing patients with T2D at high risk for cardiovascular events.¹⁰ The program aimed to increase evidence-based therapies and better control cardiovascular risk factors.¹⁰ Among 227 patients who completed follow-up over 2 years, SGLT2i use tripled from 21% to 57%, and GLP-1 RA use rose from 18% to 65% ($P < .001$ for both).¹¹ The intervention also reduced 10-year predicted atherosclerotic CVD risk by approximately 2.4% ($P < .001$), improving risk factors such as body weight, BMI, blood pressure, hemoglobin A_{1c}, and cholesterol.¹¹ Despite their success, CINEMA and similar programs face scaling challenges related to infrastructure, system cohesion, and funding.¹¹ Broader success will require robust care coordination, supported by outpatient networks, integrated EHRs, and value-based care models.¹¹

CMS...wants all patients in fully accountable models by the end of 2030. Today, only 12% of patients are being cared for in 2-sided risk models—full accountable models. And those are almost all at the PCP level.

Ken Cohen, MD
Optum Care
Golden, Colorado

To evaluate the effectiveness of EHR-based population health management as a scalable, cost-effective method for standardizing CKD management and improving resource allocation, the Kidney CHAMP trial was conducted.¹² This cluster-randomized clinical trial involved 101 primary care practices from May 2019 to July 2022, enrolling patients with an eGFR level below 60 mL/min/1.73m² and a high risk of CKD progression who had not consulted a nephrologist within 12 months.¹² The intervention group received nephrology e-consultations, pharmacist-led medication management, and patient education, whereas the control group received standard care.¹² Among 1596 patients, there was no significant difference in CKD progression between the intervention group and the control group (HR, 0.96; 95% CI, 0.67-1.38; $P = .82$).¹² However, exposure to angiotensin-converting enzyme inhibitor/angiotensin receptor blocker (ACEi/ARB) was higher in the intervention group (rate ratio, 1.21; 95% CI, 1.02-1.43).¹² The EHR-based population health management strategy addressed many barriers to implementing evidence-based CKD care; it did not significantly reduce CKD progression, likely due to late adoption of newer therapies, changes in screening, and COVID-19 disruptions.¹²

Data from a similar study, COORDINATE-Diabetes, demonstrated positive outcomes, likely due in part to its setting in specialized cardiology clinics with active participation from diabetes care clinicians, contrasting with the primary care focus of Kidney CHAMP.^{12,13} This

cluster-randomized trial, with 459 participants in the intervention group and 590 in the usual care group, aimed to increase prescriptions of high-intensity statins, ACEIs/ARBs, and SGLT2i/GLP-1 RAs for adults with T2D and atherosclerotic CVD.¹³ The intervention addressed local barriers, developed care pathways, coordinated care, educated clinicians, and provided feedback, significantly improving prescription rates for all 3 therapies (37.9% vs 14.5%; OR, 4.38; 95% CI, 2.49-7.71; $P < .001$).¹³ Although there was no notable change in cardiovascular risk factors, composite clinical events (all-cause death or hospitalization for myocardial infarction, stroke, or heart failure) occurred in 5% of the intervention group vs 6.8% in the usual care group (HR, 0.79; 95% CI, 0.46-1.33).¹³ This trial highlights the effectiveness and scalability of coordinated interventions across clinic sites.¹³

The e-consults also were our mechanism of providing education to the providers, trying to change provider practice and prescribing behavior, which is one of the hardest things in medicine.

Manisha Jhamb, MD, MPH
 University of Pittsburgh
 Pittsburgh, Pennsylvania

STAKEHOLDER INSIGHTS

Leveraging AI and Transparent Reporting to Enhance Care Coordination

AI and machine learning models have become critical tools in care coordination, enabling the development of predictive risk models for CKD, diabetes, and congestive heart failure (CHF) progression. Cohen noted these models reveal that only 5% of the population accounts for 85% of health care costs, a significant shift from the commonly taught 15%. By targeting case management resources to this smaller, high-risk group, care impact can be maximized. Transparent reporting and feedback, shared between PCPs and specialists, serve as powerful change agents. “When you begin to share that data with actionable insights, I think you can begin to move the needle,” Cohen noted. He also stressed the need for evidence-based education, explaining how his team distills research into concise summaries to help PCPs implement new findings within 3 to 6 months, rather than the typical 17-year gap. Cohen explained that a database of 250 million lives and 500 specialty-specific metrics now ranks 60,000 specialists nationwide using measures such as clean catheterization rates and heart failure admissions. These unblinded data are shared with PCPs to inform referral decisions based on evidence. Although some specialists welcome this transparency, others question its relevance. However, Cohen emphasized the importance of embracing this approach to advance the process, stating, “You’re either part of the problem or part of the solution.”

Care Coordination Initiatives for Enhancing CRM Outcomes

The CINEMA program addresses care gaps in T2D by using a team-based, patient-centered model focused on evidence-based care, education, lifestyle management, and standardizing care. The multidisciplinary team, including cardiologists, nurse navigators, diabetes specialists, dietitians, and pharmacists, collaborate to manage both primary and secondary prevention. According to Neeland, “Once [patients] understand the interconnectivity and the complexity of these disease states, it becomes easier and more acceptable to the patient to treat these conditions with the varieties of evidence-based therapies we have.” Neeland emphasized that the program also engages patients through Zoom classes and personalized care, fostering patient empowerment and active involvement in their health. He noted, “This team-based approach is...the future of...CRM care, because it addresses the defects, it makes it multidisciplinary, and it’s patient centered.” The program empowers the entire care team, including pharmacists and nurses, to prescribe, ensuring a collaborative approach to patient management.

The Kidney-CHAMP program was created to manage high-risk CKD patients alongside PCPs, particularly those who are unaware of their kidney disease and are not seeing nephrologists. Jhamb explained that many patients “don’t know they have kidney disease,” leading to rapid disease progression and “crash start dialysis.” The program uses a CKD registry and risk prediction tools to target the highest-risk individuals. Instead of clinical alerts, it relies on automated e-consults that provide individualized recommendations to PCPs, taking into account patient factors such as functional status and affordability. Jhamb elaborated, “The e-consults also were our mechanism of providing education to the providers, trying to change provider practice and prescribing behavior, which is one of the hardest things in medicine. And this way, we were providing them [with] experiential learning while they were managing their patients.” A multidisciplinary team—including pharmacists, dietitians, and social workers—works to address medication complexity, SDOH, and care fragmentation. Jhamb proudly noted, “We completed a 5-year NIH [National Institutes of Health]–funded study, and it showed that we were able to successfully implement this model of care over a large health system...[increasing] renal protective medication, including ACE inhibitors and ARBs. The SGLT2i and GLP-1 RA prescription rate was almost 2 times higher with this kind of an intervention.”

The Coordinate Diabetes trial, explained Green, is a collaboration between endocrinologists and cardiologists at the Duke Clinical Research Institute, aiming to improve care for patients with T2D and established vascular disease. Many patients are not receiving indicated therapies such as high-intensity statins, ACEi or ARBs, or newer agents like SGLT2i and GLP-1 RAs. Green noted, “We knew that endocrinologists were pretty comfortable with the use of these newer so-called diabetes medicines, but cardiologists were a bit less so.” The trial addressed this gap by randomizing US cardiology practices to either intervention or usual care and implementing educational modules, site visits with specialists, and regular feedback on care delivery. Feedback was emphasized, with Green noting, “We gave them detailed feedback...on how they were delivering care...and how they were comparing to the other sites.” The intervention successfully increased the prescription rates

of all 3 therapies. Green remarked, “With a fairly straightforward and economical intervention...in a clinical care setting, you can move the needle.” Green also recommended the COORDINATE-Diabetes website for tools used in the trial, which could be applied to other conditions such as CKD management. “I would encourage listeners to [explore the COORDINATE-Diabetes website] and see if it’s something that could work at your site.”

Cohen highlighted key themes for effective care coordination, including clinician education, pharmacist participation in care, and sophisticated information technology systems for population risk stratification, emphasizing the “easy button concept is incredibly important” for simplifying care processes.

Scalability

Cohen emphasized the challenge of scalability, explaining, “We have a total of 130,000 clinicians taking care of 23 million patients, and getting them to all do the same thing, as you can imagine, is a bit of a challenge. We are really focusing on scalable models.” He described how a scalable model, where advanced practice clinicians manage heart failure clinics under cardiologist supervision, has resulted in a two-thirds reduction in CHF admissions. Cohen concluded that developing scalable, holistic care models is key for addressing the complexity of care across large populations. Jhamb echoed this sentiment, sharing how the Kidney-CHAMP program efficiently uses advanced practice providers and pharmacists to manage care due to a nephrology workforce shortage. Neeland underscored the need for cultural shifts, noting that multidisciplinary care models impact health, though returns may take years to become visible. The success of programs such as CINEMA, which uses a personalized medicine approach, underscores the need to take small steps to demonstrate outcomes before scaling. National collaborations, such as the Cardiometabolic Center Alliance, are key to scaling across diverse populations. Jhamb further stressed that resource-intensive care models can scale by synergizing resources, suggesting that 1 multidisciplinary educator could manage multiple conditions instead of having separate specialists for each. “We don’t need a CKD educator, a diabetes educator, and a heart failure educator; we don’t need a pharmacist in each of our programs; we need 1 person.”

Key Takeaways

Innovation in health care brings significant costs, particularly within fee-for-service models that lack funding for such advancements. However, Cohen highlighted the potential savings in accountable care models, stating, “There is so much potential savings in all of the comorbidities and downstream costs associated with CRM that if you can move upstream in a fully accountable model and capture those

savings, you can use those savings to fund an enormous infrastructure that can accomplish [our goals].” By focusing on early intervention, these savings could support the infrastructure necessary to implement comprehensive care innovations.

Green expressed optimism about improving patient outcomes by reconsidering health care costs, noting that many patients take costly medications with minimal benefit. Green suggested that “we can redistribute costs, particularly when it comes to medicines, to those that we know may be helpful across conditions and meaningfully change their quality of life.”

Jhamb praised the multidisciplinary collaboration of the panel, calling it “a great step forward” in rethinking care delivery, particularly under alternative payment models. Neeland echoed this, advocating for truly comprehensive, multidisciplinary care teams. He expressed excitement about this collaborative approach, noting that “this really is the true future of CRM care.” •

REFERENCES

1. Ndumele CE, Neeland IJ, Tuttle KR, et al; American Heart Association. A synopsis of the evidence for the science and clinical management of cardiovascular-kidney-metabolic (CKM) syndrome: a scientific statement from the American Heart Association. *Circulation*. 2023;148(20):1636-1664. doi:10.1161/CIR.0000000000001186
2. Kadowaki T, Maegawa H, Watada H, et al. Interconnection between cardiovascular, renal and metabolic disorders: a narrative review with a focus on Japan. *Diabetes Obes Metab*. 2022;24(12):2283-2296. doi:10.1111/dom.14829
3. Ndumele CE, Rangaswami J, Chow SL, et al; American Heart Association. Cardiovascular-kidney-metabolic health: a presidential advisory from the American Heart Association. *Circulation*. 2023;148(20):1606-1635. doi:10.1161/CIR.0000000000001184
4. Marassi M, Fadini GP. The cardio-renal-metabolic connection: a review of the evidence. *Cardiovasc Diabetol*. 2023;22(1):195. doi:10.1186/s12933-023-01937-x
5. Aggarwal R, Ostrominski JW, Vaduganathan M. Prevalence of cardiovascular-kidney-metabolic syndrome stages in US adults, 2011-2020. *JAMA*. 2024;331(21):1858-1860. doi:10.1001/jama.2024.6892
6. Al-Chalabi S, Syed AA, Kalra PA, Sinha S. Mechanistic links between central obesity and cardiorenal metabolic diseases. *Cardiorenal Med*. 2024;14(1):12-22. doi:10.1159/000535772
7. Stierman B, Afful J, Carroll MD, et al. *National Health and Nutrition Examination Survey 2017-March 2020 Prevalence Data Files — Development of Files and Prevalence Estimates for Selected Health Outcomes*. NCHS National Health Statistics Reports; June 14, 2021. Accessed September 19, 2024. <https://stacks.cdc.gov/view/cdc/106273>
8. Eisenberg D, Shikora SA, Aarts E, et al. 2022 American Society for Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO): indications for metabolic and bariatric surgery. *Surg Obes Relat Dis*. 2022;18(12):1345-1356. doi:10.1016/j.soard.2022.08.013
9. Miller E, Raj D, Cavender MA, Mehanna S, Namvar T, Ochsner R. Cardiorenal care coordination: holistic patient care opportunities in the primary care setting for patients with chronic kidney disease and atherosclerotic cardiovascular disease. *Postgrad Med*. 2023;135(7):708-716. doi:10.1080/00325481.2023.2256209
10. Neeland IJ, Al-Kindi SG, Tashtish N, et al. Lessons learned from a patient-centered, team-based intervention for patients with type 2 diabetes at high cardiovascular risk: year 1 results from the CINEMA program. *J Am Heart Assoc*. 2022;11(15):e024482. doi:10.1161/JAHA.120.024482
11. Neeland IJ, Arafah A, Bourges-Sevenier B, et al. Second-year results from CINEMA: a novel, patient-centered, team-based intervention for patients with type 2 diabetes or prediabetes at high cardiovascular risk. *Am J Prev Cardiol*. 2023;17:100630. doi:10.1016/j.ajpc.2023.100630
12. Jhamb M, Weltman MR, Devaraj SM, et al. Electronic health record population health management for chronic kidney disease care: a cluster randomized clinical trial. *JAMA Intern Med*. 2024;184(7):737-747. doi:10.1001/jamainternmed.2024.0708
13. Pagidipati NJ, Nelson AJ, Kaltenbach LA, et al; COORDINATE-Diabetes Site Investigators. Coordinated care to optimize cardiovascular preventive therapies in type 2 diabetes: a randomized clinical trial. *JAMA*. 2023;329(15):1261-1270. doi:10.1001/jama.2023.2854

