WHITEPAPER

Cardiovascular-Kidney-Metabolic Syndrome:

Improving Quality of Care and Accountability

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Contents

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Executive Summary

OVERVIEW

Cardiovascular-kidney-metabolic (CKM) syndrome is a convergence of three interconnected chronic conditions: cardiovascular disease (CVD), chronic kidney disease (CKD) and metabolic disorders such as diabetes, obesity and metabolic dysfunction-associated steatohepatitis (MASH). Together, these conditions affect hundreds of millions of Americans, causing considerable morbidity, mortality and healthcare resource utilization. The growing prevalence of CKM syndrome, its shared pathophysiological mechanisms and disproportionate burden on marginalized populations underscore the urgent need for a unified framework that integrates prevention, treatment and quality measurement.

This report, developed from three National Committee for Quality Assurance (NCQA) expert convenings, outlines a comprehensive approach to improving CKM care quality and accountability. It explores five domains essential to transforming CKM care: (1) Defining ideal care, identifying feasible CKM measures and breaking down silos, (2) clinical integration, risk stratification and life course perspectives, (3) patient and community engagement, (4) technology as a CKM syndrome driver and (5) payment reform and health plan and health system coordination. The document concludes with an actionable roadmap for developing a CKM measurement framework that supports whole-person care, equity and sustainability.

DEFINING IDEAL CARE, IDENTIFYING FEASIBLE CKM MEASURES & BREAKING DOWN SILOS

Professional societies are central to defining standards, shaping practice guidelines and guiding training in specialty care. However, because CKM syndrome spans cardiology, nephrology, endocrinology, hepatology, primary care and pediatrics, fragmented specialty silos often prevent holistic care.

Ideal CKM care reflects an integrated, person-centered model that addresses cross-system risks, coordinates care across specialties and incorporates social determinants of health (SDoH). This care requires:

- Comprehensive risk assessment using validated tools and biomarkers.
- Social context integration, addressing socioeconomic and behavioral drivers of disease.
- Cross-cutting risk factor management for hypertension, chronic kidney disease, diabetes, obesity, MASH and other cardiovascular conditions.
- Collaborative, coordinated care with shared accountability.
- Therapies with multisystem benefits to reduce disease burden.

Panelists identified six criteria for selecting CKM quality measures:

Feasibility | **Actionability** | **Cross-cutting relevance** | **Outcome orientation** | **Equity sensitivity** | **Alignment with CKM syndrome risk stages.**

Composite or bundled measures could link across CKM conditions to track longitudinal change rather than one-time process measures. Such measures could focus on patient-reported outcome measures (PROMs), hemoglobin A1c (HbA1c), blood pressure (BP) and cholesterol.

Clinical practice guidelines can reinforce these principles by raising awareness of CKM syndrome staging, encouraging the use of CKM syndrome risk calculators and integrating quality standards. Embedding these guidelines into certification programs and payment systems may help align incentives, promote early intervention and advance equity in CKM care delivery.

CLINICAL INTEGRATION, RISK STRATIFICATION & LIFE COURSE PERSPECTIVES

CKM quality measures must transcend traditional silos to capture the syndrome's interconnected nature and evolution across the lifespan. The report examines composite, risk-stratified and structural measures that could support secondary prevention, management, coordination and outcome tracking.

Potential components include:

- CKM care bundles combining BP, cholesterol, HbA1c, estimated glomerular filtration rate (eGFR) and urine albumin-to-creatinine ratio (uACR) monitoring and medication optimization.
- Risk-stratified measures based on disease stage, ensuring interventions align with severity and progression.
- Structural measures such as shared care plans, CKM coordinators and interoperable electronic health record (EHR) integration.
- PROMs that capture functional status, self-efficacy and treatment burden.

A life course framework aligns primary and secondary prevention and disease management intensity with risk stage that begins with early-life screening and family-based interventions and includes advanced therapy coordination in later stages. Stage-based quality measures could include:

STAGE 3-4:
Multidisciplinary care and advanced therapies such as dialysis or transplantation.

STAGE 2:
Initiation of cardio-renal protective medications, guideline-based management and screening for high-risk populations with early abnormalities in eGFR/uACR, liver function, lipid measures (e.g., low-density lipoprotein [LDL] cholesterol, triglycerides) and preclinical cardiovascular disease.

STAGE 0-1:
BMI or waist circumference measurements, BP screening, family engagement and health literacy.

Persistent obesity represents a key driver of CKM syndrome. The report highlights the need for longitudinal measures of primary and secondary obesity prevention and management such as pediatric BMI screening, access to weight management programs and adult pharmacotherapy.

PATIENT & COMMUNITY ENGAGEMENT

Panelists and patient advocates emphasized that successful CKM syndrome management should be informed by lived experience and community context as well as clinical intervention. Engagement must therefore extend beyond clinic walls, connecting patients to community, digital and social support systems that foster prevention and self-management. CKM quality measures should capture community linkages like rates of SDoH screening and referral, participation in lifestyle programs, or engagement in peer support groups and PROMs are essential for capturing the patient's perspective. Feasible, validated PROMs include:

- Patient-Reported Outcomes Measurement Information System (PROMIS) Global Health and Kidney Disease Quality of Life (KDQOL)-36 for symptom burden and quality of life.
- Treatment Burden Questionnaire (TBQ) for assessing regimen complexity.
- Self-Efficacy for Managing Chronic Disease Scale for confidence in disease management.
- Patient Activation Measure (PAM) for readiness to engage in self-management.

Effective self-management strategies include shared decision-making (SDM), motivational interviewing (MI), digital engagement tools and peer/community support. Embedding these practices into EHR care plans through structured goal-setting—such as Specific, Measurable, Achievable, Relevant and Time-bound (SMART) goals aligned with patient values—creates continuity and accountability. Quality measures can cement patient engagement by tracking measures such as the percentage of patients with documented personal goals or PROMs and patient goal attainment rates over time.

TECHNOLOGY AS A CKM DRIVER

Technology holds tremendous potential to unify CKM syndrome care. However, current infrastructure often perpetuates fragmentation through limited interoperability between EHRs, poor integration of personal biometric and SDoH data, documentation burden and inequitable access to digital tools. But some current and evolving technological opportunities can strengthen CKM care considerably, although it is important to understand that development is still early and gaps exist in these tools. Examples include:

- EHR-integrated risk calculators and other tools that facilitate real-time risk stratification.
- Standardized SDoH screening and referral platforms embedded in workflows.
- CKM dashboards that aggregate clinical and claims data for population health management.
- Remote monitoring for BP and HbA1c that can enable timely medication titration and feedback.
- Telehealth and e-consults that expand access to specialist input.
- Patient portals, text messaging reminders and connected home devices that enhance adherence and engagement.

When paired with aligned financial incentives, these innovations can turn technology from a source of fragmentation into a catalyst for integration, equity and prevention.

> **Roundtable Participant:** *"Education is important at every stage of CKM syndrome, regardless of when in the course of the condition the patient presents. At stage 0, education helps prevent advanced disease. For patients with increased risk, self-management and self-advocacy education is critical to enable high-quality screening and management."*

PAYMENT REFORM & HEALTH PLAN / HEALTH SYSTEM COORDINATION

The CKM syndrome's complexity demands a redesign of health plans and systems. Value-based care (VBC) models offer a promising route to aligning incentives with integrated, preventive CKM management. Key levers include:

- Incentivizing team-based care through shared accountability for outcomes and total cost.
- Rewarding primary and secondary prevention and risk stratification, such as screening and documenting CKM syndrome stages or reducing progression rates.
- Linking payment to intermediate and longitudinal outcomes that reflect multisystem control and PROM improvement.
- Encouraging interoperability and registry participation to support benchmarking and transparency.
- Funding SDoH interventions and community partnerships to address upstream risk factors.

Health systems can integrate CKM syndrome-specific EHR tools and plans can scale remote monitoring, deploy CKM coordinators, invest in analytics, align payment models with quality outcomes and partner with local organizations to promote prevention and awareness. These system-level changes can enable sustainable, equitable CKM management that rewards long-term health improvement rather than episodic treatment.

Recommendations for a CKM Measurement Framework

The report concludes with seven interlocking recommendations that form a blueprint for a CKM quality improvement (QI) and accountability framework:

1. **Measure Integration & Alignment:** Reduce the emphasis on process-oriented measures and develop and promote intermediate outcome control like BP, HbA1c, cholesterol, uACR and weight that are aligned with CKM syndrome risk stages and that can be tracked over time.
2. **Risk-Based Framework:** Use evidence-based tools and risk calculators to guide early detection, prevention and precision management.
3. **Cross-Specialty Accountability:** Embed CKM coordinators, shared care plans and multidisciplinary documentation to align specialties around shared outcomes.
4. **Patient-Reported Outcome Measure Integration:** Incorporate PROMs assessing self-efficacy, health outcome goals, treatment burden and quality of life into performance frameworks.
5. **Technology Modernization:** Invest in interoperability, predictive analytics, remote monitoring and automation to support proactive care including self-management support for people living with CKM syndrome.
6. **Equity & SDoH Focus:** Integrate social needs screening, referral tracking and community partnerships to close disparities.
7. **Value-Based Payment:** Link reimbursement to intermediate outcomes and progression measures (e.g., reduction in blood pressure, loss of weight) that reward health plans and systems for prevention and coordination.

CONCLUSION

CKM syndrome is among the most pressing and complex challenges that clinicians, health systems and health plans face today. Its interlocking pathways, rising prevalence and inequitable burden demand a systemic response that unites clinical science, data infrastructure and human-centered care. By aligning professional guidelines, technology and payment systems within an integrated CKM syndrome measurement framework, CKM syndrome care can be transformed into a coordinated, holistic and equitable continuum. This approach will not only improve patient outcomes; it will also strengthen accountability, reduce healthcare costs and create a foundation that supports active collaboration among providers, health plans and other stakeholders that evolve alongside the populations they serve.

Introduction

Cardiovascular-kidney-metabolic (CKM) syndrome is a clinical framework that integrates three highly prevalent, interdependent chronic diseases that collectively affect hundreds of millions of Americans: cardiovascular disease (CVD), chronic kidney disease (CKD) and metabolic disorders such as diabetes, obesity, and metabolic dysfunction-associated steatohepatitis (MASH). These conditions contribute to premature morbidity and mortality and they also drive considerable healthcare spending, much of which could be avoided with better prevention and treatment.[1]

Because the CKM syndrome includes several inter-related conditions, it requires coordinated prevention and management. The interdependencies that characterize CKM syndrome allow strategies that prevent or slow the progression of one CKM component to have important clinical benefits on the others. Despite its high prevalence, one of the many challenges of treating patients with CKM syndrome is building awareness about this syndrome, how to identify it, treat it and monitor patients over the long term. Without this awareness, it is challenging to promote effective primary and secondary prevention strategies; optimize guideline-directed medical treatment (GDMT); encourage adoption of technologies that support patient monitoring and self-management; drive health plan and health system reforms that reflect integrated treatment models; or develop CKM quality measures that can be leveraged for ongoing benchmarking and quality improvement.[1]

The public health importance of CKM syndrome is underscored by rising prevalence and shifting epidemiology. Obesity, CKD and diabetes are increasing, while control of traditional cardiovascular risk factors such as hypertension and hypercholesterolemia has plateaued in recent years. These trends place pressure on health systems and health plans that are already burdened by high hospitalization rates, dialysis costs and advanced cardiovascular care. In addition, CKM syndrome has a disproportionate impact on populations that experience adverse social determinants of health (SDoH) such as economic instability, food insecurity and lack of access to affordable housing and healthcare. CKM syndrome also has a greater impact on older adults and other underserved populations.[2]

Numerous measures are available to assess the clinical aspects of CKM syndrome. Among these are blood pressure (BP), hemoglobin A1c (HbA1c), low-density lipoprotein (LDL) cholesterol, body mass index (BMI), urine albumin-to-creatinine ratio (uACR) and estimated glomerular filtration rate (eGFR), alanine aminotransferase (ALT), aspartate aminotransferase (AS) and platelet count. Although these measures are routinely used in clinical care, their impact on driving better CKM care has been limited because they are often siloed by medical specialists.[2] The challenges associated with how to best measure high quality CKM care are exacerbated by fragmented patient care journeys and the lack of accountability on the part of clinicians, health systems and health plans for delivering holistic care. In general, existing CKM measures often focus on care processes, with less emphasis on longitudinal outcomes, structure and population health.

Yet, health care paradigms that emphasize holistic patient care, existing and emerging health care technologies and the power of community to favorably impact health offer pathways to improve care for people with CKM syndrome.[3]

To begin addressing these complex issues, the National Committee for Quality Assurance (NCQA) convened three meetings to address the challenges associated with CKM syndrome. The first meeting, which was held in January 2025, focused on actionable recommendations to close CKD care gaps. A **white paper** from that meeting is available.

The second and third meetings were held in May and September 2025. Panelists offered expertise in nephrology, primary care, pediatrics, cardiology, endocrinology, internal medicine, epidemiology, pharmacy, geriatrics, nutrition, gastroenterology, lifestyle medicine, nursing, hepatology, diabetes education, informatics and health policy. The group also included three patient advocates whose personal experiences with severe kidney disease and diabetes provided valuable patient-level input. This report, which summarizes findings from the May and September meetings, offers insight into five domains that can transform CKM care through improved quality and accountability:

1. **Defining ideal care, identifying feasible CKM syndrome measures and breaking down siloes**
2. **Clinical integration, risk stratification and life course perspectives**
3. **Patient and community engagement**
4. **Technology as a CKM quality driver**
5. **Payment reform and health plan, health system and clinician coordination**

The report addresses critical questions that are relevant to each domain, with a focus on developing measures that will improve CKM syndrome care over the long term. The paper concludes with recommendations for development of a CKM measure framework.

Defining Ideal Care, Identifying Feasible CKM Measures & Breaking Down Silos

WHAT IS THE ROLE OF PROFESSIONAL SOCIETIES IN DRIVING IMPROVEMENTS IN CKM CARE?

Professional societies play a central role in defining standards for CKM-related care. They develop standards for training, board certification and specialty/subspecialty recognition and they publish clinical practice guidelines based on research and expert consensus. Historically, specialists have been trained to assess, monitor and manage risk factors that are associated with their specialty areas (e.g. HbA1c among endocrinologists, eGFR/uACR among nephrologists and cholesterol levels among cardiologists). Primary care providers (PCPs), including family medicine, general internal medicine and pediatricians, generally address all risk factors, but they have multiple responsibilities; communication with specialists can be spotty, and many people do not have a PCP. Although practice guidelines can sometimes be inconsistent with one another on certain aspects of clinical care (e.g. what triggers screening or the frequency of ongoing monitoring of established disease), they frequently define the standard of care delivery for clinicians who treat various CKM components. Such clinicians can be part of a team that can include specialists, PCPs, nurses, pharmacists, educators, care managers and others. Standards articulated in clinical practice guidelines provide guidance to the team and often become quality measures focused on process of care.[4]

WHAT IS THE ROLE OF SPECIALISTS IN CKM SYNDROME PREVENTION AND TREATMENT?

Clinicians with expertise in cardiology, endocrinology, nephrology, hepatology, primary care and pediatrics have important roles to play in CKM syndrome prevention and management. Under a re-imagined CKM care framework, there will need to be significant changes in how specialists interact with each other, with PCPs and with the rest of the clinical team, how they exchange information and how CKM measures can be crafted to ensure accountability across specialties. This new framework should be patient-centered, focus on intermediate outcomes that can be tracked over time and optimize technology to create a continuum of care that mitigates risk, prevents progression and manages the CKM syndrome's interconnected organ impacts.

Identifying how specialists, in close collaboration with primary care clinicians, will take ownership of and be accountable for their critical roles in CKM syndrome care is a foundational question for crafting relevant, feasible quality measures for patients with CKM syndrome. It is in this context that it is useful to articulate what is considered "ideal" CKM care.

WHAT IS "IDEAL CARE" FOR PATIENTS WITH SYNDROME?

Panelists indicated that optimal care for people with CKM syndrome requires a comprehensive, person-centered approach that reflects the interconnected nature of these conditions. Elements of this care include:

Assessing CKM Syndrome Risk: CKM syndrome risk stratification helps clinicians identify individuals at varying levels of susceptibility to cardiovascular, kidney and metabolic complications, guiding early and preventive action. Incorporating validated tools and biomarkers into practice enables a more precise understanding of disease progression and treatment response.

Considering Social Context: Recognizing and addressing SDoH such as socioeconomic status, health literacy, access to nutritious food and neighborhood resources facilitates realistic, inclusive and tailored care planning.

Collectively Addressing Inter-Related Risk Factors: Effective CKM care must address the complex interplay among hypertension, kidney and liver health, diabetes, dyslipidemia and obesity. A comprehensive, collective approach can yield synergistic benefits across systems, reducing overall morbidity and mortality.

Supporting Coordinated Care Approaches: Care coordination promotes consistency and continuity across specialties and facilitates care journeys and self-management efforts for patients who have multiple health conditions. Collaboration across the care team streamlines care plans, prevents redundancy and enhances patient outcomes.

Emphasizing Therapeutic Approaches with Multi-System Benefits: Some medications and lifestyle interventions can maximize clinical impact while reducing treatment burden through demonstrated benefits across cardiovascular, renal and metabolic domains. These therapies should be optimized among patients for whom they are indicated.

WHAT HINDERS DELIVERY OF IDEAL CKM SYNDROME CARE?

Panelists emphasized that because cardiologists, nephrologists and endocrinologists often track different data and measures, silos are created that hinder shared accountability.

Challenges in delivering ideal care are exacerbated by limitations in diagnostic, monitoring and communication tools that can delay early detection and impede personalized management. Resource constraints further limit capacity for comprehensive intervention and team-delivered care. Inadequate patient engagement, driven by complex treatment regimens, limited health literacy, or lack of trust, can reduce adherence to treatment and shared ownership of care. Variability in treatment planning and prescribing practices can also contribute to inconsistent outcomes across providers and settings and inadequate communication and care coordination mechanisms can result in fragmented data and duplicated efforts. Unfavorable SDoH magnify these challenges, disproportionately affecting at-risk and underserved populations and widening gaps in CKM syndrome outcomes.[4]

HOW CAN EXISTING CKM-RELATED MEASURES BE LEVERAGED TO DRIVE QUALITY IMPROVEMENT? HOW SHOULD THESE MEASURES BE SELECTED?

The current state of CKM measurement reflects a paradox. Although there are hundreds of existing CKM-related measures across Healthcare Effectiveness Data and Information Set (HEDIS), Centers for Medicare & Medicaid Services (CMS) initiatives such as the Merit-based Incentive Payment System (MIPS) which operates under CMS's Quality Payment Program (QPP), and multiple clinical practice guidelines that are published by specialty societies, redundancy and misalignment lead to measurement fatigue among clinicians and a focus on process over meaningful outcomes and population health. However, there is an opportunity to curate existing measures into a parsimonious, risk-aligned, cross-specialty set that could drive improved CKM syndrome care. The measure types shown in Table 1 are important to understand when considering what CKM quality measures might look like in the future.

Table 1. Definitions of Selected Measure Types*

Measure	Definition
Intermediate outcome	An intermediate outcome measure is a measure that assesses the change produced by a health care intervention that leads to a long-term outcome.
Outcome	An outcome measure is a measure that focuses on the health status of a patient (or change in health status) resulting from health care—desirable or adverse.
Patient-reported outcome measure (PROM)	A patient-reported outcome-based performance measure (PRO-PM) is a performance measure that is based on PROM data aggregated for an accountable health care entity. The data are collected directly from the patient using a patient reported tool, which can be an instrument, scale, or single-item measure.
Process	A process measure is a measure that focuses on steps that should be followed to provide good care. There should be a scientific basis for believing that the process, when executed well, will increase the probability of achieving a desired outcome.
Structure	A structure measure is a measure that assesses features of a health care organization or clinician relevant to its capacity to provide good health care.

*Adapted from: https://mmshub.cms.gov/about-quality/types/overview

Panelists emphasized that feasible, impactful CKM measures should rely on readily available data, guide actionable interventions, address cross-cutting risks, focus on intermediate outcomes, outcomes when available and PROMs and enable equity tracking. They also suggested that a measurement framework should align measures with CKM syndrome risk stages and potentially bundle them into composite indicators that drive whole-person care.

Panelists emphasized six criteria that should be considered in selecting CKM measures:

1. **Feasibility:** Data that are readily available in electronic health records (EHR) or claims (BP, HbA1c, eGFR, uACR, lipids/cholesterol, ALT, AST and platelet count) should be prioritized because they pose little additional documentation burden and are already incorporated into IT and other systems.
2. **Actionability:** Measures should be linked to interventions that improve outcomes, such as initiation of medications that are known to slow CKD progression and reduce atherosclerotic cardiovascular disease risk by controlling BP and glucose.
3. **Crosscutting:** Measures should address clinical factors that impact multiple aspects of CKM syndrome. For example, BP control has both cardiovascular and renal benefits.
4. **Outcome-Oriented:** Include intermediate outcomes such as BP and HbA1c control over time as well as CKM-relevant PROMs.
5. **Equity-Sensitive:** Measures should be amenable to stratification by SDoH variables to facilitate monitoring identification of disparities and closing these gaps.
6. **Alignment with CKM Syndrome Risk Staging:** Aligning measures with risk stages could use the American Heart Association's (AHA) "Stages of CKM syndrome" or another risk categorization scheme to define appropriate measures at various stages of disease.

WHAT ARE THE IMPLICATIONS OF OUR LIMITED ABILITY TO TRACK CHRONIC DISEASE OUTCOMES FOR DEVELOPING A CKM QUALITY FRAMEWORK?

Chronic disease outcomes are difficult to track with current health plan or health system data, but tracking changes in intermediate outcomes and patient reported outcomes can be done. The panel expressed concern that current measures do not emphasize such tracking of important intermediate outcomes like BP or HbA1c. These measures, although instrumental for screening and diagnosis, do not capture disease progression when they are considered in isolation from one another. Moreover, quality measures that emphasize whether a measure was collected, rather than, for example, whether individualized risk factor targets have been defined, met and improved, may encourage providers to focus on meeting process-oriented targets rather than addressing underlying drivers of disease.

A future framework should include longitudinal and patient-centered outcomes. The panel indicated that a CKM quality framework must move beyond "check the box" indicators and include progression-based outcomes that inform whole-person health and slowing CKM syndrome progression. A new framework should also include PROMs and functional status measures that reflect integrated, multi-organ health and patients' abilities to engage actively in their health journey.

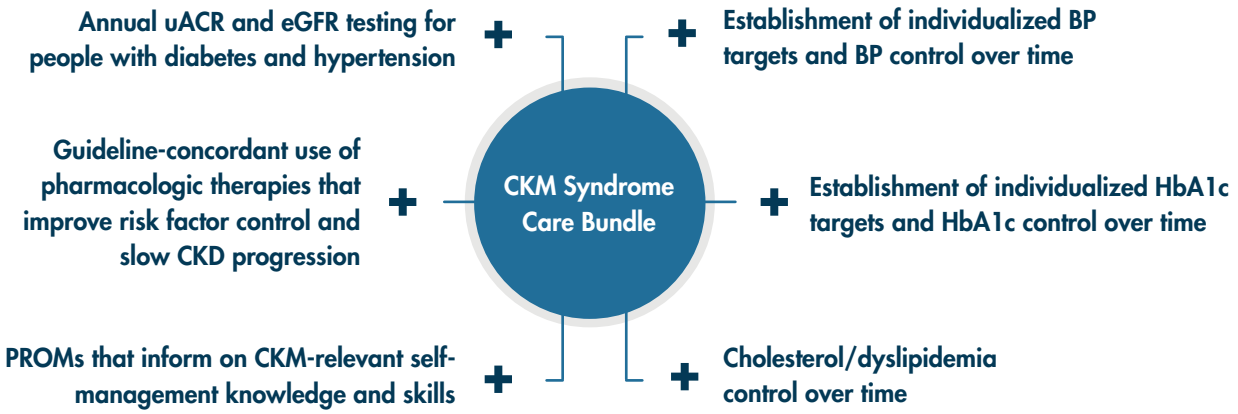
Clinical Integration, Risk Stratification & Life Course Perspectives

To improve CKM syndrome care, a measurement framework must be clinically focused and address pathophysiology across organs, specialty and primary care responsibilities, timing of risk across life stages and how clinical realities should shape measurement and intervention priorities. The panel addressed several questions related to these complex issues.

HOW CAN QUALITY MEASURES BE USED TO ADDRESS THE INTERCONNECTEDNESS OF ORGAN SYSTEM DAMAGE IN CKM SYNDROME?

Because CKM syndrome reflects interrelated damage to the cardiovascular, renal and metabolic systems, quality measures that aim to drive high quality CKM care must capture multi-organ complexity. The panel suggested several approaches to achieve this goal.

Composite or Bundled Measures: A "CKM Syndrome Care Bundle" could standardize high-value practices across conditions, including measures that address BP, lipid and glucose levels and kidney function assessments. Panelists offered examples of a CKM measure bundle:



Risk-Stratified Outcome Measures: Risk-adjusted measures can align performance evaluation with disease severity and prognosis.[5] Using CKM syndrome staging or an evidence-based risk calculator can facilitate individualized quality improvement and early intervention. These measures would incentivize proactive, stage-appropriate interventions that mitigate cross-organ deterioration.

Structural & Coordination Measures: Effective CKM syndrome management is predicated on appropriate interdisciplinary infrastructure. Structural measures may include the presence of a dedicated CKM care team or CKM coordinator/navigator role, EHR integration of risk calculators such as Predicting Risk of Cardiovascular Disease Events (PREVENT) or Kidney Failure Risk Equation (KFRE), systematic screening for SDoH and shared care plans across primary care, nephrology, cardiology and endocrinology.[6]

Patient-Centered Measures: Quality measures should reflect a patient's lived experience. PROMs can capture functional status, self-efficacy and treatment burden, providing essential insights into care effectiveness. For example, tracking the percentage of patients reporting confidence in managing their CKM syndrome risk factors aligns quality improvement with empowerment and self-management, key determinants of sustained control across organ systems.[7]

HOW SHOULD QUALITY MEASURES THAT ASSESS AND STRATIFY CKM SYNDROME RISK THROUGHOUT THE LIFE COURSE BE DEFINED? HOW CAN THEY DRIVE QUALITY CKM CARE?

Precision prevention and management of CKM syndrome can be realized by aligning intervention intensity with evolving risk. By making risk assessment routine, linking measures to stage- specific interventions and tracking progression and outcomes across the continuum, quality measures can identify critical opportunity windows for early, preventive action as well as disease mitigating treatment. Defining CKM measures in this way supports proactive care that prevents irreversible organ damage, reduces lifetime healthcare costs and drives accountability for sustained, quality improvement.

Life course stratification can ensure precision care by matching intensity of intervention to risk. A potential framework based on AHA's CKM syndrome stages or another staging rubric could include the following steps, which could be tied to CKM quality measures or a CKM measure bundle:

STAGE 4:
Advanced therapies, device-based care, transplant evaluation.

STAGE 3:
Intensification of GDMT and multidisciplinary care.

STAGE 2:
Initiation of pharmacotherapy with cardio-renal benefits when indicated, statin use, BP and glucose control, nephrology referral as needed and screening for high-risk populations.

STAGE 1:
Family-based interventions, structured nutrition and physical activity support.
Targeted SDoH interventions if needed.

STAGE 0:
Lifestyle counseling, BMI or waist circumference measurements and BP screening, health literacy promotion.

Adapted from: Ndumele C.E., et al., Cardiovascular-Kidney-Metabolic Health: A Presidential Advisory From the American Heart Association. Circulation. 2023 Nov 14;148(20):1606-1635.

WHAT ARE THE IMPLICATIONS ON CKM SYNDROME MANAGEMENT AND QUALITY MEASURE DEVELOPMENT OF THE PERSISTENT CHALLENGES ASSOCIATED WITH OBESITY?

Obesity is a primary CKM syndrome driver. It fuels insulin resistance, hypertension, dyslipidemia and chronic inflammation, all of which accelerate multi-organ damage. Early-onset obesity extends lifetime exposure to these metabolic stresses, increasing the likelihood of premature diabetes, liver disease, CKD and CVD.[8] Despite decades of intervention, obesity rates remain persistently high due to entrenched environmental, behavioral and socioeconomic influences, underscoring the need for sustained, systems-level strategies that extend beyond the clinical setting.

Implications for CKM Syndrome Management: Panelists agreed that effective CKM syndrome management requires a life course prevention model beginning with routine BMI, waist circumference and metabolic risk screening in childhood, supported by family-centered interventions and community-based nutrition and activity programs. For adults, aggressive risk factor control should combine structured weight reduction through dietary counseling, physical activity, pharmacotherapy, or bariatric surgery with early management of comorbid hypertension, hyperglycemia, CKD and dyslipidemia. This approach depends on coordination among pediatrics, primary care, endocrinology, cardiology, nephrology and behavioral health.

Implications for CKM Quality Measure Development: The panel agreed that CKM quality measures should reflect obesity's longitudinal influence on CKM syndrome risk. Pediatric and early-life measures could include the percentage of youth screened for BMI/waist circumference and referred to evidence-based weight management programs and the proportion receiving documented family-based counseling. Adult measures could capture the percentage of CKM syndrome patients with recorded BMI and waist circumference and individualized weight management plans, as well as the proportion receiving appropriate pharmacotherapy or bariatric referral. Cross-cutting measures could link obesity management to CKM syndrome outcomes such as BP, HbA1c and cholesterol control and incorporate PROMs that assess treatment burden and self-efficacy in weight management.

Patient & Community Engagement

Panelists, particularly patient advocates, emphasized the importance of lived experience, community and social context and effective patient engagement to CKM syndrome management. They stressed that PROMs that capture critical aspects of the care journey are needed to make care delivery patient-centered and effective outside the clinic walls.

WHAT COMMUNITIES ARE RELEVANT TO CONSIDER IN DEVELOPING MEASURES OR ENGAGING PATIENTS IN PREVENTION AND SELF-MANAGEMENT? WHERE DO COMMUNITY OUTREACH AND COLLABORATION FIT INTO CKM SYNDROME MEASURE DEVELOPMENT?

Communities are involved in driving key CKM syndrome outcomes through their impact on prevention and slowing disease progression. Quality measures should capture health plan linkages to community resources, address SDoH and reward community partnerships that improve CKM syndrome prevention and self-management.

Relevant Community Types: Communities can include an array of geographic areas like neighborhoods, rural and urban regions or areas with high CKM syndrome prevalence. They affect CKM syndrome risk and progression through their association with local food environments, walkability, access to care and other features that impact CKM syndrome risk factors and disease progression. Cultural and social communities like faith-based groups, ethnic networks and language-based associations influence dietary patterns, physical activity patterns and trust in healthcare systems. Virtual communities such as online peer groups, disease-specific forums and social media networks can enhance patient education, motivation and self-management. Healthcare communities, like patient-focused or disease-specific support groups help patients and their families manage disease and provider-oriented groups like integrated delivery networks, accountable care organizations and CKM syndrome learning collaboratives, facilitate protocol sharing, data exchange and coordinated quality improvement.

The Role of Communities in Measure Development: Community and patient representatives should be actively engaged in CKM measure development to ensure that measures reflect lived experience and practical barriers to care. Quality measures can include SDoH screening and referral metrics, such as the percentage of patients screened for food insecurity and successfully connected to community resources. Partnerships with community-based organizations, public health agencies, schools and employers can extend prevention and lifestyle interventions beyond clinic walls. Leveraging community-level data like ZIP code-based CKM syndrome prevalence—can help target outreach and resource allocation to populations with the greatest need.

Examples of community-oriented CKM measures could include the percentage of CKM syndrome patients referred to community-based lifestyle programs (e.g., YMCA Diabetes Prevention Program or Silver Sneakers exercise program), the percentage of patients with documented SDoH needs and closed-loop referrals and the percentage of high-risk individuals engaged in peer support or education programs.

Roundtable Participant: *"There is currently no quality measure for obesity, which is a highly predictive indicator of CKM comorbidities."*

WHAT PATIENT-REPORTED MEASURES FOR CKM SYNDROME ARE THE MOST IMPORTANT TO CONSIDER? WHICH ARE MOST FEASIBLE?

PROMs—such as those assessing quality of life, functional status and self-efficacy—capture dimensions of CKM syndrome that clinical data miss. To integrate PROMs into CKM workflows, measures must be short, validated and easy to administer. Instruments with 10 items or fewer can be embedded EHR portals, completed on tablets in the waiting room, or collected remotely via patient apps or text-based systems. The panel identified several PROM domains that it felt were important for CKM syndrome.

Quality of Life / Symptom Burden: CKM syndrome-related fatigue, edema, sleep disturbance and reduced mobility can severely impact daily living and emotional well-being. Capturing these experiences could help clinicians tailor therapy intensity, address symptom distress and monitor treatment side effects. Panelists suggested several tools that could be used to assess PROMs in this domain including the PROMIS Global Health and Kidney Disease Quality of Life (KDQOL).[9,10]

Treatment Burden: Patients with CKM syndrome often manage complex regimens involving multiple medications, frequent lab tests and overlapping specialty visits. High treatment burden correlates with non-adherence, missed appointments and lower satisfaction. Measuring perceived treatment with tools like the Treatment Burden Questionnaire (TBQ) can help identify when simplification or care coordination is needed.[11]

Functional Status: Functional decline predicts hospitalization, disability and mortality in CKM syndrome and other health conditions. Tracking mobility, endurance and physical activity allows early intervention and rehabilitation. Panelists suggested that the PROMIS Physical Function or simple functional assessments like the Timed "Get Up and Go" test could capture mobility and independence with minimal burden and could be of use for tracking CKM-related function over time.

Self-Management Confidence/Self-Efficacy: Confidence in managing medications, diet and symptoms is a strong predictor of health outcomes because low self-efficacy is linked to poor adherence and higher healthcare utilization. The Self-Efficacy for Managing Chronic Disease Scale (6-item) provides a brief, validated measure of perceived control over chronic illness management and could be used to track patients' perceptions of their ability to manage their condition.[12]

Readiness to Change/Activation: Patient activation reflects motivation and capacity to engage in preventive behaviors, follow treatment plans and maintain lifestyle changes. Assessing activation could help tailor interventions to each patient's stage of readiness and panelists suggested that the Patient Activation Measure (PAM) could be used to evaluate this domain.[13]

WHAT ARE THE MOST EFFECTIVE WAYS TO DRIVE SELF-MANAGEMENT THROUGH PATIENT ENGAGEMENT? HOW DO THESE PRACTICES TRANSLATE INTO BUILDING PATIENT-CENTERED GOALS INTO CKM CARE PLANNING?

Effective CKM care depends on patients' ability and motivation to engage in daily self-management, including monitoring diet, activity, medications and symptoms over years or decades.[14] The panel suggested several approaches to driving patient self-management through effective engagement.

Shared Decision-Making (SDM): SDM is a collaborative process in which clinicians and patients jointly evaluate treatment options using both clinical evidence and patient preferences. In the CKM syndrome, SDM may involve discussing the comparative benefits and side effects of various medications, or other aspects of the treatment plan.

Motivational Interviewing (MI): MI is a structured counseling technique designed to elicit intrinsic motivation for behavior change by exploring ambivalence and strengthening commitment. It is particularly effective for lifestyle-related goals—such as improving diet, increasing physical activity, or reducing sodium intake—where long-term adherence can be difficult. Rather than prescribing rigid plans, MI uses open-ended questions, reflective listening and affirmations to guide patients toward self-identified actions.

Digital Engagement Tools: Digital tools such as mobile apps, patient portals and remote monitoring devices enable patients to track BP, glucose, diet, weight and physical activity in real time. These tools reinforce accountability, provide instant feedback and allow care teams to respond to early warning signs. Personalized nudges like reminders for medication or messages acknowledging progress can sustain engagement between visits. When integrated with EHR systems, these tools also streamline data collection for PROMs and quality reporting.

Peer & Community Support: Peer mentoring, group education and community health worker programs build social connections that normalize the challenges of managing chronic conditions. Programs like the YMCA Diabetes Prevention Program, community-based Silver Sneakers exercise programs and CKM-focused peer groups can empower participants through shared experience, mutual encouragement and culturally relevant strategies for self-management.

Education & Skills Training: Practical, hands-on training is essential to build competence and confidence in managing CKM syndrome. Teaching patients to interpret home BP and glucose readings, recognize early symptoms and adjust diet and activity strengthens self-efficacy and reduces treatment burden.

Translating Engagement into Patient-Centered Goals: Panelists emphasized that patient engagement becomes meaningful when it translates into individualized, achievable goals that guide care planning. The process begins by asking "What matters most?", using structured tools such as Goal Attainment Scaling to capture personal priorities—for example, "I want to walk my grandchild to school" or "I want to keep working part-time."

From there, clinicians and patients co-develop SMART goals (Specific, Measurable, Achievable, Relevant and Time-bound) that connect patient aspirations to clinical targets. Integrating these goals into the EHR care plan can then ensure accountability and continuity. Each follow-up visit should revisit progress on both clinical targets and personal goals to reinforce the patient's agency in managing their health.

How Quality Measures Can Reinforce Engagement: Quality measurement can drive implementation of engagement and self-management practices by embedding them into performance frameworks. For example, engagement-focused process measures could be the percentage of CKM syndrome patients with documented patient-centered goals in their care plan or the percentage of patients with recorded PROMs assessing self-efficacy or treatment burden. Outcome measures could include the percentage of patients achieving personal goals over time and structural measures could include integration of SDM tools, MI training and goal-setting templates in the EHR or care management workflows.

Technology as a CKM Quality Driver

WHAT ASPECTS OF CURRENT MEDICAL TECHNOLOGIES AND TECHNOLOGY INFRASTRUCTURE HINDER OPTIMAL CKM CARE?

Technology should enable integrated CKM care, but current systems are fragmented, lack interoperability and are not aligned with CKM syndrome prevention goals or the need for coordinated CKM care.[15]

Fragmented Use of EHR Data: Most EHRs are optimized for documentation and billing rather than care improvement or population health. As a result, CKM-relevant data such as BP trends, renal function and HbA1c results, are often scattered across multiple templates or modules, making longitudinal tracking cumbersome. Care teams struggle to generate actionable dashboards that reflect a patient's full CKM profile, hindering both clinical decision-making and quality improvement.

Lack of Interoperability: Patients with CKM syndrome often receive care from a primary care provider and multiple specialists who may use different EHR systems that do not communicate effectively. This lack of interoperability leads to redundant testing, inconsistent medication lists and missed opportunities for timely intervention. Even when data sharing is technically possible, privacy restrictions, vendor barriers and inconsistent data standards limit seamless integration.

Limited Integration of SDoH Data: Housing instability, food insecurity and transportation barriers contribute to CKM syndrome risk, yet most EHRs lack standardized fields or workflows for capturing and acting on this information. Although some systems include SDoH screening tools, the data often remain static, unstructured, or disconnected from referral systems, hindering clinicians and care teams from addressing these risk factors.

WHAT ARE THE TECHNOLOGY GAPS FOR PATIENT ENGAGEMENT?

Digital Divide: While digital tools such as patient portals, mobile apps and remote monitoring devices can support CKM syndrome self-management, their reach remains uneven. Older adults, low-income individuals and people in rural areas are less likely to have broadband access, smartphones, or digital literacy skills.

Limited Use of Remote Monitoring: Evidence strongly supports remote monitoring technologies such as self-measured BP (SMBP), continuous glucose monitoring (CGM) and weight tracking for improving outcomes and early detection of CKM syndrome progression, but these tools are underused in routine CKM care.[16] Barriers include device costs, inconsistent reimbursement, lack of integration into EHRs and uncertainty about workflows for data review and follow-up.

WHAT IS THE ROLE OF AI AND AUTOMATION IN CKM CARE?

Manual Documentation Burden: Clinicians spend significant time manually entering data for quality reporting and compliance. Artificial intelligence (AI) tools—such as natural language processing (NLP) or automated note parsing—could extract relevant CKM values (e.g., BP control, HbA1c, eGFR) from existing clinical notes, freeing up clinician time and improving data completeness. However, data accuracy and completeness can still be problematic and the use of AI is still evolving.

Slow Adoption of Predictive Analytics: Validated CKM syndrome risk prediction tools like the PREVENT risk calculator and KFRE exist but are rarely embedded directly into clinical workflows. Without automated risk stratification, providers miss opportunities for targeted prevention and management or early referral.

HOW DO FINANCIAL INCENTIVES PLAY INTO TECHNOLOGY ADOPTION AND USE?

Current payment models and technology investments continue to favor episodic, disease-specific care rather than integrated CKM syndrome management. Health systems often receive reimbursement for discrete visits, tests and procedures—but not for building interoperable data systems, patient engagement platforms, or team-based prevention infrastructure. This misalignment discourages the use of technology for care coordination and long-term risk reduction. Shifting incentives toward value-based and population-focused payment models could drive investment in interoperable platforms and digital tools that support comprehensive CKM syndrome care.

Technology should enable, not hinder, integrated CKM care, but today's systems often reinforce the fragmentation they are meant to solve. EHRs and reporting tools remain condition-specific, disconnected from social and behavioral data and burdensome for clinicians. Patients face digital inequities, while predictive and automation technologies remain underused. To transform CKM care, providers and health systems must prioritize interoperability, automation and patient-centered design. Aligning payment incentives and data systems with CKM syndrome's integrated preventive framework will turn technology from an obstacle into a catalyst for cardiometabolic health.[17,18]

WHAT CURRENTLY AVAILABLE TECHNOLOGIES FOR HEALTH PLANS, PHYSICIAN PRACTICES AND PATIENTS COULD FACILITATE IMPROVED CKM SYNDROME CARE IN THE SHORT TERM? HOW WOULD THESE TECHNOLOGIES DRIVE IMPROVEMENTS?

Although current technology infrastructure presents challenges to integrated CKM syndrome management, many proven and readily available tools can be leveraged in the short term to drive measurable improvements in prevention, management, coordination and patient engagement.[19] When effectively integrated into workflows, these technologies can help clinicians identify high-risk individuals earlier in the disease course, close care gaps more efficiently and empower patients to take a more active role in managing their cardiometabolic and kidney health.

Health Systems

EHR-Embedded CKM Syndrome Decision Support & Risk Tools: Embedding CKM syndrome risk calculators into EHR workflows can enable real-time risk stratification and clinical decision support and configuring standing orders, care-gap alerts and medication prompts within the EHR can ensure consistency across providers and reduces reliance on manual data review.

These tools can improve CKM care by facilitating earlier risk identification through timely ordering of labs, referrals and initiation of evidence-based therapies. They can also reduce the time to GDMT initiation, thereby improving intermediate outcomes and reducing disease progression across CKM syndrome domains. The tools can also offer consistent staging and stratification, promote reliable escalation and de-escalation decisions and foster uniform referral practices across care teams.

SDoH Screening & Closed-Loop Referral Inside Workflows: Integrating standardized social needs questionnaires into EHRs and connecting them to referral platforms will allow care teams to identify SDoH, refer patients quickly and track whether they successfully access community resources. These tools can address adherence barriers by linking social needs directly to care interventions and improve equity and quality measures, including visit completion rates, medication fills and follow-up adherence.

CKM Performance Dashboards: Developing CKM syndrome risk tiers and performance dashboards across diabetes, CKD and CVD domains could allow for systematic tracking of care delivery and outcomes. Dashboards can integrate EHR, claims and lab data to support continuous QI. This approach would enhance team transparency by showing which patients are off-track or due for follow-up. It could also focus QI efforts on high-risk or underserved cohorts that are most likely to benefit from intervention and support accountability at the health plan, clinic and provider levels through clear, measurable performance indicators.

Primary Care & Specialty Practices

SMBP & Remote BP Programs: Validated home BP monitors and structured workflows for data collection via EHR, patient portal, or text-based platforms would greatly facilitate ongoing remote monitoring of hypertension control. Panelists suggested that these strategies could drive improvement by improving BP control rates compared with in-clinic readings alone, facilitating timely medication titration and patient education between visits.

Continuous / Intermittent Glucose Monitoring: Deploying continuous or connected glucose meters provides automated summaries and trend data accessible to both patients and clinicians. This could improve CKM care by improving HbA1c and time-in-range, time below range and other parameters through real-time feedback and adaptive dosing, identifying hypoglycemia risk early and preventing adverse events and through enhanced lifestyle and medication coaching.

"Dot-Phrase" / Template Bundles for CKM Visits: Standardized EHR templates or "dot-phrases" consolidate CKM-relevant data like uACR, eGFR, HbA1c, BP trends, medication lists and shared-care goals into one note section, thereby facilitating more integrated documentation. Improved documentation could reduce fragmentation across specialties by unifying key data points within the visit note and improve documentation of education, self-management plans and follow-up goals, thereby supporting quality measure reporting and team continuity.

Telehealth / e-Consults with Specialists: Establishing virtual consultation workflows between primary care teams and specialists expands access to expert input without requiring in-person referral. Virtual access to care would expedite specialist input, reduce delays in care escalation, prevent missed opportunities for early intervention in patients with stage 2–3 CKM syndrome conditions and support CKM coordinator-led protocols for ongoing follow-up and interdisciplinary care planning.

Patients & Caregivers

Patient Portals, Secure Messaging & SMS Nudges: Patient portals and mobile messaging systems can send reminders for lab tests, medication refills, SMBP uploads and care-plan check-ins, creating ongoing touchpoints between visits. By using these tools, patients and caregivers can increase adherence to medications, monitoring, and scheduled appointments and reinforce shared decision-making by maintaining communication around individualized goals and progress updates.

Home Devices / Apps: BP Cuffs, Connected Scales & Activity Tracking, Wellness and Self-Management Apps: Roundtable participants underscored the potential of provider-connected, at-home medical devices and consumer-grade wellness apps in advancing CKM syndrome management. Clinically validated tools such as Bluetooth-enabled blood pressure cuffs, connected scales and CGM are being leveraged more frequently to monitor blood pressure, weight and glucose levels outside of traditional care settings. These devices, along with activity trackers and smartphone-based step counters, allow patients to capture real-time data on lifestyle and clinical metrics, supporting both self-management and clinician oversight.

Panelists pointed out that remote monitoring interventions are already reimbursed for conditions like heart failure and were noted as a practical way to enable timely medication titration and feedback loops. By aggregating home-monitored data into CKM registries and dashboards, care teams can identify early warning signs and intervene before complications escalate. This proactive approach to CKM care aligns with the roundtable's emphasis on risk stratification and preventive care, enabling clinicians to adjust therapies, provide counseling, or initiate referrals based on dynamic trends rather than static office visits.

Digital Literacy Supports: Providing brief, targeted coaching in person or via phone and offering low-tech alternatives like paper BP logs or call-based data submission can ensure equitable participation for digitally underserved populations. These strategies help bridge the digital divide, ensuring older adults, people in rural areas and low-income individuals can realize the benefits of relevant technology.

WHAT EMERGING TECHNOLOGIES COULD FACILITATE IMPROVED CKM SYNDROME CARE IN THE FUTURE?

While many technologies can already enhance CKM syndrome care today, the next generation of tools promises to fundamentally change how prevention, risk management and patient engagement are delivered. AI, large language models (LLMs), next-generation sensors and adaptive digital therapeutics are rapidly evolving to support more personalized, continuous and data-driven care. Some of these technologies are discussed below, and while not yet ready for full deployment, they hold great promise for the future. By enabling earlier detection, seamless coordination and patient-tailored interventions, these innovations may eventually address persistent barriers in CKM syndrome management.[20]

Health Systems

Ambient AI & LLMs for Real-Time Quality Capture: Ambient AI (AI-powered systems that passively capture and interpret clinical interactions) and LLMs (a type of AI system that is trained to understand, generate and interact using human language) can listen to or transcribe clinical encounters, identify and tag counseling activities like discussions of about diet, physical activity, or sleep and automatically populate structured quality fields in the EHR. NLP algorithms can also mine unstructured notes to identify care gaps or confirm documentation of education, shared decision-making and PROM capture. These emerging tools can automate documentation and quality reporting, freeing providers to focus on patient interaction, improve the accuracy and uptake of CKM quality measures and standardize documentation across multidisciplinary teams.

AI-Driven Population Risk Stratification & Outreach: Advanced analytics models that integrate clinical, SDoH and device-derived data can help identify people at high risk of CKM syndrome progression. These models could enable automated risk-tiering and trigger proactive outreach for early CKM interventions. They could fast-track initiation of pharmacologic treatments for patients with diabetes who are at high risk of renal disease or flag obese patients for sleep apnea screening. They could also optimize resource allocation by focusing care management and coaching on those most likely to benefit and bridge gaps between prevention and treatment.

Interdisciplinary "CKM Coordinator" Software: Purpose-built coordination platforms can organize nursing, pharmacy and Diabetes Care and Education Specialist workflows, with embedded protocols, worklists and referral tracking that connect directly to the EHR. Such a platform could scale standardized protocols for medication titration, monitoring and follow-up, extending the reach of CKM coordinators and care teams. These platforms could also improve attainment of GDMT through structured task management and facilitate seamless cross-team communication that ensures accountability and reduces care fragmentation between primary and specialty care.

> **Roundtable Participant:** *"The first set of CKM outcome measures should drive patient fluency and agency around CKM as a syndrome that stems from multiple risk factors. If patients can identify and understand the factors that drive CKM, they can reduce their overall risk by engaging with providers and lifestyle health care."*

Primary Care & Specialty Practices

Intelligent CKM Visit Guides & Adaptive Thresholds: Emerging AI-enhanced clinical decision support tools may be able to support improved CKM care if they are aligned with clinical workflows and existing tools. AI could be leveraged to dynamically adjust BP, HbA1c, LDL and weight management targets based on a patient's CKM stage, comorbidities and treatment response. These tools could reduce variability in CKM management across providers by bringing guideline-concordant care directly to the point of care, reduce both overtreatment and undertreatment by personalizing clinical targets to patient risk and treatment response and enhance care continuity by providing consistent, data-driven recommendations during every encounter.

Composite "CKM Health" Measures with Automated Data Assembly: Emerging EHR modules and analytic tools that can automatically compile labs, vitals, medication adherence data, PROMs and functional measures into a single composite CKM dashboard could offer a holistic performance and care-coordination indicator that transcends disease silos. This would align care teams around a single north-star measure, combining cardiovascular, metabolic and kidney outcomes into one longitudinal measure, simplify quality reporting by reducing redundant condition-specific measures and drive a shift toward integrated accountability that emphasizes outcomes that matter across the CKM continuum rather than within individual specialties.

Patients & Caregivers

Next-Generation Sensors: Emerging wearable and home-based sensors may enable continuous, passive monitoring of CKM-relevant indicators. These technologies could facilitate continuous risk sensing, detecting early changes in hypertension, glucose control, or kidney function before symptoms appear. They could also support proactive prevention outside clinic walls to empower patients and clinicians to respond quickly to emerging risks and reduce the burden of traditional monitoring, making adherence to surveillance recommendations easier and more consistent.

Personalized Digital Therapeutics for CKM Syndrome: Emerging AI-enabled digital platforms can integrate medication management, nutrition guidance, physical activity tracking and behavioral health support. These platforms could improve CKM care by improving self-efficacy and adherence through real-time, personalized feedback and motivation. They could also link daily behaviors to intermediate outcomes like BP, reinforcing the connection between patient action and measurable health gains and generating actionable data for care teams.

Payment Reform & Health Plan / Health System Coordination

WHAT STEPS CAN HEALTH SYSTEMS AND HEALTH PLANS TAKE TO DRIVE THE DELIVERY OF HIGH-QUALITY CKM SYNDROME CARE?

Health systems and health plans each play distinct but complementary roles in advancing comprehensive CKM care. Health systems are primarily responsible for delivering clinical services and ensuring that care teams have the tools, data and infrastructure needed to identify CKM risk, coordinate treatment and engage patients effectively. Their work centers on integrating clinical workflows, supporting multidisciplinary teams and using technology to manage complex conditions across settings. There are several things health systems can do to improve CKM care:

- EHR integration for CKM
- Remote monitoring
- Patient engagement platforms
- Data analytics, dashboards and registries
- Multidisciplinary CKM care teams
- Addressing SDoH
- Education for providers and patients

Health plans operate at the population and system-wide levels, shaping the broader environment in which CKM care occurs. Through benefit design, value-based arrangements, health system and community partnerships and member outreach, plans can influence access, address social needs and promote preventive behaviors. By aligning incentives and supporting public health–oriented initiatives, health plans help expand the reach of CKM efforts beyond the clinical setting. The following list includes elements that health plans can do to improve CKM care:

- Value-based care alignment
- Addressing SDoH
- Partnering with delivery systems and local communities on CKM prevention and management
- Raising awareness of CKM

Although some of these approaches can apply in both health systems and health plans, together, they create a foundation for coordinated, preventive and person-centered care that bridges gaps across settings and social contexts.

Roundtable Participant: *"Patients less engaged in the health care system and those experiencing adverse social determinants of health are most likely to be missed by CKM case-finding, screening and treatment activities."*

HOW CAN VALUE-BASED CARE BE LEVERAGED TO DRIVE CKM QUALITY?

Value-based care (VBC) models can align incentives with integrated CKM management by rewarding value rather than volume. Patients with CKM are among the most medically complex and costly individuals in healthcare. The traditional fee-for-service model incentivizes volume and procedure-based care, fragmenting management across specialties. In contrast, VBC models reward coordination, primary and secondary prevention, guideline directed disease management and maintenance of health over the long-term. This makes VBC a natural fit for CKM, where integration and continuity are essential for slowing disease progression and improving quality of life. VBC can be leveraged to improve the quality of CKM care in several ways.[21]

Incentivize Integrated Care: VBC rewards shared accountability for total cost and outcomes and encourages the formation of interdisciplinary CKM teams, including physicians, pharmacists, nurses and dietitians. These teams can deploy CKM coordinators to manage transitions, support medication optimization and align goals across providers. Shared care plans within the EHR can further ensure that interventions are complementary rather than duplicative.

Reward Risk Stratification & Prevention: VBC contracts can tie incentives to measurable secondary prevention milestones, such as:

- Percentage of patients with documented CKM stage or risk category.
- Enrollment in lifestyle or weight management programs.
- Reduction in progression from Stage 2 to Stage 3 CKM.

Rewarding early intervention supports precision prevention and aligns payment with the life course model of CKM care.

Link Payment to Composite Outcomes: VBC can promote composite outcome bundles such as:

- Assessment of BP level + HbA1c level + albuminuria + cholesterol level
- Inclusion of PROMs such as improved self-efficacy or reduced treatment burden in routine care planning.

A CKM care bundle could become a pay-for-performance measure, encouraging care teams to achieve balanced progress across all relevant domains.

Enable Data Sharing & Technology Integration: VBC contracts can require EHR interoperability and embed CKM risk calculators. These investments in data infrastructure would facilitate real-time benchmarking, quality improvement and equitable performance measurement, all of which are supported by VBC frameworks.

Support SDoH & Community Partnerships: CKM outcomes are shaped by access to healthy food, transportation and social supports. Flexible VBC funds can be used to address these needs directly by financing nutrition programs, rides to dialysis or specialty appointments, or community health worker engagement. Contracts can also include closed-loop referral measures that ensure patients not only receive referrals for SDoH services but also successfully connect to them.

Conclusion & Recommendations for a CKM Measurement Framework

CKM presents critical challenges to patients, clinicians, health systems and health plans. Rising prevalence, high costs and inequities demand urgent action. By evolving quality frameworks to emphasize integration, longitudinal outcomes, PROMs and equity, stakeholders can transform CKM care from fragmented, disease-specific management to holistic, patient-centered approaches. This report proposes a framework for improving CKM care quality through measurement and accountability. Recommendations include:

1. **Measure Integration & Alignment:** Reduce the emphasis on process-oriented metrics and develop and promote intermediate outcomes like BP, HbA1c and uACR that are aligned with CKM risk stages and that can be tracked over time.
2. **Risk-Based Framework:** Use evidence-based tools and risk calculators to guide early detection, prevention and precision management.
3. **Cross-Specialty Accountability:** Embed CKM coordinators, shared care plans and multidisciplinary documentation to align specialties around shared outcomes.
4. **Patient-Reported Outcome Measure Integration:** Incorporate PROMs assessing self-efficacy, health outcome goals, treatment burden and quality of life into performance frameworks.
5. **Technology Modernization:** Invest in interoperability, predictive analytics, remote monitoring and automation to support proactive care.
6. **Equity & SDoH Focus:** Integrate social needs screening, referral tracking and community partnerships to close disparities.
7. **Value-Based Payment:** Link reimbursement to intermediate outcomes and progression metrics that reward health plans and systems for prevention and coordination.

Together, these strategies can transform CKM syndrome care from fragmented disease management to coordinated, equitable and person-centered health improvement.

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