Circulation: Cardiovascular Quality and Outcomes

CARDIOVASCULAR PERSPECTIVE

Cardio-Renal-Metabolic Care Models

Toward Achieving Effective Interdisciplinary Care

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The highly interdependent relationship between the heart and kidneys was described as early as in 1836 by Sir Richard Bright, who identified cardiac structural abnormalities in a series of patients with advanced chronic kidney disease.[1] Around the same time in 1835, French chemists isolated phlorizin, a natural, nonselective inhibitor of SGLT1 (sodium glucose co-transporter 1) and SGLT2, as part of early attempts to create an animal model for diabetes. Since then, despite major developments in cardiorenal and metabolic medicine, there has been a relative chasm between availability of new approaches to optimize cardiovascular and kidney outcomes and their implementation in clinical practice. With the advent of the sodium glucose cotransporter 2 inhibitors (SGLT2is) and the glucagon-like receptor-1 agonists and other new cardiorenal protective therapies, the spheres of cardio-nephrology and metabolic medicine have converged in unprecedented ways with the potential for population-level improvements in multidomain health. However, despite high-quality evidence for cardiovascular and kidney protection afforded by these agents, these therapies seem mismatched with population risk such that they are not reaching the highest risk patients with established cardiovascular and/or kidney disease.[2,3] For instance, in one study, younger, healthier, and non-Black patients were most likely to start SGLT2i, although patients with cardiovascular or kidney disease were less likely to use SGLT2i from 2013 to 2018.[3] This perspective piece explores potential explanations for the underutilization and appropriate deployment of risk-reduction strategies in patients with type 2 diabetes mellitus, kidney disease, and/or cardiovascular disease, and offers the concept of a multidisciplinary cardio-renal-metabolic care model that may help overcome some of these barriers.

DISPARITIES IN SPECIALTY RESOURCES AND SILO CARE

In the United States, there is wide variation in the volume of the specialty workforce across cardiology, nephrology, and endocrinology. Specialty care access is substantially limited in certain geographic regions.[4] In addition, reduced retention rates of internal medicine trainees as primary care physicians further compounds their existing shortage as a central part of the care team for patients with complex chronic diseases. As such, it is conceivable that limited access to necessary care may limit introduction of effective risk-reducing interventions. Specialists may genuinely be limited in their office-based resources with respect to monitoring complex patients closely after initiation of these agents and may choose to prioritize workflow aligned with their existing practice patterns, rather than take on new challenges. Beyond resource distribution and support issues, siloed care may contribute to increase therapeutic inertia. As an example, there is a reluctance on the part of cardiologists and nephrologists to initiate SGLT2i or glucagon-like receptor-1

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agonists, despite high-quality supporting data for their cardiorenal benefits, likely driven by several factors such as the need to add diabetes management to existing subspecialist responsibilities, adjust antidiabetic therapies prescribed by other physicians and handle prior authorizations, inadequate insurance coverage and excess out-of-pocket cost issues. Last, communication between specialists and primary care physicians tends to be fragmented, and compensation models that prioritize high patient volumes and procedures may limit opportunities to optimize medical management.

BLIND SPOTS IN THE KNOWLEDGE BASE

Superimposed on the workforce-related disparities, there exist knowledge gaps and different perspectives that may impede optimal delivery of therapies even when a patient has access to a full spectrum of appropriate specialists. Examples of these include the underutilization of renin angiotensin inhibitors, the SGLT2i or intensive blood pressure control strategies because of the inaccurate perception of elevated risks of acute kidney injury.[5,6] These differences in clinical approach stem from reliance on standardized definitions of acute kidney injury, which may not be applicable in these scenarios where hemodynamically mediated fluctuations in glomerular filtration markers commonly occur, which do not represent true intrinsic kidney injury. Given these interventions affect multiple disease states and multiorgan health, there is a need for broad education across specialties about the nuances and limitations of commonly used definitions and terms in the cardiorenal metabolic space, to ensure that a common language is in place that will facilitate a multidisciplinary care model.

ECONOMIC DISINCENTIVE FOR INTEGRATED CARE

While seamless integration of care across specialties may be beneficial to patients, there may be potential barriers with respect to current specialty workflow and reimbursement models. Outside of a few health systems with value-based models that incentivize high-quality care, most health systems reward quantity over quality. Thus, without creating new reimbursement models for physicians engaging in cross-disciplinary collaborations, it is impossible to sustain these models of care over time. Currently, one of the barriers to an integrated model of care is the lack of insurance reimbursement when multiple clinicians see the same patient in a select practice on a given day. Having a single specialist invested in multisystem health evaluate the patient in an initial encounter followed by staggered subsequent specialty engagement may help offset this problem and guard against large gaps in care.

CARDIO-RENAL-METABOLIC CARE MODELS

There is an unmet need to create sustainable and seamless multidisciplinary care models for cardio-renal-metabolic disease especially as effective therapies have emerged that reduce mortality and cardiorenal complications.[7] To this end, we offer several suggestions that may help individual physicians, practices, hospitals, and specialty organizations consider implementing a cardio-renal-metabolic care model (Figure).

Training and Education

1. Facilitate educational opportunities for cardiology, nephrology, and endocrinology trainees in teaching hospitals. Examples would be the creation of cardio-renal-metabolic teaching conferences and journal clubs for internal medicine residents and subspecialty fellows. Program leadership for fellowships in these specialties should consider providing areas of concentration in cardiorenal-metabolic medicine during elective rotations across specialties, to support early career

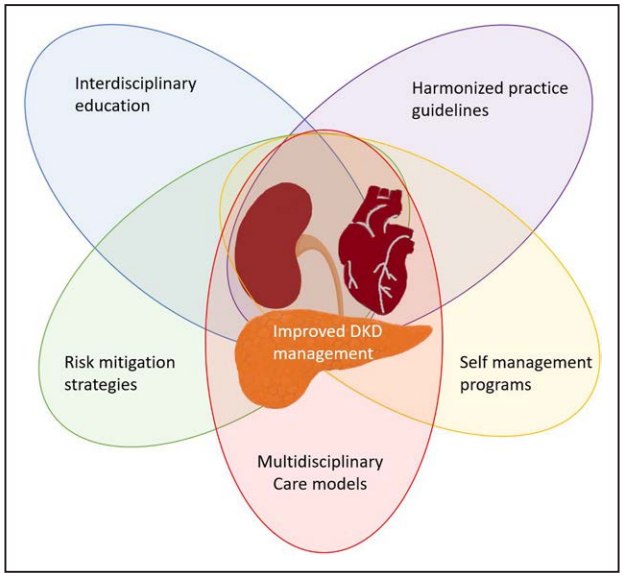

Figure. Components of a successful cardio-renal-metabolic care model at an institutional level.
A successful multidisciplinary model would include physician or advanced practice provider, dietician, clinical pharmacist, care navigator, and administrative representative from all 3 specialties sharing the care of patients at high risk /with established cardio-renal-metabolic disease. Such a program would be based on mutually common decision-making algorithms across all 3 specialties, shared documentation platforms, frequent interface of the care team members (virtually or in-person), and periodic review of clinical outcomes, adverse events, patient experience, and program financial viability. Such a model would also incorporate patient and caregiver representation to align interventions with patient-centered values and therapeutic goals. DKD indicates diabetic kidney disease.

physicians with a sound knowledge base in this interface area. This practice is already in place at the corresponding author's institution with established clinical and research pathways for trainees in this multidisciplinary area. Incorporation of multidisciplinary content in the planning of specialty conferences at a regional and national level will also increase education in this overlap space.
2. Specialty societies may consider providing avenues for certification in this area, with the opportunity for a cardio-renal-metabolic subspecialty, described elsewhere,[8–10] which may be integrated into existing fellowship training time.

Clinical Restructuring and Quality Improvement

1. Create a workflow model that can function seamlessly and ensure close communication between clinicians, using shared decision algorithms applicable to all specialties, frequent group meetings to discuss care outcomes and shared platform for medical documentation, where feasible. This may not necessarily require shared physical common workspace and may be feasibly implemented virtually, as is necessary in many health systems in the wake of coronavirus disease 2019 (COVID-19).
2. Advocate for shared costs across specialties to fund advanced care providers to maintain communication and facilitate patient interactions between specialists and the primary care physicians.
3. Encourage the use of a care navigator, dietician, and clinical pharmacist to help the patient navigate each aspect of this multidisciplinary care team.
4. Maximize the use of telemedicine visits where appropriate to ensure timely access to specialists. The swift utilization and uptake of telemedicine in the context of COVID-19 provides a scaffold for future use in a nonpandemic scenario in areas of great need such as cardio-renal-metabolic medicine to reduce disparities in patient access to specialty care.

Patient, Caregiver, and Community Engagement

1. Invite patients and their caregivers to be represented during reviews of performance of cardio-renal-metabolic clinics, to incorporate their voice into actionable items.
2. Engage with stakeholder organizations at a regional and national level in each of these specialties to advocate for legislative changes in financial reimbursement for value-based care provided by these multidisciplinary care models to promote sustainability. This will help sustain the long-term financial viability of these models.
3. Harmonize clinical practice guidelines across specialties to ensure effective and consistent messaging, to facilitate smooth delivery of common goals for clinicians and patients.
4. Promote access to SGLT2is, glucagon-like receptor-1 agonists, and other emerging new therapies for cardio-renal-metabolic conditions through participation of payers, pharmacy benefit managers, and pharmaceutical companies in strategies for efficient uptake of guideline-based treatments.

CONCLUSIONS

There is a pressing need to create a common workflow model in cardio-renal-metabolic medicine to address the complex needs of this vulnerable patient population. With the available state-of-the-art interventions that may reduce cardiovascular and kidney risks in these patients, it is imperative to align physician expertise and workflow with disease overlap states rather than the current silos of specialization. These models require initiatives across local, regional, and national organizations to implement the necessary changes to ensure long-term viability of these multidisciplinary models of care. These efforts will support rapid translation of scientific discovery over the last decade to improved implementation and health outcomes patients with cardio-renal-metabolic disease.

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