Heart disease has long been the leading cause of death among patients with chronic kidney disease (CKD), but clinicians often treat the conditions separately. A new presidential advisory from the American Heart Association (AHA), published in Circulation, calls for a new, multidisciplinary approach emphasizing interconnections among the heart, kidneys, and metabolic diseases (1).

Advisory lead author Chiadi Ndumele, MD, PhD, a fellow of the AHA and associate professor of medicine and director of obesity and cardiometabolic research in the Division of Cardiology at Johns Hopkins University in Baltimore, MD, noted that multiorgan dysfunction is associated with premature deaths from heart disease and that the rising prevalence of these interrelated conditions has stalled progress on reducing heart disease deaths.

The new advisory defines cardiovascular-kidney-metabolic (CKM) syndrome as a condition caused by interactions among metabolic disorders and kidney diseases in individuals with cardiovascular disease or who are at risk of cardiovascular disease because of metabolic or kidney diseases. It lays out a four-stage paradigm for assessing an individual’s risk for CKM and facilitating early intervention, suggests risk assessment and treatment algorithms, and proposes multidisciplinary care models to address CKM. It also highlights the importance of addressing social determinants of health, often critical drivers of CKM syndrome, and integrating social determinants of health assessments and interventions into care.

“We increasingly appreciate that cardiovascular, kidney, and metabolic conditions all closely interact and often cluster together,” Ndumele said. “The time is certainly right to start to understand and address this directly in how we practice and engage with the public.”

The advisory and scientific statement summarizing the evidence supporting this approach, published December 2023 | Vol. 15, Number 12
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simultaneously in early October, were drafted by a multidisciplinary team that included nephrologists (2). Among them was Katherine Tuttle, MD, executive director for research at Providence Inland Northwest Health Services, and a professor in the Division of Nephrology at the University of Washington in Seattle.

“It’s fantastic to see that people who have different backgrounds and complementary skills [come] together to solve common problems,” Tuttle said. “We have some of the most powerful tools ever that really work across the spectrum now.”

Early identification

Recognizing that progression toward CKM often begins early in life, the staging model starts with recommending interventions to promote healthy diets and activity in individuals with no metabolic or heart risk factors (stage 0), including children. The model outlines four more stages and suggests prevention approaches at each. The working group designed the model to allow “de-staging” individuals who reduce risk factors.

“We hope that through this staging construct, we can start to have people be aware of risk earlier and address risk earlier, primarily through healthy lifestyle,” Ndumele explained. “We hope that this supports people getting the right therapies when needed and that we have a lifestyle-course approach to thinking about prevention from youth onward.”

People with excess weight, larger waist circumferences, impaired glucose tolerance, or prediabetes fall into stage 1. Stage 2 includes individuals with hyperglycemia, hyperlipidemia, metabolic syndrome, diabetes, or moderate- to high-risk kidney diseases. The staging tool categorizes individuals with subclinical cardiovascular disease who have excess weight, metabolic risk factors, or CKD as stage 3. Stage 4 comprises individuals with heart disease, metabolic risk factors, and kidney diseases with or without kidney failure.

Ndumele said 90% of individuals in the United States will likely stay in stage 1 or 2 and that primary care physicians will be the first point of contact for most. By applying the staging construct to identify risk and reduce it, Ndumele and his coauthors hope that primary care practitioners can reduce the number of individuals who progress to later stages of CKM. “We want to reduce the number of individuals who get to the point [in which] they need to see subspecialists because we are addressing risk earlier,” he noted.

Advisory cochair Janani Rangaswami, MD, section chief of nephrology at the Washington, DC, Veterans Affairs Medical Center and professor of medicine at George Washington University School of Medicine and Health Sciences, said that the document solidifies the role of the nephrologist in helping to identify cardiovascular risk as they follow patients across their disease progression.

“We now practice in an era [in which] we have multiple tools in our toolbox that not only improve kidney health and reduce the progression of CKD to kidney failure and prevent bad kidney outcomes, but we also can make a significant dent in the cardiovascular disease,” said Rangaswami, who is also chair of the AHA’s Council for Cardiovascular Health Sciences, said that the document solidifies the role of the nephrologist in helping to identify cardiovascular risk and prevent bad kidney outcomes, but we also can make a significant dent in the cardiovascular disease risk as they follow patients across their disease progression.

Ndumele and his coauthors hope that primary care practitioners can reduce the number of individuals who progress to later stages of CKM. “One of the biggest challenges that patients face in this circumstance is care fragmentation as a consequence of having to see multiple practitioners again, who may not always be using the same playbook and maybe giving slightly differing recommendations,” Ndumele offered.

Rangaswami noted that primary care clinicians identify many patients with CKM syndrome and refer them to specialists who may be working in silos and not communicating effectively. She explained that a nephrologist may de-escalate therapies started by a cardiologist. But, as the scientific statement shows, the conditions are interrelated, she said. “There is so much crosstalk between these organ systems; that’s how the disease process evolves,” she explained. “The way we approach it has to mirror the disease.”

“Shared ‘playbook’

The advisory also outlines ways to streamline and standardize care for patients with CKM, including suggesting multidisciplinary care models and shared algorithms for using proven CKM interventions. “One of the biggest challenges that patients face in this circumstance is care fragmentation as a consequence of having to see multiple practitioners again, who may not always be using the same playbook and maybe giving slightly differing recommendations,” Ndumele offered.

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Adam Whaley-Connell, DO, associate chief of staff for research at the Harry S. Truman Memorial Veterans’ Hospital in Columbia, MO, and professor of medicine at the University of Missouri School of Medicine, said that it was gratifying to see research on the underlying connections translated into action after decades of research on these interrelated conditions. Whaley-Connell was not involved in drafting the advisory or review. “I was extremely excited to see that AHA put this working group together and [is] giving this priority,” noted Whaley-Connell, who helped develop the Journal of the CardioMetabolic Syndrome (3) and the journal Cardiorenal Medicine (4). “We have evolved in our understanding that adipose tissue is a distinct endocrine organ that influences vascular and kidney health.”

The advisory suggests that patients with two or more overlapping CKM conditions receive care from an interdisciplinary care team, including primary care, cardiology, nephrology, endocrinology, pharmacy, nursing, social workers, and community health workers. A CKM care coordinator, who organizes patient care and facilitates communication among team members, would play a central role in the model. “We want to all be reading from a similar playbook, which makes things easier for patients,” Ndumele said. When subspecialists are needed, the CKM care coordinator can help patients navigate across practitioners and ensure that they are receiving holistic care, he said.

“The multidisciplinary model outlined in the advisory reinforces and expands on the multidisciplinary diabetic kidney disease care models recommended by Kidney Disease: Improving Global Outcomes (KDIGO) (5), the American Diabetes Association (6), and ASN (7),” Tuttle said. She noted that this involves multiple specialties, including cardiology, endocrinology, and nephrology, as well as nurses, pharmacists, advanced practitioners, and social workers. “[CKM syndrome] is such an enormous problem,” Tuttle explained. “There are so many people affected. If we can align on the guiding principles and overall care approaches, together we will have a much larger impact.”

The advisory also provides broad guidance on how and when to use newer drugs that may benefit the patient’s heart, kidneys, and metabolic health along with mainstream medications, noted Rangaswami. She expects this guidance to be updated regularly as new data emerge. In November at the organization’s Scientific Sessions 2023, AHA unveiled a new cardiovascular risk calculator that considers CKM risk to help further guide patient assessment (8). “We are just really at a place where there is this embarrassment of riches with so many high-quality trials showing overwhelming benefit [for new classes of drugs],” she said. “It’s up to us now to close this loop [and] implement these therapies, not just in a meaningful way, but in an equitable way.”

Social determinants of health

The advisory also emphasizes the role that social determinants of health play in contributing to CKM and the need to identify and address them to care for patients successfully. “At every level, social determinants of health play a role in both the development and the impact of CKM syndrome,” Ndumele noted.

Rangaswami explained that, for example, an individual with metabolic syndrome may be experiencing homelessness, food insecurity, racism, or other social determinants that can impact their outcomes. “If we don’t screen and acknowledge that social determinants of health matter, then we won’t have the ability to intervene and make that better,” she said. “The advisory puts that up front.”

It recommends systematically screening patients for social determinants of health and incorporating them into risk assessment. It suggests building social determinants of health into electronic health records, clinical workflows, and the makeup of patient care teams. For example, it recommends having team members who can address patients’ social determinants of health and help them overcome barriers to care by leveraging community programs and resources. Rangaswami also emphasized the need to ensure equitable use of new therapies.

“Nephrologists are very familiar with the fact that patients who come from [populations that are disenfranchised] or are racial or ethnic minorities have a disproportionately high incidence of CKM syndrome, but they are also less likely to receive appropriate therapies,” she said. Creating more systematic ways of identifying and treating CKM syndrome and addressing related social determinants will help reduce these disparities and allow patients to access kidney health.”

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preventive therapies earlier. “We hope patients will have optimal risk factor control and that a lot of them will be on RAAS [renin-angiotensin–aldosterone system] inhibitors or SGLT2s [sodium-glucose cotransporter-2s] before they even get to the nephrologist, who can then manage the additional risk factors,” Sapkota said.

Ndumele acknowledged that some practices may only work in some settings. One of the next steps for him and his colleagues will be to develop implementation plans that help address the needs of specific practice settings. For example, rural settings with limited access to local specialists may leverage telehealth to connect patients with specialists care.

“Our intent is to make this as flexible as possible so that no matter where a person is in the world, that the guiding principles could help provide a framework to deliver care,” Turtle said. She noted that health systems can tailor how they implement the advisory to their contexts and hopefully share successful strategies. She also said that there is a need for implementation and cost-effectiveness studies.

Whaley-Connell agreed that more work is needed to develop multidisciplinary systems for caring for these complex patient populations and address some root causes, for example, crafting policies and guidance to address refined sugar, salt, and fat content and improving access in areas of food deserts. “The workgroup has provided an important conversation for the nephrology community to think about how we stage and address cardiometabolic health for patients with kidney disease,” Whaley-Connell said. “We can use the advisory with existing tools for diagnosis and management of kidney diseases.”

Turtle added that there will also be a role for professional organizations in advocating for policies that support the multidisciplinary care models that the advisory recommends. Having multiple professional organizations involved in a disease state advisory will also likely have a greater impact on helping to enact the needed policy changes. “Health policy changes are critical,” she said.

Turtle also expressed gratitude for the AHA issuing the advisory and review and the scientific statement and bringing its expertise and experience targeting the early origins of disease to tackling CKM syndrome. “It’s the right thing to do, and [AHA has] the influence to make substantial change,” she said. ■

References

Preparedness Is Key for Dialysis Clinics

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investigators found the average percentage of missed hemodialysis appointments was 2.5% for rain, 7.8% for hurricane or tropical storm events, and 4.9% for snow. A 10-mm higher rainfall was associated with a 2.6% higher risk of missed appointments on the same day. Wind advisory and sustained wind speed were associated with a 5.3% to 9.6% higher risk of missed appointments, respectively. Generally, rainfall-related risk of missed appointments dissipated after 1 day, whereas risk associated with snowfall, snow depth, and wind advisories persisted for several days. Hurricanes and tropical storms led to a 55% higher risk of missed appointments, sustained wind advisories led to a 29% higher risk of missed appointments, and wind gusts showed a 34% higher risk of missed appointments for the 7 days following an event.

“These inclement weather events lead to missed appointments for a [patient on hemodialysis], which can be quite detrimental in terms of the risk of hospitalization and other adverse health outcomes,” said senior study author Jeffrey Kopp, MD, section chief of the Kidney Diseases and Kidney Diseases. Kopp coauthored a recent commentary on disaster preparedness for patients with kidney diseases (3). “Some of our patients have frailty,” he said, and worry about falls. “They may have lost muscle mass. They may have electrolyte disorders that are hard to control. They don’t want to put themselves at risk or put at risk the people who are driving them around.”

Most severe weather events, such as hurricanes, blizzards, or periods of extreme heat, can be predicted days in advance, Kopp said. This means that nephrologists and dialysis center staff have time to be proactive. For example, if a storm is forecasted for a Sunday, and a patient receives dialysis on a Monday, Wednesday, and Friday schedule, the patient could potentially sustain 3 or 4 days before needing another treatment. Nephrologists and other staff also could reach out to patients to remind them to get any needed medication refills before a storm hits.

The ongoing process of global warming can cause other issues, Kopp explained. Heat can cause an issue for people with chronic illness, as they may be unable to regulate their body temperature as effectively as healthy individuals. Their ability to sweat and to regulate plasma chemicals and peripheral circulation may be impaired.

In preparation for these events, dialysis centers could host periodic seminars, either in person or online, to help patients plan ahead. What would patients do in case of a wildfire, a flood, or other event? Patients should be encouraged to prepare an evacuation bag with clothing, personal care items, and a list of personal contacts and medical care practitioners. Medications should be added immediately before the need to depart. Patients should review their plan at least twice a year, Kopp continued. “The upside about preparing [patients on dialysis] is that they’re in the center three times a week, so you have an audience that’s usually very willing to hear these messages,” he said. Sapkota also coauthored a commentary with tips for patients with chronic kidney disease and for dialysis clinics to handle extreme weather events (4). In case of power outages, dialysis clinics should be equipped with backup generators if possible and should anticipate staff having difficulties getting to the clinic or potentially needing help there, he said. For backup facilities, they should have contingency plans to ensure operations with staff shortages or to extend hours to accommodate patients from affected areas.

Dialysis centers also could provide patients with identification cards listing their medications, medical and dialysis treatments prescriptions, comorbidities and insurance, and emergency contacts, plus details for backup health care and dialysis facilities, added Sapkota. “We must be proactive, to try to anticipate these [weather] threats ahead of time, prepare for them, and respond to them, instead of always reacting,” Sapkota suggested. “With the ongoing climate change, we’re going to see more and more of these threats, and patients with end stage kidney disease undergoing dialysis are among the most vulnerable.” ■

References