Dr. Chiadi Ndumele
We have an understanding of the fact that there's a really close interplay among these various metabolic risk factors - obesity, diabetes, and the metabolic syndrome itself - with chronic kidney disease, which is a dramatically under-recognized risk factor, and the cardiovascular system. It's not just one direction; it's kind of multi-directional. The thing that's really, I think, remarkable now is that if you look at what's been happening in the population over the last 25 years or so, we've seen that this kind of constellation of these metabolic risk factors - chronic kidney disease and the cardiovascular disease - is really becoming the predominant form of cardiovascular disease we're seeing in the population.

LuAnn Heinen
That's Dr. Chiadi Ndumele, lead author of the recently published American Heart Association Presidential Advisory on Cardiovascular Kidney Metabolic Health. Dr. Ndumale is a practicing cardiologist, educator, and researcher at Johns Hopkins University. He's been instrumental in shaping our understanding of the connections across obesity, diabetes, chronic kidney disease, and cardiovascular disease. The newly defined disorder resulting from these interconnections is cardiovascular kidney metabolic syndrome, CKM for short.

I'm LuAnn Heinen, and this is the Business Group on Health podcast, conversations with experts on the most relevant health and well-being issues facing employers.

Today, Dr. Ndumele and I talk about the growing recognition of CKM syndrome and its impact on health outcomes and health care costs, including the importance of screening adults beginning at age 30 for heart disease risk with a newly released online calculator known as PREVENT, which stands for Predicting Risk of cardiovascular disease EVENTS.

Hi Dr. Ndumele. Thanks for being here today.

Dr. Chiadi Ndumele
Thanks for having me.

LuAnn Heinen
You are a Harvard-trained physician with impressive credentials, chief resident at Harvard's Brigham and Women's Hospital, followed by two cardiology fellowships at Johns Hopkins, after which you joined the Johns Hopkins Medical School faculty very quickly. Soon after that, you were honored with an endowed chair. Now, I'm leaving out many awards for teaching and research, lots of publications, and I think a graduate public health degree. Was that a master's or PhD?

Dr. Chiadi Ndumele
I have both. Thank you, LuAnn.

LuAnn Heinen
Both in public health?

Dr. Chiadi Ndumele
Yes, a masters and a PhD in epidemiology.

LuAnn Heinen
In light of all that achievement, I hope you won't mind me asking if you'd tell us something else about yourself, maybe a favorite hobby, a ritual that keeps you grounded, any fun fact.

Dr. Chiadi Ndumele
Well, I spent a lot of my early years singing. I come from a singing family, and that was a lot of joy for me. I sang in college and in high school, and now I mostly sing to my children.

LuAnn Heinen
I love that. And what lucky kids.

Dr. Chiadi Ndumele
Thank you.

LuAnn Heinen
Let's turn to your collaboration with the American Heart Association. You're first author on the recent AHA Presidential Advisory on Cardiovascular Kidney Metabolic Health.

Dr. Chiadi Ndumele
Yes.

LuAnn Heinen
The term diabesity was coined way back, maybe, I don't know, 40 or 50 years ago, and cardio-diabesity and metabolic syndrome are still in play. We still hear those. But now there's CKM syndrome. What advance in scientific understanding does this new broader framing represent?

Dr. Chiadi Ndumele
It's a really important question. I think anytime there's a new initiative is, what are the gaps and what's being filled? I think the CKM syndrome really reflects the fact that scientifically, we have an understanding of the fact that there's a really close interplay among these various metabolic risk factors - obesity, diabetes, and the metabolic syndrome itself - with chronic kidney disease, which is a dramatically under-recognized risk factor, and the cardiovascular system. It's not just one direction; it's kind of multi-directional. The thing that's really, I think, remarkable now is that if you look at what's been happening in the population over the last 25 years or so, we've seen that this kind of constellation of these metabolic risk factors, chronic kidney disease, and the cardiovascular disease is really becoming the predominant form of cardiovascular disease we're seeing in the population. That, and the fact of what it is related to clinically, which is primarily the premature mortality, really provide a lot of impetus for focusing on this as a key public health challenge. We'll talk, I imagine, about the staging a little later on, but at least 90% of adults fall somewhere along this CKM syndrome spectrum. So really something that I think that there's a lot of urgency for addressing, but thankfully, we are having an increasing number of tools to actually help us address. The timing was just very right for making this a key focus area for the American Heart Association and I was happy to play a role in leading it.

LuAnn Heinen
One of the phrases that jumped out in the advisory that we're talking about said CKM is, “common, deadly, and treatable.” You've addressed how common. I mean, are you saying at least 90% of adults are somewhere on the full spectrum, and we'll talk about the stages later, the zero to four stages. How is it deadly? What are the endpoints when CKM is not identified and treated? You've alluded to those.

Dr. Chiadi Ndumele
No, I think that that's a really important question. The biggest reason to focus on this is disability and premature mortality. One thing that's really important to emphasize is the fact that in this CKM syndrome construct, it really emphasizes not just the interrelatedness, but often the overlap and the confluence of risk factors that individuals often face. So it's not just an individual that has diabetes. It's often an individual has diabetes and chronic kidney disease, or an individual has obesity and diabetes, or diabetes and cardiovascular disease, or sometimes all of these things. If you look at the individual components, if you look, for example, at severe obesity or grade three obesity, like a BMI 40 to 45, we see a survival reduction of about 8 to 10 years relative to those individuals who are normal weight. If you look at diabetes, we see a survival reduction of 13 to 14 years compared to those individuals without diabetes, and even greater survival reductions if the diabetes has earlier onset. If we look at chronic kidney disease, so stage four, which is the stage right before a more end-stage phase, versus those who have relatively normal kidney function, we see a survival reduction of greater than 20 years. Those are all obviously very powerful risk associations and important, but the reality is most of the time we don't see them in isolation. We see a confluence of risk factors and when we see that confluence, the risk is synergistically increased. A good example is looking at 10-year mortality rates for diabetes. Diabetes over 10-year mortality is around 8%. CKD over 10 years is about 11%. When you put the two of those together, you see an over 30% mortality.

So the sum is more than the parts, a synergistic increase in mortality. That's actually what most patients are facing is not just one condition, but these confluence of conditions. So the deadliness is clear. The other thing that's important to emphasize is that over the last five decades or so, we've had a continuous drop in rates of cardiovascular mortality. That's because of a lot of great things like smoking rates going down, better blood pressure and cholesterol control in the population, these procedures that are helping people survive from heart attacks, for example. But in the last decade, we've actually seen a dramatic plateau in that previous decline that we were seeing in cardiovascular mortality and now we're starting to see an uptick. The fairly universal consensus is that this is likely related to CKM syndrome and this confluence of risk that's driving cardiovascular mortality in the other direction.

LuAnn Heinen
Wow, the synergistic, negative synergism is really frightening, and yes, the fact that the decline in cardiovascular related deaths has been arrested by all of these other conditions that are making the situation so much worse.

Dr. Chiadi Ndumele
Yeah.

LuAnn Heinen
In lay terms.

Dr. Chiadi Ndumele
That's well-stated.

LuAnn Heinen
Okay, so some of the other health outcomes that I read about in the article, I mean, kidney failure, you mentioned, and we already have, I think, I heard a podcast on this recently, over 90,000 people on the wait list for a kidney transplant. It certainly factors into disability, cognitive decline, liver disease, sleep apnea, cancer. But to your point, the greatest adverse impact on health and early death is cardiovascular.

Dr. Chiadi Ndumele
Yes, you're right. All of these various aspects of health are well-affected by this and that really gives motivation in multiple ways for thinking about addressing CKM syndrome. But cardiovascular disease is the primary driver of mortality. Historically, we've focused quite a bit on heart attacks and strokes because that's obviously a major cause of mortality. What we're seeing is that conditions like heart failure are very much on the rise, as well as atrial fibrillation and peripheral artery disease, so this kind of risk we focus on for CKM syndrome is all of these various forms of cardiovascular disease. We really do elevate focus on heart failure. Heart failure is a condition that's associated with 50% 5-year mortality and 90% 10-year mortality. Actually, in individuals with diabetes over the next probably decade or so, heart failure is poised to become the primary manifestation of cardiovascular disease in that population.

LuAnn Heinen
So, so sobering. Another attention-getting quote from the report was CKM is a “progressive condition that commonly begins in early life.” I have a feeling this is new news to a lot of people. How early?

Dr. Chiadi Ndumele
You know, it's really early, actually. One other thing that's very important here is that, you know, this risk doesn't come out of nowhere. We do see this kind of accumulation across the life course. In terms of early, early, it actually really starts in utero. Exposure to certain unhealthy environments can cause something called maternal imprinting that can actually affect youth cardiometabolic health. But then certainly various aspects of how our environment is structured make it more likely that individuals start to develop a lot of these CKM syndrome components early in life. We see currently historic rates already of obesity and diabetes, for example, among youth that are being connected to early changes in the cardiovascular system and in the kidney function. But what is striking about that is that risk factors in youth tend to persist, a phenomenon called tracking, and then also extend and worsen into adulthood. It is very frequently the case that this is something that starts early on and that's actually why our focus is not just

for adults, but our focus on kind of identifying and addressing risk as actually across the life course and starts for youth as well.

LuAnn Heinen
We recently spoke with a pediatric endocrinologist on this podcast who made a similar comment about tracking and why it's so important to focus on obesity early in life, young children.

Chiadi Ndumele
Yes, it's absolutely necessary, and as we might talk about, it's a much more systemic phenomenon. In general, all the things that we're talking about are not about individual failings. These are about systemic issues that are making this affect, for example, overweight and obesity are currently affecting 70% of the population. As I mentioned, the CKM syndrome kind of broader construct affects 90% of adults. When you see these kinds of numbers and such a striking majority of the population being affected, it's really impossible to think about this as an individual challenge or a failure of willpower or some other issue. This is actually a systemic issue. A lot of it being actually tied also to social determinants of health. We do know that so many of these health behaviors and certainly so much of the impact of CKM syndrome is disproportionately borne by certain populations.

LuAnn Heinen
We will want to talk some more about that, but now I'm still thinking about your comment about maternal imprinting. What exactly is that?

Dr. Chiadi Ndumele
What happens is if you're exposed to certain environments with greater degrees of insulin resistance and greater degrees of obesity, you can see some slight modifications biologically that can occur as a consequence of those that then make it more likely that the individual who is in utero and in that environment will start to manifest some of those similar challenges. There's a growing body of data on the idea that maternal cardiometabolic health has some biological impact on offspring cardiometabolic health.

LuAnn Heinen
Wow. Thank you for that. There's a risk calculator for CKM called PREVENT that was released just in January of this year. I personally can't resist a calculator that provides instant feedback and whether or not individuals are supposed to go in there and take it themselves, I did. I want to just talk a little bit about that experience, because first of all, you can tell us if we're supposed to go and take that individually or if this is something, you know, our physician is intended to administer, but I was able to find every bit of data. It was very simple data that it requested and even some of the optional inputs were all in my online health record. Do you want to talk a little bit about the calculator?

Dr. Chiadi Ndumele
The calculator was a part of this cardiovascular kidney metabolic health initiative. One of the things that we do focus on as a cardiovascular prevention physician is we focus on risk-based prevention. We do know that when individuals are at the highest risk for developing cardiovascular disease or other adverse outcomes, we're going to be really intensive about trying to lower their risk with not just lifestyle change, but pharmacotherapies. And we still are very interested in and focused on prevention in individuals who are not at immediate high risk, but in that scenario, we may be a little bit less aggressive with some of the medications because we're not going to get quite the same bang for your buck and we can focus a lot more on lifestyle. But those older calculators really weren't reflecting all the needs related to CKM syndrome. We recognized a few things were necessary. Number one, people are starting to develop cardiovascular disease earlier and earlier as a result of CKM syndrome. The calculator previously had started at age 40, the American Heart Association's calculator called the pooled cohort equation, so we have actually were able to move that age to age 30 and to start calculating risk earlier, reflecting the needs of the population. There was also a focus on not just our traditional 10-year risk horizon for assessing risk, but we also do a longer term 30-year assessment risk based on your risk profile today, which particularly for young adults who maybe don't have a very high risk of a heart attack in a few years, but have still a high lifetime risk or 30-year risk of cardiovascular disease based on their risk profile, then this is something we can capture better in that scenario. And then we also start thinking not just about atherosclerotic cardiovascular

disease, that's heart attacks and strokes, we've also added in heart failure as part of this risk assessment so that we actually can talk about total cardiovascular disease and then talk about these different subtypes, heart failure and atherosclerotic cardiovascular disease and give all of that input. Then finally, it's also what goes into the calculator, so we've started to include some of these CKM syndrome components. BMI is in there, hemoglobin A1C and the measures of kidney function are in there. That's important. These things that are really starting to drive risk in the population. Additionally, we also have added in social deprivation index, and that's a measure of social determinants of health. It's a place-based measure that incorporates lots of different things, reflecting education in the area and income and various other kind of aspects of the built environment. That is included in there as well that further help with personalizing our understanding of risk. Race was previously included in older calculators because we didn't have estimates that were very accurate across different racial groups, but now this calculator actually works really well in different race groups. This is actually a more broad and generalizable population. It was actually developed and validated in 6 million people, so it works really well. We were able to have one equation that works for everybody and most of the racial differences we see are due to social determinants of health. So having some of those measures in the calculator, I think is helpful for that as well.

LuAn Heinen
Is it intended for individual patients to log on and do this themselves?

Dr. Chiadi Ndumele
Yes, I think that that's totally fine. It's actually helpful to understand risk better. A lot of times, one of the things that happens is a lack of awareness of not just risk factors, but overall risks. Some awareness of that, I think, is really helpful for starting to engage with individual health, but also engaging with the health system. I think that that's really helpful, but I also think it's particularly helpful to take those estimates and discuss them with providers as well to discuss more about the interpretation and then partner on the steps to optimize cardiovascular kidney metabolic health.

LuAnn Heinen
It's also just really interesting for consumers to know what some of the inputs are. So systolic blood pressure, but not diastolic, so that's the top number, right? Total cholesterol, HDL cholesterol, age is an independent risk factor, whether you're a smoker and whether you're using antihypertensive or lipid-lowering meds. That's pretty much it. Pretty easy.

Dr. Chiadi Ndumele
We actually made a point of having accessible and routinely available measures as part of this calculator to make sure that it was applicable to the larger population.

LuAnn Heinen
The Presidential Advisory recommended a staging system and that was covered in the circulation article. Can you describe that?

Dr. Chiadi Ndumele
Thanks for that question. The staging system was really meant to reflect the typical progression of CKM syndrome that leads from its early stages to the development of cardiovascular disease. The goal of the staging focus is really to support prevention across the life course, kind of addressing its early underpinnings to increase awareness so that we basically start prevention approaches earlier to prevent progression to the later stages, but also to recognize when people are in later stages of CKM syndrome that there's often going to be a need for more intensive care approaches because of their higher risk. It also supports the concept of regression in CKM stages as well. So the CKM staging construct starts from stage zero, which is individuals without any of the CKM risk factors, and there we're just focusing more on primordial prevention. That's where we're hoping people can stay for as long as possible through healthy lifestyle practices and a broader focus on ideal cardiovascular health. Stage one is individuals who have excess and/or dysfunctional adipose tissue, which is really most of the time the precursor to most of what comes next in terms of CKM syndrome. Stage two is the presence of metabolic risk factors like diabetes, high blood pressure, abnormal lipids, dyslipidemia, particularly high triglycerides, the metabolic syndrome, which is this construct of these metabolic risk factors and/or moderate to high-risk chronic kidney disease.

Stage three is now the development of early cardiovascular changes or the risk equivalents like high predicted risk using the prevent calculator or very high-risk chronic kidney disease. And that is most of the time the precursor to stage four, which is clinical cardiovascular disease overlapping with metabolic risk factors and/or chronic kidney disease. Again, the focus there is on better awareness, preventing progression to later CKM stages when there is more advanced CKM syndrome, focusing on the need for more intensified therapy, and then also promoting the concept of CKM stage regression as well.

LuAnn Heinen
Got it. That's great. Super helpful. So even if you are not quite in the one to four scale yet, you're not scot-free.

Dr. Chiadi Ndumele
Yes, I mean, again, 90% of adults are going to fall somewhere along that scale, but I think having a better understanding of where you are and what your actual risk is in developing cardiovascular disease can really provide complementary information. One real important thing I should say is that in this country currently, we kind of have an epidemic of under-recognized risk, particularly with regards to CKM syndrome. Right now, among people who have chronic kidney disease, 90% of individuals who have that diagnosis are currently unaware. Okay.

LuAnn Heinen
How can that be?

Dr. Chiadi Ndumele
Well, it's because chronic kidney disease has often gone unrecognized. People are not routinely aware of that diagnosis when it occurs. Also, one of the things that really helps us better characterize chronic kidney disease risk is using not just your estimated GFR, glomerular filtration rate, using your creatinine or something called Cystatin C, but also assessing how much albumin there is in your urine using something called your urine-albumin-to-creatinine ratio. That together gives you a lot more information about what your risk is for progression to kidney failure and also about what your risk is for cardiovascular disease and early mortality. But because that's not done enough and people are not aware of those results when they happen, that's something that is often unrecognized. I will also say that obesity, even though it is at historic levels and is a main driver of CKM syndrome, is also historically, markedly under-addressed. A paper from 2019 suggested that we were diagnosing and addressing obesity in less than 2% of office encounters for individuals with that diagnosis. And then still, some of our traditional measures like high blood pressure and diabetes, the majority of individuals are not at the level of what we would call controlled. We really do have an epidemic of this. The staging is really important and what you talked about in terms of people going and understanding their risk to make sure that we are better understanding this risk, better identifying it and addressing it early before we develop actual full-blown cardiovascular disease.

LuAnn Heinen
Yes, excellent. You've alluded to good news and that there are treatment options and there are ways to reduce risk. Let's talk a little bit about that. I think we might have to go back to what are some of the challenges that we face in the health system as it's designed today.

Dr. Chiadi Ndumele
Yes, I think that's really helpful. One thing I should say is that we are aware of the need to address obesity and that's something that is a little bit more helpful these days because we have an increasing number of tools that is helpful for that. We know that lifestyle change when it's supported in a sustained fashion can be helpful to some degree. We also know that we have these pharmacotherapies, particularly the family called the incretin analogs with these GLP-1 receptor agonists like Wegovy or Ozempic, the newer ones like Mounjaro or tirzepatide. While people are on them, we know that those can help support quite significant weight loss and also improvement in most of these CKM syndrome components as well. I think that's really important. Then more recently, we've seen some impact on cardiovascular disease rates in relation to these medications. We also see that we know that bariatric surgery is a really effective therapy. Those are in our armamentarium and we need to kind of support that further, but that's something that we can be doing to help prevent progression and also promote regression along the CKM syndrome spectrum. We

know there's also a variety of newer therapies that are impacting multiple aspects of this CKM framework, often having metabolic effects, kidney effects, and cardiovascular effects. A good example of that is, well, one is what I just said, the GLP-1 receptor agonists. Those are agents that can, from a metabolic standpoint, improve weight, improve glycemia. From a kidney standpoint, we see them have an impact on improving that albuminuria and reducing that aspect of kidney dysfunction. Then we also see they reduce cardiovascular mortality and major adverse cardiovascular events. SGLT2 inhibitors, which were also initially developed as diabetes agents, we know that they have some impact on the blood sugars, a little bit of an impact on weight, but they have a pretty dramatic impact on kidney function and also reduce major adverse cardiovascular events and cardiovascular mortality, in particular, heart failure hospitalizations as well. Then we know there's other agents like amiodarone that have impacts on kidney and cardiovascular events, as well as some of the older agents like ACE inhibitors and angiotensin receptor blockers. Our armamentarium of agents to impact cardiovascular, kidney, metabolic health and outcomes is growing. That's really exciting to have more and more tools to address that. One of the things that we start to do in the Presidential Advisory is to actually start to provide a framework for how we might consider allocating some of these therapies in the population, but having these tools is really exciting and means that it's more and more likely that we can positively influence the health of individuals along the CKM syndrome spectrum.

LuAnn Heinen
Well, it's interesting you mentioned the word allocation, and you may be speaking from, for example, there's been a shortage of GLP-1 receptor agonists recently. That's likely going to get resolved, but allocation is still going to be something that payers are going to look at. Of course, many public and private payers don't cover some of these drugs presently, and the numbers of people who could be eligible and are eligible for those kinds of therapies is enormous.

Dr. Chiadi Ndumele
Yes, it's a real challenge and two things will be helpful. Number one is where we have the most data. We know that in individuals who have existing cardiovascular disease, our risk is particularly high, but then our data is growing in that population. For example, we have data on those SGLT2 inhibitors. They're now a part of our standard armamentarium for patients who have heart failure, but also patients who have other forms of cardiovascular disease. We see some pretty dramatic benefits with those agents for people who are at highest risk. Similarly, there was a lot of buzz around the SELECT trial that was presented at the American Heart Association scientific sessions in November, the annual meeting, and that was a trial among individuals who have obesity and atherosclerotic cardiovascular disease, so prior coronary artery disease or stroke, but without actual diabetes, and those individuals, we saw a 20% reduction in major adverse cardiovascular events with the use of these agents. We've seen similar data in individuals with diabetes in the past. We've seen now the changes in coverage that are going along with where this evidence is. Medicare Part D recently highlighted that they were going to start focusing on individuals who have an improved indication for some of these agents, so people with cardiovascular disease who are in this kind of SELECT trial criteria might be some of the people who would be able to get coverage for these medications that would support not just for weight loss, but actually for the downstream cardiovascular benefits of these agents. We've had better coverage of people with diabetes as well.

I think the other piece to emphasize which goes along with this is the idea that if you're at greater risk for developing these bad outcomes, especially in the short-term, we're going to get more bang for your buck in terms of a risk reduction. For example, let's say something reduces your risk by 50%. If you have a 1% risk of developing that outcome over the next 10 years, then you get like a 0.5% actual reduction in kind of your absolute rates. On the other hand, if you have a 20% or 30% likelihood of developing a bad outcome, now you have a 10% or 15% absolute risk reduction, so a lot more bang for your buck, a lower what we call number needed to treat to achieve a significant benefit clinically with these agents. I suspect using a risk-based approach, using our risk calculators, using our risk profiles, as well as understanding when we have people with high risk with cardiovascular disease, we're going to see better coverage in some of those situations. It still raises the question of how do we appropriately address risk for the majority of the population with CKM syndrome who are along this spectrum. What are the ways that we can actually kind of more effectively support those individuals? I think that that's going to be a real area of focus. One more quick thing I'll say is that for GLP-1 receptor agonists, we do know that currently the data says that they're

really, really effective when you're on them, and when they stop, the obesity comes back and some of the other things that go along with that come back. That obviously has longer-term implications. You talked about children. When we start these agents, does that mean we're going to be going on them for decades or does that mean we're going on and off them? Is a period on them better than no period on them at all? There's a lot of questions that need to be answered moving forward, but I think that these are things we're going to have to engage with because this is what's driving health in our population.

LuAnn Heinen
Let's circle back to social determinants of health and how the equity and disparities issue factors in to CKM syndrome.

Dr. Chiadi Ndumele
Social determinants of health are a really important consideration here. The one thing that I'll start by saying is that we see a disproportionate burden of CKM syndrome among those individuals who live in areas that are more deprived, who have themselves individually more adverse social determinants of health at the individual level - income, education, and various things. One of the things that is really clear is that these social factors impact at multiple levels - what's happening in terms of the societal level, what's happening in terms of your neighborhood, what kind of interpersonal support you have. Then all these things impact various components of our health behaviors and then if you have more of a biological predisposition, you're going to be more likely to have these adverse consequences if you have more adverse social determinants of health. So you can think about health behaviors and you can think about CKM syndrome really in this broader socioecological framework of these various social factors that influence what our health outcomes are. Once you do develop these CKM syndrome components, more adverse social determinants of health will impact when they're recognized, it will impact how well we engage with the health system around these, and then the likelihood of complications and premature mortality. All these things are very important. One of the things that we actually emphasize is the need to more systematically screen for adverse social determinants of health as part of kind of routine practice. This is actually something that CMS is also going to be requiring for health systems as well. It kind of fits into that as well and then it's not just enough to screen and say, oh, there are some challenges here, but to also have some systematic approaches for addressing that. There are individuals that we can have on the health care teams, like community health workers and social workers who, when these are present, can actually leverage existing community resources and kind of more systematically connect people with help where necessary. So we think that that's a really important part of the care model and one that will be necessary, particularly when we think about equity in relation to addressing CKM syndrome.

LuAnn Heinen
Yes, it does sound like there are some recommendations for tweaking, or that may not be a strong enough word, the current care models. In another direction, the various specialties who are involved in CKM syndrome have very different points of view. I think that the Presidential Advisory points that out, not to mention individual physicians within those specialties - nephrologists, diabetologists, cardiologists, obesity medicine experts, and I'm sure many more. And, you know, we're not set up now to provide integrated holistic care. What's your thinking about that?

Dr. Chiadi Ndumele
That's a great point and I think that that's one of the key challenges that we have in this context. When individuals have multiple systems affected, so if your cardiovascular system and your renal system, kidney system, and also your endocrine system, and maybe even other systems, neurologic, pulmonary with sleep apnea, when these are affected, you're often seeing multiple different providers, and the providers are often not reading from the same playbook. So it's frequently the case that we can have more fragmented care, where everyone's kind of just taking care of the thing that's in their silo, and things can fall through the cracks. There's often not much communication, certainly not much integration, and the plans are often not so comprehensive and cohesive. This is a clear challenge and there's a need to have a more, as you said, holistic approach, where we're thinking about not what's my specialties issue, but more so what is the patient facing? The patient has these confluence of challenges that are not separate, they're all interrelated, and these things have kind of implications for thinking about coordinated care, and I just also described the social context. That's one of the key goals. The CKM Syndrome Science Advisory Group that

you had mentioned, it didn't just include cardiologists like myself, it included individuals from nephrology, renal, kidney backgrounds, individuals who are endocrinologists, individuals who were nurses and physicians and pharmacists, people who are internal medicine, because internal medicine is actually often going to be at the center here for addressing this patient population, particularly those who don't have full-blown cardiovascular disease or more severe kidney or diabetes disease, for example. The goal was to kind of provide a framework that really took from these different societal guidelines and brought them all together in a harmonized fashion to help people start to read from the same playbook. That's really something that was a very intentional part of this process. We're also going to have a lot more focus on interdisciplinary care approaches. We put forth some value and volume-based kind of care models that are interdisciplinary that focus on, yes, for high-risk patients being appropriately referred, but also kind of mechanisms to help different providers work more closely together. We emphasize the role of CKM coordinators. Coordinators in this circumstance have been really, really helpful for helping individuals get on kind of guideline-directed medical therapy and also just helping patients along the journey to optimizing their health. I think that we think that that can play a key role here and also could further support integration and communication amongst different specialists.

LuAnn Heinen
Dr. Ndumale, thank you so much for this. CKM syndrome, I want to share with our listeners, you heard it here first. This is going to be a significant factor in health care going forward, I predict. Thanks so much for your time today.

Dr. Chiadi Ndumele
Thank you so much for having me.

LuAnn Heinen
I've been speaking with Dr. Chiadi Ndumale, board-certified cardiologist and chair of the American College of Cardiology's Cardiometabolic Think Tank. Dr. Ndumale is helping us see how deeply intertwined our cardiovascular, metabolic, and kidney health truly is, highlighting the need for interdisciplinary care models that support patients more holistically.

I'm LuAnn Heinen, and this podcast is produced by Business Group on Health, with Connected Social Media. If you liked this episode, please rate us and leave a review.