



Chronic Care Roundtable

*Navigating the Intersection:
Diabetes, Cardiovascular
Health, Kidney Function, and
GLP-1 Therapies*

New Orleans, LA – November 12, 2024

Meeting Summary





AMGA Foundation Chronic Care Roundtable



John W. Kennedy, MD, president, AMGA Foundation, chief medical officer, AMGA, welcomed participants to New Orleans for a day of “navigating the intersection of diabetes, cardiovascular health, kidney function, and GLP1 therapies.”

“We’re going to be exploring the latest innovations, strategies, and best practices to improve patient outcomes in these areas through a health equity lens, while highlighting the importance of community engagement,” he said.

“With Q&As, small group discussions, and hot topic sessions throughout the day—the Chronic Care Roundtable is intended to be very participatory. We hope you have an opportunity to share your experience and get all your questions answered.”

Diabetes & Cardiovascular-Kidney-Metabolic (CKM) Syndrome

Kenny J. Cole, MD, MS System VP, Clinical Improvement Medical Director, Digital Medicine Ochsner Health

On the wall of every exam room across Ochsner Health’s 65-plus clinics, a prominent chart guides chronic kidney disease (CKD) diagnosis and treatment: the KDIGO Heat Map.

Color-coded in green, yellow, and red as a stoplight, the KDIGO Heat Map displays albuminuria ranges across multiple stages of CKD progression, from normal levels to kidney failure. As an objective measure for monitoring a complicated condition, it’s an invaluable tool, Cole said. But it’s just the beginning of what’s needed for truly effective CKD management.

“Primary care should be able to monitor patients up through stage 3, but time constraints complicate this. And nephrology can’t handle the volume of consults. This workflow needs to be redesigned,” he declared.

A first step in this redesign: Equipping primary care with knowledge and tools like the CKD Care Pathway. “The CKD Care Pathway clearly lists out what should be within the domain of primary care versus where nephrology gets involved, with all the important variables that need to be checked and monitored.”

One of these variables is the Tangri kidney failure risk equation, which predicts the risk of CKD progression from CKD to end-stage kidney disease via four variables: age, sex, estimated glomerular filtration rate (eGFR), and urine albumin/creatinine ratio (UACR). Ochsner built dot phrases (.KFRE2 and .KFRE5) into Epic, which providers can “just type in and instantly know” a patient’s Tangri risk score.



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KDIGO Heat Map

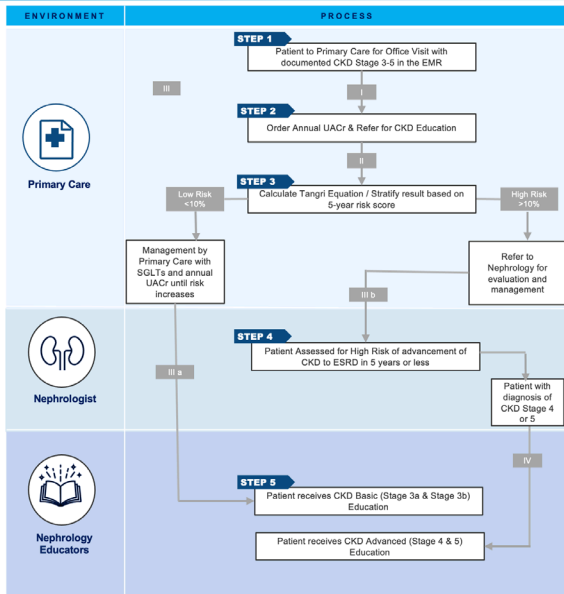
Use this heat map to help monitor progression versus improvement in kidney function objectively via improvements in albuminuria and/or eGFR to assess performance of digital CKM solution

CKD is classified based on:
Cause (C)*
GFR (G)[†]
Albuminuria (A)[†]

				Albuminuria categories		
				Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–299 mg/g 3–29 mg/mmol	≥300 mg/g ≥30 mg/mmol
GFR categories (mL/min per 1.73 m ²) Description and range	G1	Normal or high	≥90	Screen 1	Treat 1	Treat and refer 3
	G2	Mildly decreased	60–89	Screen 1	Treat 1	Treat and refer 3
	G3a	Mildly to moderately decreased	45–59	Treat 1	Treat 2	Treat and refer 3
	G3b	Moderately to severely decreased	30–44	Treat 2	Treat and refer 3	Treat and refer 3
	G4	Severely decreased	15–29	Treat and refer [†] 3	Treat and refer [†] 3	Treat and refer 4+
	G5	Kidney failure	<15	Treat and refer 4+	Treat and refer 4+	Treat and refer 4+

- Low risk (if no other markers of kidney disease, no CKD)
- High risk
- Moderately increased risk
- Very high risk

CKD Care Pathway



Pathway Decision Node Criteria

Process Step	Decision Criteria Definition
i.	Proceed if ≥1 of the following criteria apply: <ul style="list-style-type: none"> • Patient with confirmed diagnosis of CKD Stage 3-5 • HCC capture/re-capture
ii.	Order annual UACr: <ul style="list-style-type: none"> • Applies to all patients with a diagnosis of CKD Stage 3-5 • Document result in Epic Health Maintenance • Utilize the written order guideline for appropriate level of care Refer for CKD education <ul style="list-style-type: none"> • Level of CKD Basic Education Class <ul style="list-style-type: none"> • Stage 3 class (virtual or in-person) • Stage 4-5 class (virtual or in-person) • Consider referral into Digital CKD Program after launch in 3Q 2024
iii a. & b.	Calculate Tangri / KDIGO <ul style="list-style-type: none"> • <10% @ 5% Risk → Medical Management by Primary Care with SGLTs • >10% @ 5% Risk → Refer to Nephrology for assessment and future management • Consider referring into the Digital CKD Program
iv.	Refer to Nephrology for assessment and future management <ul style="list-style-type: none"> • Assess and confirm CKD stage level • Refer to Nephrology Educators as indicated • Consider referring into the Digital CKD Program
v.	Patient receives CKD Education <ul style="list-style-type: none"> • Based on Stage of CKD, patient participates in CKD education classes • Consider referring into the Digital CKD Program



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The CKD Care Pathway provides a framework with decision criteria at each node, of what to expect at each stage. For example, as a patient progresses into stage one, excess adiposity can begin to lead to insulin resistance and impaired glucose tolerance, which may then evolve into stage 2 CKD with increasing metabolic risk. You've got elevated triglycerides, hypertension, diabetes, even early-stage chronic kidney disease, and all of these things are tightly interrelated," Cole said.

New Medications Show the Interconnections

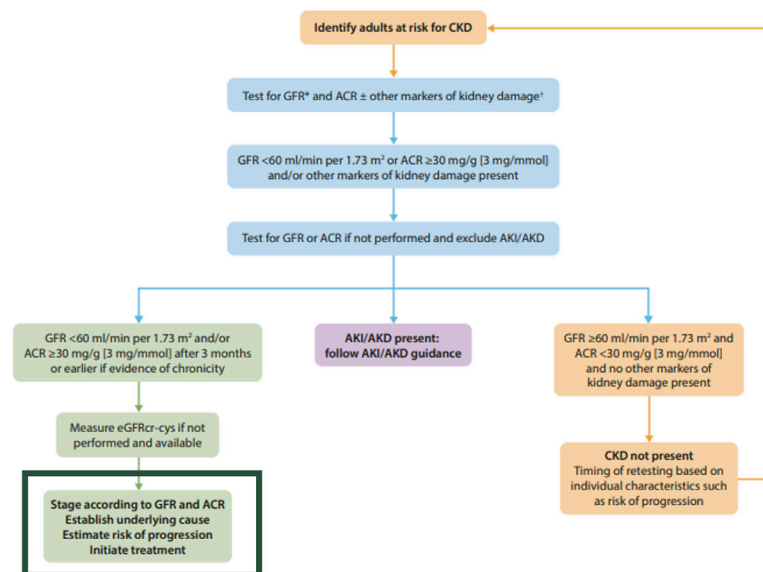
One solution for slowing, stalling, or even reversing CKD progression involves weight management and the many medications now available in this area.

Cole walked through research related to SGLT2 inhibitors. Empagliflozin therapy has led to a lower risk of kidney disease progression, along with a lower risk of death from cardiovascular causes, for a wide range of patients who are at risk.¹ This includes patients with both type 2 diabetes and high cardiovascular risk.²

In patients with kidney disease and type 2 diabetes, canagliflozin has shown to contribute to a lower risk of kidney failure, as well as lower risk of cardiovascular events.³ Meanwhile, patients with chronic kidney disease, with or without diabetes, who took dapagliflozin had their risk significantly lowered for sustained GFR decline, end-stage kidney disease, and death from renal or cardiovascular causes.⁴

He also shared GLP-1 receptor agonist research for these interconnected chronic conditions. Liraglutide has been shown in patients with type 2 diabetes to both improve diabetes control and reduce the risk of major adverse cardiovascular events.⁵ For patients with CKD and type 2 diabetes, semaglutide reduced the risk of clinically

Screening Algorithm for CKD





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important kidney outcomes, as well as death from cardiovascular causes.⁶ Nondiabetic patients with preexisting cardiovascular disease who are overweight or obese and took semaglutide had reduced incidence of nonfatal stroke, nonfatal myocardial infarction, and death from cardiovascular causes,⁷ as did patients with type 2 diabetes and high cardiovascular risk⁸ and patients with type 2 diabetes who took liraglutide.⁹

Given “how the algorithms come together into this sort of Venn diagram,” Ochsner takes a holistic approach to CKD treatment, aiming to preserve GFR, address care gaps impacting UACR, and supplement kidney medications with blood pressure, lipid control, and lab work in areas such as phosphorus, calcium, vitamin D, and parathyroid hormone.

Such a unified scope also means not burdening patients or providers with too many care management platforms, but rather connecting digital programs for hypertension, diabetes, lipidemia, and beyond. “Ultimately, CKM syndrome is a staging framework that allows us to build out new digital tools that will better manage these conditions across the entire spectrum,” Cole said.

He illustrated the success of this approach with a patient example: “At the beginning of care, her LDL was over 160, her blood pressure was 170/100, and her A1c had never been in single digits.” After three years of unified treatment, the patient’s 14.8% risk of kidney failure in five years fell to 4.7%. “That’s what happens when you’re really paying attention to the details. You understand the evidence and you treat patients in a holistic manner,” he said.

Q&A and Roundtable Highlights

Participants talked about the work involved in effectively shifting CKD patients from nephrology to primary care, from getting everyone up to speed on the latest best practices to navigating the new treatment guidelines. Embed digital solutions, said one participant, especially given all of the related medical conditions, labs, and medicines involved in CKD care. “If we’re counting on hundreds of primary care doctors to be continuously up to date on all of the evidence, then we’re never going to get there.”

Another healthcare organization (HCO) talked about how they’re leveraging PharmDs in the treatment stage to assist busy physicians, having them run a medication algorithm and communicate back to primary care—an approach that spurred many audience questions.

PharmDs can help with the division of labor, but who owns primary accountability for patient therapy? Who does a patient call with questions? And who manages the data? One participant talked about how their pharmacy director leverages the organization’s network for areas like analyses and actuarial reports. “We have a shortage of data scientists. We can’t pay Amazon salaries.”

Could a bundled measure “get rid of the metrics overburden?” To get there from a policy standpoint, HCOs will need to “pull together and figure out how to make it happen,” another participant declared, making evidence-based arguments and connecting bundled measures to cost of care.

Education, Medication, and Doing More with Less

Participants discussed efficiency and workflow enhancements in their organizations, from using electronic health record (EHR) alerts to reminding nurses and medical assistants to talk to patients about social drivers of health (SDOH) to implementing “automation when possible” and hybrid/floating staff and remote care to supplement stretched resources. “It’s not realistic to have embedded diabetes educators at every office,” one participant noted.



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They also emphasized the need for patient education, to correct misunderstandings in areas such as nutrition and lifestyle guidance and address areas of resistance like medication adherence. “Follow-up discussions are so important and do not always happen,” one participant declared.

Transportation was a frequently mentioned SDOH barrier. One organization talked about using grant funding for solutions. Another suggested that organizations with their own insurance plans use some of those dollars to support transportation/food insecurity, possibly as an initial proof of concept.

Finally, a top priority was the cost of medications, especially within the SGLT2 and GLP-1 classes, which may not be universally covered by all insurance plans. “Get data on reduction in cardiovascular and kidney events and show the insurers that the meds will ultimately pay for themselves by reducing overall healthcare costs,” one participant recommended.

Diabetes and Health Equity

Yeng Yang, MD, *Internal Medicine/Pediatrics, Urgent Care, HealthPartners Park Nicollet*

A patient resists nutritional recommendations because the guidelines don’t work with the foods and recipes they use at home. A clinician makes a biased assumption because a patient doesn’t speak the same language or comes from a different socioeconomic class.

These are the types of situations culturally informed and responsive care is designed to address. The approach takes into account how language, culture, heritage, beliefs, and more factor into health literacy, health decisions, and the provider-patient relationship.

In this session, Yang shared HealthPartners’ efforts in this area and the importance of this work, providing high-level context into health disparities and the structural inequities behind them, then focusing in on chronic conditions and culturally responsive care.

Bridging Gaps and Building Trust

Black and Hispanic populations have the highest prevalence of diabetes in the United States, but the treatments these patients receive are often less aggressive. Bias—and the chain reaction it catalyzes—play a big factor in why, she explained.

When a provider has inaccurate assumptions about a patient’s intelligence, resources, ability to adhere to treatment, or desire for lifestyle changes, it affects the type of care that’s offered. When a patient feels as though the provider doesn’t understand them, they’re less likely to open up about symptoms, follow through on recommendations, or even return to the clinic for future visits.



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Finding common ground has been a core tenet in bridging these gaps. Yang shared an example of research linking language-concordant care to improved glycemic control.¹⁰ But does a care team absolutely have to “look like the patients they serve”—share the same heritage, come the same racial or ethnic background—to have a strong patient-provider relationship?

Not necessarily. Providers can also build common ground through shared interests, such as football, she said. She shared another study comparing blood pressure control across White/White, White/African American, and African American/African American provider-patient relationships. The study showed little difference in medication adherence. Trust, instead, was the key.¹¹

“If you have trust, it gives you a better chance of better outcomes—no matter what you look like or where you come from,” she declared.

Asking What Communities Want and Need

HealthPartners has been collecting data on diabetes prevalence, prevention, and disease for the state-mandated Minnesota Community Measures database. Despite years of health equity initiatives, gaps persisted, and Yang suspected the reason why: “We’ve been doing quality improvement, but we haven’t done culturally responsive care or cultural inclusive care.”

Yang talked about recent efforts to address this situation, starting with an equity lab project focused on care for chronic diseases. The initiative included focus groups with members of the area’s Somali and Ethiopian communities.

Project #1: MyPlate → MyMeal

Miraha Fruits

Tufbaan Apple, Banaana Banana, Tessa Dates, Canshi Grapes, Beer Pear, Liin macaan Orange, Carba Mango, Liin dhanaan Lemon, lime

Baruurta iyo saliidaha Fats and oils

Saliidka kamaadka Canola oil, Saliid saynuun Olive oil, Subag yarin ah ama co'cood ah Ghee

Khudaarta cagaaran ee sorkorta kicinayn Non-starchy vegetables

Badarka iyo khudaarta sorkorta kicisa Grains and starchy vegetables

Waxyaabaha caanaha laga sameeyay Dairy

Caano boore Powdered milk, Caano garuur ah Yogurt, Caano xeebaha laga saamirka Butter/milk, Caano isbiyo bar laga saamirka (ST) Reduced fat STZ milk

Khudaarta cagaaran ee sorkorta kicinayn Non-starchy vegetables

Yaango Tomato, Saadii Romano lettuce, Basasha cas Red onion, Kaasoota Carrots, Isbiing Spinach

Badarka iyo khudaarta sorkorta kicisa Grains and starchy vegetables

Anjirero, Mook, basasha Rice, pasta, Heed, haruur Lentils, barley, spaghetti, Basato Beans, Bariis Rice, Hilbi lo'raad, Hilbi lo'raad Hilbi yiraad, Hilbi yiraad Hilbi dipaag Chicken, Hilbi dipaag Chicken, Raasim, cuntooyinka Pork, seafood

Waxyaabaha caanaha laga sameeyay Dairy

Caano boore Powdered milk, Caano garuur ah Yogurt, Caano xeebaha laga saamirka Butter/milk, Caano isbiyo bar laga saamirka (ST) Reduced fat STZ milk

Kawaajiyadda iyo basbaaska Herbs and spices

Noon-salidka ka mid ah: Basil, Kammar caleem Cilantro, Qoorfe Coriander, Khamuun Cumin, Xawaaj dhacsi-dhacsi Cardamom, Toon Garlic, Sinqaash Ginger, Fiifi Black pepper

Suqaar hilbi iyo bariis xawaashyo kala duwan beef supper with spiced rice

Miraha Fruits

Moox (jab moox ah) Banana (2 half), Bariis Rice (cooked), Barasho Peas

Badarka iyo khudaarta sorkorta kicisa Grains and starchy vegetables

Khudaarta cagaaran ee sorkorta kicinayn Non-starchy vegetables

Basasha cas Red onion, Kaasoota Carrots, Barbaroom Red bell peppers, Yaango Tomato

Booratiin Protein

Hilbi lo'raad Beef

Baruurta iyo saliidaha Fats and oils

Saliid saynuun Olive oil

Qiyaas Amount

10 gacmarada oo-la duubay ifig Fat = 1 look 1 cup

Kawaajiyadda iyo basbaaska Herbs and spices

Qoorfe Coriander, Xawaaj (Banaadhuub) Cardamom, Khamuun Cumin, Fiifi Black pepper, Hayl Cardamom, Dhagayeen Cloves, Toon Garlic, Harasad Turmeric, Kammar caleem Cilantro

Ilaha Waxbarashada Education Resources





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“We focused on learning what the understanding of diabetes is in each culture, what they’re looking for in patient education, and how they like to receive that patient education,” Yang said.

One requested change involved nutritional guidance. “Food cultures are different,” Yang explained. “Patients feared they wouldn’t be able to translate this information at home, and not all clinicians really feel that comfortable talking about the different food cultures to help them manage the diabetes.”

In response, HealthPartners reimagined patient and clinician education materials to respond to the food and cooking traditions of the Somali community.

Community feedback was essential for making sure the materials hit the mark in terms of language and context, Yang said. “You just can’t translate word for word, because sometimes you’ll end up with sentences that are not understandable.”

Bringing Patients into Product Design

Human-centered design factored in as well, she continued, “really trying to put yourself in the end-user’s shoes and understanding how they use the material.”

Sometimes these efforts have resulted in infographics and other times videos. “Human-centered design allows for creativity and thinking outside the box,” she said and offered some guidance from her team’s experiences.

“You iterate because the first effort won’t be the greatest and involve the users of the materials throughout.” The results will pay off. “Patients are more satisfied, and they’re more likely to adopt their care plans.”

In addition to patient education, HealthPartners’ health equity work includes lessons on how to put the data to work for hypertension control. The patient-focused part of the tool involves blood pressure readings collected through remote monitoring. Then a “priority wizard,” a custom-built decision support tool, alerts care teams to readings that aren’t under control and next steps based on the patient’s medications and health profile.

Yang wrapped up the presentation part of the session with encouraging results so far and the acronym that guides all health equity initiatives at HealthPartners: PEARL—plain language and understandability; explicit data, statistics, and graphs; affirmative framing; representative content; and local connection.

“If you go to your patients and their communities with trust and an open heart, they will show you the same,” she concluded.

Q&A and Roundtable Highlights

Yang’s presentation of HealthPartners’ work inspired participants to share the own strategies for addressing health disparities and SDOH in their practices. They discussed variation across providers, systems, patients, and locations. “There is no one-size-fits-all approach,” one participant noted.

Gathering and Using Information

Much of the conversation focused on metrics and measurements. Participants talked about using dashboards to track health equity KPIs like screenings, the need to “democratize the data” in terms of organization-wide information-

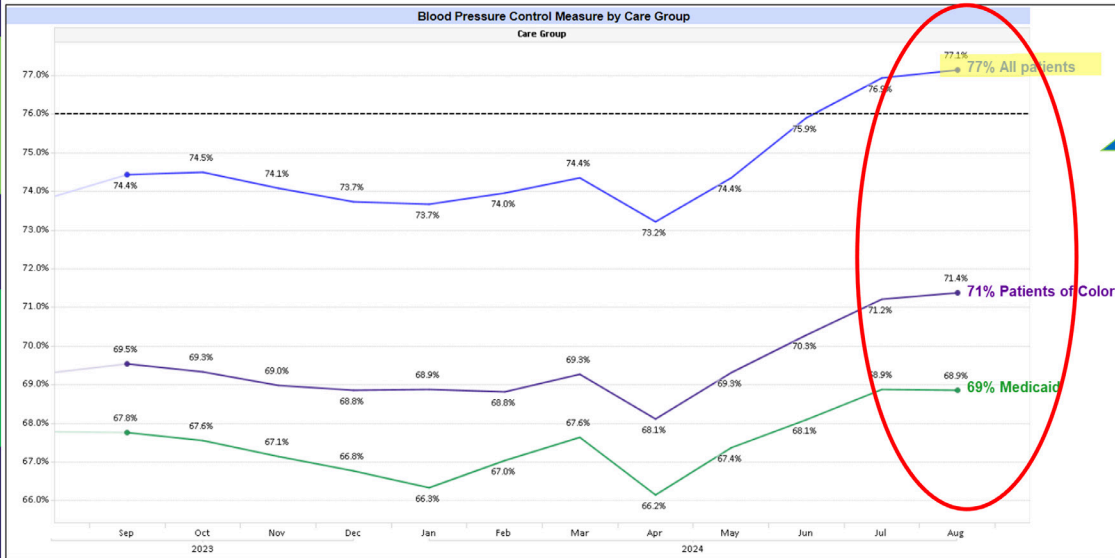


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Hypertension

Goal 76%



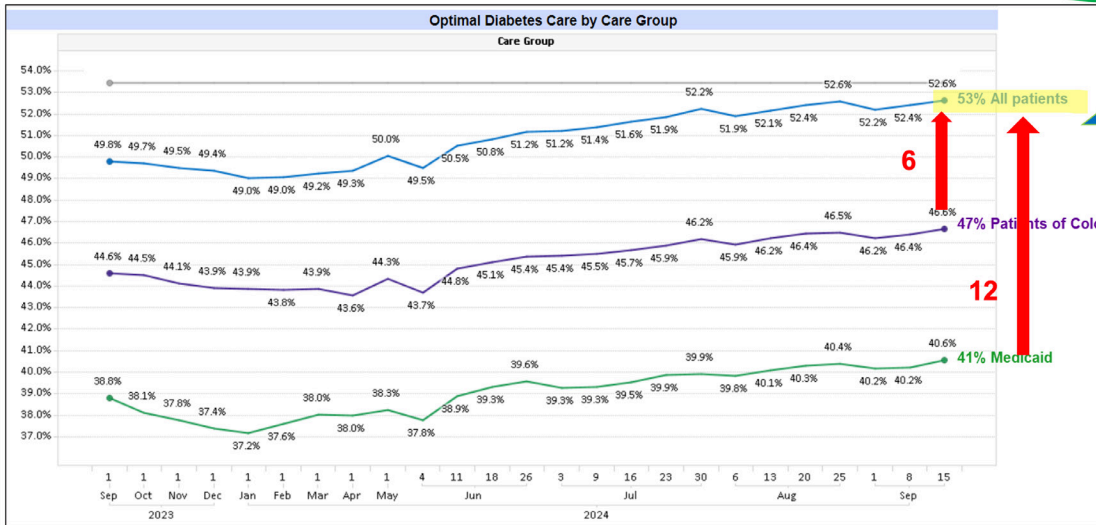
3.3% increase!

All Patients 160,376 | Patients of Color 27,950 | Payor (Medicaid) 11,976

© HealthPartners

HP Optimal Diabetes Care YTD 9.24

Goal 53.4%



3% increase!

All Patients 62,967 | Patients of Color 18,625 | Payor (Medicaid) 8188

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sharing, and making sure goals are consistent across races and ethnicities. “We should expect nothing less,” one declared.

Organizations are at different stages in their SDOH information-gathering. One reported collecting these data in 95% of patient visits. Another talked about leveraging annual wellness visits to ask patients about challenges like access to food.

“Consistency in the questions asked is key,” was one piece of guidance. “Identify what data are truly needed,” another participant advised.

Throughout, it’s important to realize that surveys and metrics are just one part of understanding and addressing gaps. “You can run data, but they tell you the what, not the why,” was one observation. “You need to talk to people at all levels,” another participant emphasized.

Building Trust and Sustainability

Participants also talked about the human factors involved in addressing care disparities. Leadership may respond to health equity data with resistance and disbelief, for example. Patients can be reluctant to share SDOH information.

One participant suggested asking SDOH questions in a range of settings beyond outpatient care, such as during a hospitalization for an acute illness. “People often feel more vulnerable in an inpatient setting and may actually divulge more SDOH issues and concerns.”

As organizations tackle bias on the care team side with awareness and education efforts, there’s another side of the equation that needs to be considered as well: patient bias against providers. “The workforce needs to be diversified,” one participant declared.

Medications were another topic of discussion, both strategies for getting patients onto them and affordability concerns, especially with the new obesity drugs. “What is the point of providers taking the time to do shared decision making and prescribing evidence-based treatments only to find out later the patient’s commercial insurance, Medicare, or Medicaid won’t cover it?”

Throughout, participants talked about the overarching challenges of funding, staffing, and sustaining their health equity work. They shared approaches their organizations are taking and ideas for others, from grant programs and community partnerships to fresh thinking about roles and responsibilities, such as using clinical nurse navigators in areas like care transitions.

“We discussed using community health workers,” one participant said about workforce shortages in their own health equity efforts. “But the funding needs to be secured to sustain and grow these programs.”



Diabetes Technology and Innovation

Vivian Fonseca, MD, FRCP, *Asst. Dean for Clinical Research, Chief, Endocrinology, Professor, Tullis-Tulane Alumni Chair—Diabetes, Tulane University School of Medicine*

Lizheng Shi, PhD, MsPharm, MA, *Endowed Regents Professor, Director, Health Systems Analytics Research Center, Tulane University School of Medicine*

Fonseca and Shi's work in diabetes risk analysis aims to streamline the many evolving and interconnected factors providers need to consider in diabetes treatment decisions.

New medications, growing awareness of comorbidities in chronic conditions, and the rise of personalized medicine are opening up new opportunities in diabetes care—along with many questions. Should a patient with diabetes automatically be considered a candidate for heart disease medication? What's the hospitalization risk of a patient with CKD but not cardiovascular disease? And how does overall patient risk—and thus the patient's goals for treatment—change with age and over time?

"The doctors have 10 minutes each visit to work this all out," Fonseca said. All the while, they're facing many other competing priorities when charting next steps in patient care and allocating their organization's limited resources. "It's very, very challenging, and as a result, the goals have not been achieved for many people."

Making things even more complex is the nature of diabetes itself. The condition has several subtypes, each with its own unique characteristics and differentiators: insulin resistance vs. insulin deficiency, varying degrees of obesity, and level of metabolic control. Navigating the commonalities, differences, and nuances can get complicated. Both severe insulin-resistant type 2 diabetes and MODY 2 diabetes may be diagnosed in adolescence or early adulthood, for instance, but only the former carries increased risk of kidney disease.

Building Upon a Growing Body of Work

Fonseca noted that very few markers exist for identifying diabetes risk. "The genetics are just too complex." Furthermore, he explained, "Predicting outcomes is complicated. It's not as simple as saying this is your A1C, this is your LDL, this is your risk," he explained. Factors like renal impairment and related interactions can play a role as well.

By bringing massive amounts of information, such as large population studies, into specialized algorithms, risk engines are designed for complex analyses like these. This is how Fonseca, Shi, and their team began their quest to simulate the progression of diabetes.

The multigenerational Framingham Heart Study, which informed the Framingham Risk Scores for cardiovascular disease,¹² is foundational for estimating risk. But the Framingham risk equations pose some limitations, Fonseca explained. They can overestimate some risks, for example, and their estimates do not have the flexibility to incorporate regional, socioeconomic, and time-related differences into disease rates. The latter is particularly important when



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thinking about how diabetes risk in people living in Framingham, Massachusetts decades ago might compare with diabetes risk in people living in New Orleans today.

The UKPDS model, a patient-level simulation tool for predicting lifetime health outcomes among people with type 2 diabetes mellitus,¹³ offers greater precision and larger number of related variables, but there are limitations here as well. UKPDS is based on a small population in the UK, rather than the large, multi-ethnic population of the United States.

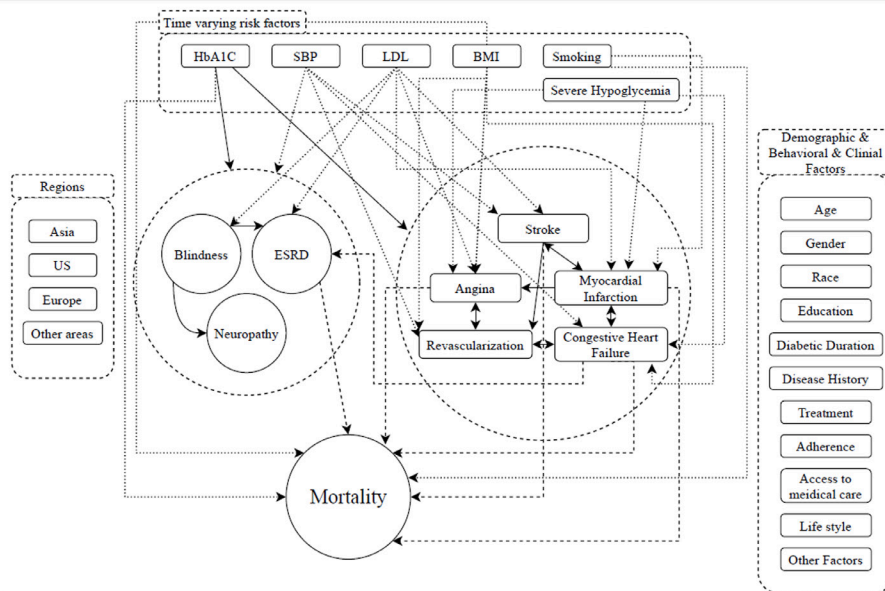
One study that addressed the issue of population size was the National Institutes of Health-sponsored Action to Control Cardiovascular Risk in Diabetes (ACCORD) clinical trial. With more than 10,000 participants, it is one of the largest studies ever conducted for adults with type 2 diabetes and high cardiovascular risk.¹⁴

Fonseca's team at the University of Tulane Medical School used the ACCORD dataset as the basis for a new risk prediction engine: BRAVO.

BRAVO: Multifaceted Risk Simulation with Regional Variation

BRAVO is a real-time micro-simulation tool that estimates risk for diabetes complications and mortality for patients with diabetes at the patient level. It supports provider decision-making by predicting the risk of different events, as well as life expectancy, cumulative quality-adjusted life years, and lifetime costs.

WHAT IS THE BRAVO DIABETES MODEL?





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The model incorporates change in A1C and LDL-C markers over time, neuropathy risk, SDOH information, ZIP code data, and more. “We have multiple equations running simultaneously to give you this output, and it’s changing all of the time,” Fonseca said.

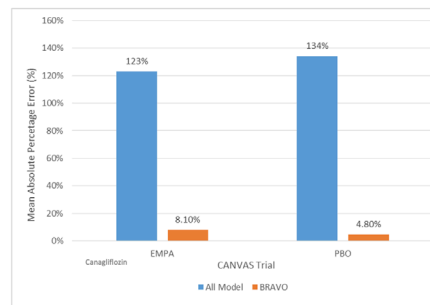
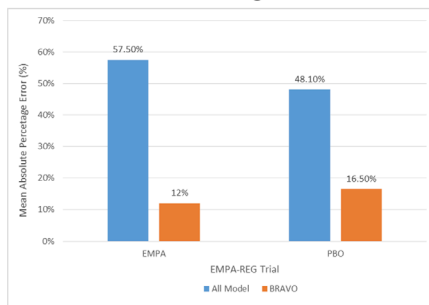
PREDICTION MODELS COMPARISON

Differences between BRAVO model, Framingham equation and ASCVD equation	Framingham	ASCVD	BRAVO
Infer clinical decision (e.g. risk stratification, and patient heterogeneity)			
• predict risk of general cardiovascular event as one outcome	Yes	Yes	Yes
• predict risks of different cardiovascular event types (i.e., MI, CHF)			Yes
• predict risks of microvascular complications (i.e., ESRD, Blindness)			Yes
• Short-term outcomes prediction (<=10 years)	Yes	Yes	Yes
• Long-term or lifetime outcomes prediction		Yes	Yes
• Cost estimation over a specified time period			Yes
• QALY estimation over a specified time period			Yes
• Take into account impact of treatment			Yes
Support discrete-time event simulation and cost-effectiveness analysis			
• Person-level microsimulation			Yes
• Allow 1st (stochastic) order uncertainty			Yes
• Allow 2nd order uncertainty			Yes
• Allow time-varying risk factors			Yes
• Allow inter-related diabetes complications			Yes
Global Calibration Module, allow cross-country prediction			Yes

GHMP, Tulane University

BETTER PREDICTION ACCURACY FOR NEWER AGENTS

■ The International Diabetes Simulation Model Bi-annually Competition: The Mount Hood Challenge



- In EMPA-REG trial, the average prediction errors across 12 models were 57.50% (Treatment) and 48.1% (Placebo), while the prediction error of BRAVO model was 12.0% and 16.5%, respectively.
- In CANVAS trial, the average prediction errors across 12 models were 123% (Treatment) and 134% (Placebo), while the prediction error of BRAVO model was 8.1% and 4.8%, respectively.



GHMP, Tulane University



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Fonseca walked through key features that distinguish and differentiate BRAVO from other models, including its ability to capture the impact of body weight on cardiovascular risk, cost-of-care, and quality of life, and its ability to capture the impact of hypoglycemia.

A globalization module that calibrates the model's projections for regional variation of cardiovascular risk has been externally validated by 18 separate large-scale randomized clinical trials. Data from those studies were used to further calibrate BRAVO's outputs.

"We've started improving on our model using data for any trial that's publicly available," Fonseca said.

Targeted Insight Right in the EMR

Fonseca walked through various studies conducted with the BRAVO model: Using biomarker controls (BMI, HbA1C) to predict life expectancies, predicting results from an SGLT2 inhibitor cardiovascular outcomes trial, and mapping the long-term economic and health impact of \$35 monthly insulin copayment cap policies. He also showed how adjusting various biomarkers and characteristics could impact patient outcomes.

"BMI seems to make a huge difference," Fonseca said. "Systolic blood pressure is modest, surprisingly, as is LDL, which we used to think is the most important factor. The benefit of lowering the LDL is relatively small, maybe because we've done so well already in lowering LDL cholesterol, so achieving any additional benefit has been challenging."

As Fonseca and Shi's team roll the BRAVO model out for regular operational use, the initial focus has been integrating the software into existing electronic medical record (EMR) systems, for risk stratification in service of more targeted care.

"Instead of giving everyone 15 minutes for an appointment, wouldn't you like to be able to say up front 'I need 10 minutes for this patient' or 30 minutes for somebody else based on high, medium, or low levels of risk?" Fonseca asked. "And wouldn't it be nice if risk information flashed on the EMR screen in the form of a little red dot or a green dot?"

The next step involves incorporating BRAVO into the clinic visit itself as a platform for shared decision making. As a patient and provider discuss potential treatment plans, the BRAVO model uses patient data to simulate the risk for various outcomes: complications from diabetes, specific conditions like hypoglycemia, and mortality.

Fonseca walked through examples to illustrate. A patient at low-risk with in-control blood pressure and a BMI of 25 might have a 1.4% risk of stroke and a life expectancy of 33 more years. For a higher-risk patient, by contrast, the BRAVO model might predict a life expectancy of only eight more years, along with double-digit percentages for risk of stroke, renal disease, and congestive heart failure.

The Next Step: Interactive Risk Prediction

The interface for displaying these projections remains a work in progress, Shi and Fonseca said, with future enhancements focused on usability and interaction.

"I think it could be even more dynamic," Shi elaborated, "implementing the heat map so you can see how moving around a combination of biomarkers can generate a difference in life expectancy. We want to be able to calculate that."



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The goal, he said: “Give doctors and patients the opportunity to play around with it a little bit.”

The team is pursuing grants and partnerships to explore these possibilities, he said, and they hope to offer BRAVO’s capabilities to a wide range of facilities, regardless of the level of technology available.

“We’ve done it in a few EHRs, and we want to make it scalable and usable for Epic, Allscripts, and so forth,” Fonseca said. “This could be a powerful tool to educate your patients on the right treatment: These are your risks, and to improve your health outcomes, these are the goals your doctors are going to set for you. And if you focus on this, your life will be better and longer—all with a click of a mouse.”

What’s next for BRAVO? Shi talked about areas he and the Tulane team are exploring, including analyses related to prediabetes, diabetes progression, and the onset of heart failure and CKD. Other possibilities include building a platform for gestational diabetes and integrating mental health screening into the model and its applications.

Q&A and Roundtable Highlights

Participants asked about “translating those numbers on the dashboard into something that’s more tangible for the patient.” Fonseca and Shi and their team are looking at funding opportunities toward this goal, such as generative AI that would turn analysis into more accessible prose or provide patient recommendations at a third-grade reading level.

Participants also asked about preventative care—supporting patients at the earlier stages of the risk continuum.

Preventative care starts with the tool’s initial recommendations, “the things you need to take care of first for busy doctors and patients,” Shi replied. “We try to give them clinical support for the four main treatment goals—body weight, A1C, LDL, and blood pressure—and which one the patient needs to start first.”

Shi emphasized the importance of “multisectoral” approach: talking about health disparities and SDOH, doing SDOH screenings, and connecting with social services, particularly if coverage or cost barriers exist.

Participants also asked about tactics for validating and vetting AI tools and encouraging physicians to use them. Shi walked through three criteria. First, do the tools use good measures? Secondly, is there clinical validity? “If you’re improving A1C, then you’re going to have better outcomes,” he said. The last and most challenging criterion is clinical utility. “Is the tool really moving the needle?”

Shi cautioned that organizations should be aware of the potential for built-in biases, particularly when using data from clinical trials that have lower minority representation or when care levels vary greatly between populations. He illustrated with an example of how geography and access to resources impact heart attack risk. Patients with immediate access to an interventional cardiologist and a stent will likely have a much better chance of survival than those who lack access to such resources.

Finally, remember that any AI tool ideally involves a partnership between humans and technology. “The tool can give you a recommendation, but eventually you make the final judgement,” Shi said.



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Hot Topics

Moderator: Nancy Beran, MD, MHCDS, FACP, CPE, Vice President and Chief Quality Officer, Northwell Health

In two sessions throughout the day, attendees had the opportunity to bring up topics they wanted to discuss in greater detail with their peers.

Collecting and Using SDOH Data

How can a provider address multiple SDOH concerns in a limited amount of time? “Try to get as much done as possible in one visit”—for example, getting A1C and urine protein measurements at the point of care to reduce the number of return visits required for patients. What about collecting complete and accurate race/ethnicity data in the first place? Education and scripts for frontline registration staff can be helpful, with some participants noting that patient self-entry of this information has posed challenges, both in terms of understanding the use of new technology and in terms of resistance to sharing sensitive personal information.

“Patients push back on entering SDOH data when trying to schedule a visit,” was one participant’s response to this subject. “We allow them to answer as many as questions they want,” another shared. “Then even if they just bypass several of these questions, at least we’re capturing some information.”

Then there are other issues to consider at the back end of the data collection system. “As the population shifts, the categories that we have in our IT systems don’t really map to what the realities are,” one participant observed. For example, the list of available race, ethnicity, or gender options may not correspond to how a patient self-identifies. This makes it challenging to meet patients where they are and target interventions in a resource-constrained world.

Addressing Disparities in Treatment and Outcomes

One organization is using dashboards to break data down health equity data by location and office site, adding that “we’re actively choosing not to go down to the individual physician level.”

Another is moving ahead incrementally by refining language and measurements for one specific HEDIS measure, such as colorectal cancer screening or blood pressure control, each year.

For one organization, resource limitations and patient transportation barriers converged for an unexpected challenge: “We had funding for a bus but not for a driver.”

Medication cost and access, especially in the areas of SGLT2 and GLP-1, has been “a huge issue” that participants are tackling in a variety of ways: pharmacy-driven patient access programs, manufacturer coupons, and cost-sharing programs with health plans, to name a few. But some programs have strict guidelines for coverage, like working with a specific pharmacy and making enrollment in certain patient monitoring programs and achieving specific weight loss goals a condition of coverage.

Rethinking Teams and Redesigning Care

“Who owns CKM syndrome within your organization?” Beran asked. “This is a relatively new concept for many primary care providers,” one participant replied, adding that primary care wants to do more but needs to have



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something else taken off their already overloaded plates. “This is more than they can manage, including more frequent labs.” Primary care redesign is needed, with AI tools and pharmacies potentially providing support.

Organizations have been using their pharmacy departments in many ways: Outreach, e-consults, assistance with rebate programs, and support with medication education, adherence, and de-prescribing efforts. “They’ve been a huge help,” one participant shared.

As these partnerships evolve, participants advised their colleagues, watch out for duplication of efforts to avoid burdening patients and prioritize timely communication among all stakeholders.

Closing WISDOM

Kennedy concluded the event by asking participants to share their WISDOM—What I Shall Do on Monday—namely, the top learnings they would take back to their organizations. “Something to check on, to implement, to try or to learn more about that you will start on Monday.” He encouraged participants to “ask your colleagues in the room today for their business cards, references, and resources, and invite them to follow up with you as well.”

Targeted Insights on CKM/CKD

Participants said they found the specific CKM/CKD focus of the event to be particularly helpful—and needed. They said the event had helped identify concrete next steps, such as integrating continuous glucose monitoring and albumin-to-creatinine ratios into patient care.

One noted that “CKM needs to be talked about more,” beyond conversations about diabetes. “I don’t think we’re really doing a consistent job or a strategic job of screening our folks for CKD,” another observed.

Empowering Primary Care Providers

Participants also noted “a lot of great feedback” from the day’s sessions for primary care.

“We talked so much about getting everybody on the care team working at the top of their license,” one participant elaborated. “I think we need to prioritize getting primary care to work at the top of their license. How do we really free up our primary care doctors so we can get them back to the level of critical thinking that they’re trained to do?”

One way is to bring pharmacists into the equation—an often-discussed tactic throughout the day that many participants said they planned to investigate after the meeting. Participants also cited a need for “meaningful tools” usable during point-of-care decision making, such as those available within the Ochsner model of CKM care.

Harnessing Data and Innovation

Conversations also focused on leveraging information more effectively: refining treatment algorithms, sharpening understandings of SDOH, and exploring applications for predictive analytics and AI.



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“Data, data, data—we can’t say the word enough,” one participant said, and many others echoed that sentiment in their next steps and topics for further exploration:

- “I’m really interested in understanding the current state of the data in our system so we can think about improving that in the context of CKM.”
- “We have a lot of good data, but how do you translate it into insights for clinicians in their constricted amount of time, and then come up with a care plan for patients?”
- “Right now, we spend a lot of time gathering, crunching, and analyzing data, but when it’s time for collaborating and decision making, it’s getting sacrificed. How can we empower the patient to be more knowledgeable?”

A Holistic Approach to Chronic Care Management

Finally, the WISDOM recap emphasized the benefits of combined assessment and care across all of these interconnected conditions: CKD/CKM, diabetes, cardiovascular conditions, and beyond.

“I think in population health, we look at measures singularly,” one participant said. “If we can try to do those bundled measures, we can look at things more holistically and look at optimal care across the patient care continuum.”

Patients were central to many planned next steps, from addressing and eliminating barriers to care to educating patients about these conditions.

Focus your patient education “not only on the risk, but also about what they can do to address the risk,” in the words of one participant. “How can their health outcomes improve as they make different changes or adhere to different treatments?”

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