

DAILY NEWS



Inside



See today's QCOR schedule. QCOR at Sessions is a one-day event. **AND** Late-Breaking Science schedule

3

Learning Studio and Symposia schedule

7



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Scientific Sessions

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LIVE Today



Main Event
Long-Term COVID-19: Cardiopulmonary Translational Science

9:30-10:30 a.m. EST

This main event session will discuss topics directly pertinent to the longitudinal cardiopulmonary clinical care of COVID-19 survivors.

Lewis A. Conner Presidential Lecture champions primordial prevention and health equity

Due to concerted cardiovascular disease prevention efforts by the American Heart Association and the devotion of scientists and clinicians to cardiovascular health and patient well-being, age-adjusted cardiovascular disease death rates declined 70% from 1968 to 2010. By 2011, however, the trajectory of cardiovascular health success had plateaued. It is within this context, the future of

improved cardiovascular health (CVH) needs to be reinvigorated to enable improved population health by reducing cardiovascular events. The long understood paradigm of cardiovascular disease prevention was represented by three tiers of the Prevention Pyramid. At the top of the pyramid is tertiary prevention, which is centered on reducing the consequences of acute cardiovascular events. Secondary



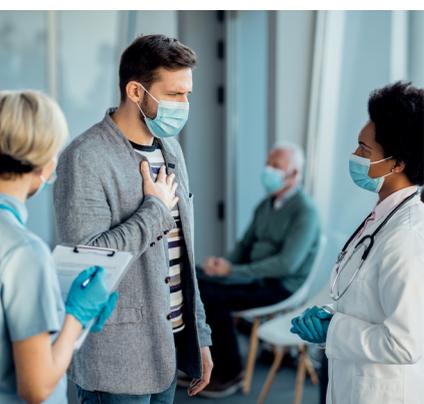
AHA CEO Nancy Brown

prevention in the middle focuses on discharge therapies and See **PRESIDENTIAL**, page 4



EARLY CAREER
Top Early Career Tips in Cardio-Oncology: Paving the Way
Monday, Nov. 15
11 a.m.-Noon EST

AHA unveils first chest pain guidelines



Chest pain is a problem, and not just for patients who have it. From the cardiology office to the emergency department, clinicians must assess whether the pain is likely to be

CS.ME.495.

Chest Pain Guidelines
Monday, Nov. 15
9:30-10:30 a.m. EST

cardiac in origin, figure out which tests are and are not appropriate and determine when to send the patient home, to the cath lab or somewhere else. All the while, you must keep the patient informed and actively involved in decision-making. "Nonspecific chest pain is the No. 1 reason people present in the emergency room and one of the most common reasons people seek medical care whatever age they are," said Martha Gulati,

MD, MS, FAHA, chair-elect of the American Society for Preventive Cardiology and chair of the American Heart Association/American College of Cardiology/American Society of Echocardiography/Society for Academic Emergency Medicine/Society of Cardiovascular Computed Tomography/Society for Cardiovascular Magnetic Resonance Chest Pain Guideline Writing Committee.



Gulati



Levy

"The cause isn't often cardiac when you're younger, but it's also not always cardiac when you're older. And there has never been a See **GUIDELINES**, page 6

The Online Program Planner allows you to search sessions by Day, Session Type and Track, making it easier to plan your schedule. Please visit the Online Program Planner frequently for the most current programming.

Trials' results suggest advancements in treatment approaches for AF and insight on the cardiac effects of coffee consumption

Investigators in four trials revealed findings to impact the treatment of patients with atrial fibrillation (AF) and common cardiac arrhythmias during their Late-Breaking Science session "Prevention to Intervention in Atrial Arrhythmias" on Sunday. They found:

- The anticoagulants, dabigatran and warfarin, did not impact cognitive outcomes

- in patients with AF and atrial flutter.
- Coffee consumption did not increase the risk of supraventricular tachycardia arrhythmias.
- Posterior left pericardiectomy reduced postoperative AF after cardiac surgery.
- Left atrial appendage exclusion is safe but was not superior to standard ablation treatment.

Cognitive outcomes did not decline in older patients with AF treated for two years with warfarin or dabigatran

AF carries an increased risk of dementia and cognitive decline. Could anticoagulant treatment affect cognitive outcomes in older patients with AF? That was the question asked in the dabigatran versus warfarin

on Cognitive Outcomes in Nonvalvular Atrial Fibrillation trial (GIRAF). The trial found no statistical difference in cognitive impairment between older patients with AF taking warfarin or dabigatran.

The prospective parallel study enrolled 200 patients with AF age 70 and older scoring CHADS-2VASc >1. Patients were

See **COFFEE**, page 8

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Join us at AHA 2021

Have you considered hypertrophic cardiomyopathy (HCM) as part of your differential diagnosis?

Clinical suspicion of HCM includes the presence of symptoms,* an abnormal EKG, a systolic ejection murmur, or family history.¹

Approximately 700,000 people in the US have HCM.²

*symptoms of HCM can include: dyspnea, fatigue, palpitations, chest pain^{3,4}

Learn more about HCM at our microsite:

<https://bmsbcmcongresses.com/aha>

Thanks for attending our Learning Studio!

Heart failure isn't the only type of "failure" in cardiology: Raising the Clinical Suspicion for Hypertrophic Cardiomyopathy (HCM)



Sara Saberi, MD



David Fermin, MD



Matthew Martinez, MD



Anjali Tiku Owens, MD (moderator)

This event is not part of the official Scientific Sessions 2021 as planned by the AHA Committee on Scientific Sessions Programming.

HCM, hypertrophic cardiomyopathy

References:

- Ommen SR et al. *J Am Coll Cardiol.* 2020;76(25):e159-e240.
- Maron et al. *Am J Cardiol.* 2016;117:1651-4.
- Argulian E et al. *Am J Med.* 2016;129:148-52.
- Wexler RK et al. *Am Fam Physician.* 2009;79:778-84.

CV-US-2100848 10/21



If you missed our Learning Studio, view it on demand at <https://ahasessions.heart.org/live-stream/23144726/Heart-Failure-Isnt-the-Only-Type-of-Failure-in-Cardiology-Raising-the-Clinical-Suspicion-for-Hypertrophic-Cardiomyopathy-HCM> starting Nov. 15th.

Visit our virtual booth **BMS Medical Affairs**, <https://bmsbcmcongresses.com/aha>

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Global, collaborative community is needed to optimize cardiovascular outcomes

QCOR.CVS.03
QCOR At Sessions: Global Cardiovascular Outcomes
 Monday, Nov.15
 9:30-10:30 a.m. EST

Optimizing cardiovascular quality and outcomes will take a global, cooperative effort in which observational and randomized data can be used to leverage a better understanding of effective and efficient therapeutic approaches.

Monday's session, "Global Cardiovascular Outcomes," will feature five presentations tackling topics including overcoming the challenges to global collaboration, the future direction on the integration of evidence-based practice and an international effort for dealing with sex-based disparities in cardiovascular care.

Oyere Kalu Onuma, MD, assistant professor of cardiology at Yale University School of Medicine, will give a presentation on "The Urgent Need for a Global Community of Cardiovascular Quality and Outcomes: How to Overcome the Challenges for Establishment of Such International Collaboration."

She will be followed by Mark Huffman, MD, MPH, FAHA,

cardiologist at Northwestern Memorial Hospital in Chicago, who will give a talk on "International Collaboration for Using Observational and Randomized Data to Deliver Population-Based Recommendations to Optimized Cardiovascular Quality and Outcomes."

Next up, Renato Lopes Sr., MD, PhD, FAHA, professor of Medicine at Duke University Medical Center in Durham, North Carolina, will discuss "Generating International Collaborative Groups to Archive Data Standards for Common Cardiovascular Conditions and Optimize Quality and Outcomes."

Then, Rohan Khera, MD, MS, assistant professor at Yale University School of Medicine in New Haven, Connecticut, will take a look at the "Future Direction on Integration of Evidence-Based Practice and Health Informatics to Achieve Cardiovascular Quality and Outcomes."

And lastly, we'll hear from Harriette Van Spall, MD, MPH, associate professor of medicine in the cardiology division at McMaster University in Hamilton, Ontario, Canada. She will discuss "Sex-Based Disparities in Cardiovascular Care: An International Effort for Improving Quality." •

QCOR at Sessions is a one-day event. Check out today's sessions at QCOR at Sessions.

Monday, Nov. 15

8 a.m. EST

- Circ: CQO Journal Editorial Board
- Moderated Digital Posters and ePosters

9:30 a.m. EST

- Global Cardiovascular Outcomes

10 a.m. EST

- Rapid Fire Oral: Disparities

11 a.m. EST

- Early Career Investigator Award Finalists

11:30 a.m. EST

- Rapid Fire Oral: Quality

3 p.m. EST

- The State of the Art in mHealth for Cardiovascular Disease (AHA SFRN for Health IT)

4:30 p.m. EST

- Quality of Care and Outcomes During COVID

5:45 p.m. EST

- QCOR Awards and Moderated Networking Session

LATE-BREAKING SCIENCE

Check the Mobile Meeting Guide app for updates.

Monday, Nov. 15

8-9 a.m. EST

LBS.06 | Fish Oil, Cocoa and Cholesterol: Recipes for CVD Prevention?

- Icosapent Ethyl Versus Placebo in Outpatients With COVID-19: The Main Results of PREPARE-IT 2 (PREPARE-IT 2)
- The Clinical Safety, Pharmacokinetics and LDL-Cholesterol Lowering Efficacy of MK-0616, an Oral PCSK9 Inhibitor

11 a.m.-Noon EST

LBS.07 | New Drugs and New Drug Indications in Cardiovascular Disease

- Effects of Aspirin on Dementia and Cognitive Impairment in the ASCEND Trial (ASCEND)
- P2y12 Inhibitors in Noncritically Ill Hospitalized Patients With COVID-19 (ACTIV-4A)
- Effect of Bentricimab on Platelet Inhibition and Hemostasis in Ticagrelor Patients With Uncontrolled Hemorrhage or Requiring Urgent Surgery in the REVERSE-IT (REVERSE-IT)
- Milvexian for Prevention of Venous Thromboembolism After Elective Knee Arthroplasty: The AXIOMATIC-TKR Study (AXIOMATIC-TKR)

For up-to-the-minute coverage of Late-Breaking Science click here to visit sessions.hub.heart.org.

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For complete exhibitor information, view or download [Your Event Guide](#).

Update on local and global hypertension science

Saturday's Late-Breaking Science session "Hypertension: Local, Global and Pandemic Impacts" found that:

- Hypertension is a global problem irrespective of income levels.
- Remote care can improve blood pressure and lipid levels with in person visits across a population of more than 10,000 patients.
- COVID-19 reduced clinic visits and blood pressure control in patients with hypertension.

- Community lay persons with minimal training effectively control hypertension in rural China.

Hypertension does not respect borders. Once seen as a problem in higher income populations, hypertension has emerged as a global concern. More than one billion people worldwide are estimated to have elevated blood pressure, and only about 20% of them have adequate blood pressure control, noted Anushka Patel, MBBS, PhD, vice principal director and chief scientist at

the George Institute for Global Health in Sydney, Australia.

The conventional approach to the treatment of hypertension, starting with a single drug at low dose, increasing the dose, adding an additional agent, and repeating as needed, performs poorly in most settings.

"This approach is a recipe for under-treatment and therapeutic inertia," Dr. Patel said. "We have many different strategies that have been shown to be effective. The challenge is scaling up these strategies."

This Late-Breaking Science session offered three novel population-based approaches to hypertension.

Remote care delivers major improvements in hypertension, lipid management

In what may be one of the largest experiments in remote hypertension and lipid management, a team from Mass General Brigham has demonstrated dramatic reductions in blood pressure and LDL-cholesterol levels across more than 10,000 patients.

The remote program used a combination of pharmacists and non-licensed health navigators to provide an end-to-end management program for hypertension and hyperlipidemia. They reduced mean blood pressure from 148/82 mmHg at referral to 125/72 mmHg without in-person visits.

See **HYPERTENSION**, page 9

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PRESIDENTIAL

continued from page 1

primary prevention — treating risk factors to reduce incident cardiovascular disease events — forms the foundation.

"There were cracks in the foundation of our pyramid," said AHA President Donald M. Lloyd-Jones, MD, ScM, FAHA, and chair of the Department of Preventive Medicine at Northwestern Feinberg School of Medicine in Chicago. "The obesity epidemic and widening socioeconomic and educational disparities began taking a toll on population health, jeopardizing our efforts. Something was missing from the pyramid."

In Sunday's session, the "Lewis A. Conner Presidential Address," Dr. Lloyd Jones introduced a fourth and foundational layer of the Prevention Pyramid — Primordial Prevention — which represents a focus on creating and maintaining high cardiovascular health from birth, marked by optimal levels of all seven of Life's Simple Seven metrics simultaneously: blood pressure, cholesterol, blood glucose, body weight, heart-healthy diet, physical activity and not smoking.

"We must continue with tertiary, secondary and primary prevention. But that's not enough. Each of those approaches tries to correct a problem. Primordial

"There were cracks in the foundation of our pyramid. The obesity epidemic and widening socioeconomic and educational disparities began taking a toll on population health, jeopardizing our efforts. Something was missing from the pyramid."

– Donald M. Lloyd-Jones, MD, ScM, FAHA

prevention is a game changer. It focuses on trying to prevent the development of risk factors in the first place," Dr. Lloyd-Jones said. He cited powerful scientific data supporting evidence that people with high cardiovascular health live longer, healthier lives. They not only experience less cardiovascular disease, but less cancer and dementia, he said.

"Primordial prevention is the path to launching a generation of children with ideal cardiovascular health. It's the only way to break the current stagnation," Dr. Lloyd-Jones said.

Launching a new generation into a lifestyle of high cardiovascular health with the goal of eradicating cardiovascular disease is a monumental task. But advocacy efforts are already underway that support primordial prevention, including AHA's 2024 Impact Goal and its focus on health equity, which is anchored in equity and inclusion in research funding, advocacy,

community investment, workplace health, scientific publications and more.

"We are committed to ensuring all people have the opportunity for longer, healthier lives," said AHA CEO Nancy Brown. "This is our North Star." Ms. Brown cited other AHA initiatives designed to strengthen all four tiers of the Prevention Pyramid, including investing \$20 million in the Health Equity Research Network on preventing hypertension and co-leading the Periodic Table of Food Initiative, a global research and discovery platform introduced last year by the Rockefeller Foundation.

"By capturing and quantifying the composition of food, it sets the stage for scientific breakthroughs with the potential to revolutionize the health, agriculture and food sectors," she said. "This is the kind of big swing we like to take. It's a global initiative that can create healthier people and a healthier planet." •



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COVID vaccines show low instances of cardiovascular issues



(from left to right) Manesh R. Patel, MD, FAHA, and AHA CEO Nancy Brown joined Biykem Bozkurt, MD, PhD, FAHA.

As more people around the world get vaccinated against the COVID-19 virus, evidence continues to show that the vaccines are contributing to very low numbers of cases of myocarditis.

In remarks during “COVID Vaccine Development and CVD Implications: Updates and Fireside Chat,” Biykem Bozkurt, MD, PhD, FAHA, professor of medicine-cardiology at Baylor College of Medicine in Houston, Texas, said myocarditis is diagnosed in approximately 10 to 20 people out of every 100,000 individuals vaccinated per year in the general population.

In looking at how the COVID vaccines may have affected the incidence of myocarditis Dr. Bozkurt cited statistics from Israel that showed only 148 cases of myocarditis were reported out of 10.4 million vaccinated individuals. The majority of those were detected after a second dose, and mostly in men aged 16 to 30 years of age.

Low rates of myocarditis following COVID vaccination have also been reported in the U.S., with 23 male military personnel reporting myocarditis following 2.8 million doses of the vaccine. These data were reported in a recent review article by Dr. Bozkurt published in *Circulation* and reveal the benefits of the vaccine itself far outweigh any potential risk of myocarditis.

“The risk of hospitalization, ICU stay and death from COVID infection itself far outweigh the risk of myocarditis following COVID vaccination,” Dr. Bozkurt said.

Although the risk of myocarditis is very low, Dr. Bozkurt cautioned health care providers to be aware that it is there.

“Clinicians need to be aware of this risk, though it is very low,” she

said. “If an individual is presenting with chest pains, it may require further evaluation. But keep in mind, most symptoms are mild and resolve in four or five days.”

Mikael Dolsten, MD, PhD, chief scientific officer and president of worldwide research, development and medical at Pfizer, talked about the development of the COVID vaccine and how it differed from the traditional approach to vaccine development because of the global emergency.



“As we generated encouraging early clinical data, at the same time we were in parallel investing thousands of scientists and of course the funds to prepare for potential success and put our large manufacturing network into play,” he said. “This allowed us in 2021 to deliver up to 3 billion doses. Already 2 billion have been leaving our facilities. This was a really unique end-to-end approach.”

In addition to the vaccine, Dr. Dolsten said that Pfizer this year has reported the first inhibitor as a therapeutic for the virus with 90% protective efficacy for hospitalization in COVID patients, and 100% protection for fatal outcomes. Dr. Dolsten said this is indicative of the holistic approach Pfizer has taken toward developing the treatments.

“Starting with the COVID pandemic, we tried to take a holistic, comprehensive approach, and the focus was that to control the pandemic a vaccine will be crucial,” he said. “But our experience has been that when you supplement the vaccine with a therapeutic,

you get the maximum opportunity for medical management.”

Meanwhile, Stéphane Bancel, CEO of Moderna, said his company has been working on mRNA vaccines since it was founded in 2011, first trying to find a way to make mRNA work safely in humans. This, he said, gave Moderna an advantage when it came to developing a COVID vaccine and has helped with developing other vaccines as well.



“We now have 37 mRNA programs in development, and up to 50 additional ones in the labs that teams are working to get to development,” he said. “Ninety percent of the drugs with traditional technologies that go into a clinic don’t make it to market. We think mRNA is going to change that in a profound way.”

Bancel said that because of the pandemic, Moderna had the ability to do everything in parallel as long as it was safe. In a normal environment, scientists would have to wait for phase 1 approval in a trial before moving into phase 2. With COVID, by necessity that all changed.

“There was no risk to patient safety. It was a financial risk, we thought it was the right thing to do because we were in a pandemic. The thing that was our north star was to never take any risks with clinical trial participants.”

Both Bancel and Dr. Dolsten said an annual COVID vaccine was going to be a likely necessity because the virus isn’t going away. They also both agreed to a question posed by Dr. Bozkurt about the potential for a collaboration between the companies and the AHA to study the low risk of myocarditis in the vaccines and find out why it’s there at all.

“There is a good opportunity to work across organizations and companies to gain more insight,” Dr. Dolsten said. “We always should strive to improve benefit-risk even though it’s very favorable. We always should strive to do more.” ●



Can technology put some patients at a health care disadvantage?

CCOVID-19 helped propel telemedicine to the mainstream, but did it improve access to care across the board? Consider patients in rural areas without a stable Internet connection. Or those who rely on their phone for access to the Internet with limited data plans. Or even those patients with whom English is not their first language. These are just some examples of how technology — though shaping the future of medical care delivery — can disproportionately affect patient populations.

Monday’s session: “Digital Impact on Disparities in Cardiovascular Care: Can Big Tech Step Up to the Challenge?” from 8-9 a.m. EST, will examine how technology can put some patients at a health care disadvantage.

“While big tech can help us in lots of ways, we also have to keep health equity in mind,” said Keila Lopez, MD, MPH, director of transition medicine, division of pediatric cardiology at Texas Children’s Hospital/Baylor College of Medicine in Houston.

“It’s critically important to understand how and why people are using technology differently and how it’s impacting their health care.”

Dr. Lopez will talk about how the use of technology can affect access to care in under-represented racial and ethnic groups as well as patients with lower socioeconomic status, those who live in rural areas, those with lower health literacy, and those in which English is not their first language.

“Assuming everyone can easily access telemedicine via their electronic devices is not a fair

assumption because not everybody has the ability to do that,” Dr. Lopez says. Black and Latino adults in the U.S. are less likely than white populations to have a traditional computer or have high-speed Internet access in their home. Moreover, as many as 25% of Latino people are smartphone-only Internet users, and cellular data may be limited based on their data plan, Dr. Lopez said.



Lopez

Online patient portals are another example of how technology can put some patients at a disadvantage. As of April 2021, the 21st Century Cures Act mandates that eight categories of clinical notes created in an electronic health record must be immediately available to patients through their online patient portal, including lab and imaging reports.

“In theory, this is a good thing because we’re encouraging data transparency, but who could that impact disproportionately in a negative way? What if you’re a teen seeking confidential services, but your parents have access to your medical portal? Or what if you’re a patient with low health literacy, and you have an advanced illness? Without having careful interpretation or context for test results, it can cause significant mental distress,” Dr. Lopez said.

With the tide of technology rising quickly, Monday’s session will highlight the digital disparities technology can create for patients and offer solutions for increasing health care equity for all. ●

AHA 2021 dietary guidance to improve cardiovascular health emphasizes dietary patterns



(from left to right, top to bottom) Frank Sacks, MD, FAHA, Anne Thorndike, MD, MPH, FAHA, Penny M. Kris-Etherton, PhD, RDN, LDN, FAHA, FNLA, FASN, CLS, Lawrence J. Appel, MD, MPH, FAHA, Alice Lichtenstein, DSc, FAHA, Maya Vadiveloo, PhD, RD

Most people want to follow a heart healthy diet but are deterred by unhealthy food environments, socioeconomic factors, nutrition insecurity, structural racism, neighborhood segregation, widespread dietary misinformation from the Internet, lack of nutrition education in grade schools and medical schools and targeted marketing which can negatively impact individual food choices, eating habits and food preferences. Still, “people can improve their cardiovascular healthy by focusing on dietary patterns rather than individual foods or specific nutrients,” said Alice Lichtenstein, DSc, FAHA, senior scientist and director of the cardiovascular

nutrition team at the Jean Mayer USDA Human Nutrition Research Center on Aging in Boston.

In Saturday’s session “The AHA 2021 Dietary Guidance to Improve Cardiovascular Health,” Dr. Lichtenstein, who is also the Stanley N. Gershoff Professor of Nutrition Science and Policy at the Friedman School of Nutrition Science and Policy, introduced the 10 features of the guidance, which were published simultaneously in *Circulation*. They include:

- Adjust energy intake and expenditure to achieve and maintain a healthy body weight.
- Eat plenty of fruits and vegetables; and choose a wide variety.
- Choose foods made mostly with whole grains rather than refined grains.

- Choose healthy sources of protein.
- Use liquid plant oils rather than tropical oils, animal fats and partially hydrogenated (trans) fats.
- Choose minimally processed foods instead of ultra-processed foods.
- Minimize intake of beverages and foods with added sugars.
- Choose and prepare foods with little or no salt.
- If you do not drink alcohol, do not start; if you choose to drink alcohol, limit intake.
- Adhere to this guidance regardless of where food is prepared or consumed.

The guidance provides a platform for improving overall health. “Heart-healthy dietary patterns provide benefits beyond heart health,

including reducing the risk of stroke, type 2 diabetes, kidney disease and cognitive dysfunction. The guidance is also consistent with promoting a healthy, sustainable planet,” Dr. Lichtenstein said.

Yet, race, ethnicity, education and income level disparities persist that can make implementing the guidance challenging. “Overall diet quality among high income people, including vegetable and whole grain intake, and the intake of sugar-sweetened beverages has improved. We’re not seeing the same magnitude of improvement in lower income populations, which suggests disparities are entrenched,” said Maya Vadiveloo, PhD, RD, a member of the writing committee and an assistant professor in the department of nutrition and food sciences at the University of Rhode Island.

To promote healthy dietary patterns, multisector policy changes are needed to “change the default,” said Lawrence Appel, MD, MPH, FAHA, director of the Welch Center for Prevention, Epidemiology and Clinical Research at the Johns Hopkins University in Baltimore. Dr. Appel, who served as the co-chair of the writing committee, recommended public food procurement policies requiring foods and beverages served or sold in public settings, including

schools, public hospitals, childcare facilities, correctional facilities and government workplaces to promote healthy diets. “These policies will indirectly influence food manufacturers to reformulate,” he said. “But we need your help. Advocate for, or at least be supportive of, policies that improve the health of patients and the broader population.”

Both clinicians and patients face barriers to receiving adequate diet guidance. “Diet counseling in clinical practice takes time,” said writing group member Anne Thorndike, MD, MPH, FAHA, an investigator with the Tobacco Research and Treatment Center at Massachusetts General Hospital in Boston. Nonetheless, to implement the 2021 AHA dietary guidance in clinical practice, it’s important to deliver simple advice consistently.

“Encourage fruits and vegetables, whole grains, healthy proteins, liquid plant oils, low or non-fat dairy and minimally processed foods and discourage food high in sugars or sodium, refined grains, processed meats and excess alcohol,” Dr. Thorndike said. “We should treat diet like we do tobacco and ask about it at every visit.”

For more information, visit [2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association | Circulation \(ahajournals.org\)](https://www.aha.org/2021-dietary-guidance-to-improve-cardiovascular-health) •

GUIDELINES

continued from page 1

guideline of what you should do with chest pain. We have guidelines if they are diagnosed with acute coronary syndrome, or an aortic dissection, or a pulmonary embolism. But we’ve never had guidelines that started from the very beginning until now.”

Dr. Gulati will help introduce this **first guideline** for the assessment of nonspecific chest pain 9:30-10:30 a.m. EST, Monday, Nov. 15 during **“Chest Pain Guidelines.”** The session will explore 10 key messages to help clinicians evaluate, define and treat non-specific chest pain.

“The medical community has been clamoring for these guidelines for years,” said co-presenter Phillip D. Levy, MD, MPH, FAHA, Edward S. Thomas Endowed Professor of Emergency Medicine and assistant vice

president for translational science and clinical research innovation at Wayne State University and chief innovation officer at Wayne Health.

“Dealing with undifferentiated chest pain has been very challenging prior to the publication of these guidelines. Assessment was done by protocol in a lot of hospitals, which is good, but lacked in standardization. The guidelines have given us the definitive pathways and recommendations as to how we should approach the care of these patients from that initial evaluation to risk stratification and recommendations as to what should happen next. It has very clear-cut algorithms that walk clinicians from that initial interaction with the patient all the way to final disposition.”

Dr. Gulati will present the guidelines as a mnemonic — CHEST PAINS — 10 key

messages to help assess the likely cause of emergent chest pain, stratify patients by risk and involve patients in deciding the most appropriate path forward.

“When people say, ‘chest pain,’ they can be describing discomfort in the chest, shoulder, jaw, stomach, neck,” she said. “The guidelines give us an evidence-based assessment to triage which pains are more likely to be cardiac and how to go from there.”

Identifying cardiac-related pain isn’t always simple and distinguishing high-risk pain can be even more difficult. A sharp pain is probably not acute coronary syndrome or ischemia, Dr. Gulati said, in contrast with stress or exertional-related pains. The classic chest discomfort that can be experienced — “elephant on the chest,” feelings of squeezing, pressure, gripping and tightness — are more worrisome, she said.

“We have guidelines if they are diagnosed with acute coronary syndrome, or an aortic dissection, or a pulmonary embolism. But we’ve never had guidelines that started from the very beginning until now.”

– Martha Gulati, MD, MS, FAHA

“The idea that we need to understand chest pain may seem pretty simplistic, but there are still a lot of people in our medical community who need that reminder,” she said. “I deal with it every day as a cardiologist, and I see it missed too often.”

She also pointed to imaging and technology that can help work up the potential causes of chest pain when needed to guide the care of patients.

The new guidelines will likely reinforce much of what is already

current practice in many emergency departments, Dr. Levy said.

“A lot of current practice already aligns with the guidelines, which will make it easier to layer on adjustments when they are doing a few things differently,” he said. “And the guidelines will help patients by creating a standard for how they will be treated for chest pain no matter what facility they may go to. Shared decision-making is a big emphasis. We want all patients to be informed participants in their care.” •

Treatments highlighted for reducing diabetes-related heart failure and chronic kidney disease

A major driver of cardiovascular mortality, type 2 diabetes greatly increases the risk of heart failure. Moreover, patients with diabetes are at increased risk of chronic kidney disease, which further magnifies cardiovascular risk. Fortunately, new therapeutic agents are available or emerging to reduce cardiovascular risk in patients with diabetes and chronic kidney disease.

Monday's session: "Confronting the Tide of Heart Failure in Diabetes: From Mechanisms to Management" from 11 a.m. – Noon EST, will highlight potential contributors to cardiovascular complications, particularly heart failure and chronic kidney disease in patients with diabetes, and will feature new therapeutic agents available or in development to reduce cardiovascular risk.

"SGLT2 inhibitors have exhibited a dramatic effect on heart failure, but we still have a long way to go to completely mitigate the risk of heart failure in patients with diabetes," said Evan Dale Abel, MD, FAHA, chair of the department of internal medicine and director of the Fraternal Order of Eagles Diabetes Research Center at the University of Iowa Carver College of Medicine in Iowa City.

Dr. Abel will discuss potential mechanisms contributing to heart failure in people with diabetes, including changes in mitochondria, cardiac

PR.ME.461

Confronting the Tide of Heart Failure in Diabetes: From Mechanisms to Management
Monday, Nov.15
11 a.m.–Noon EST

metabolism, oxidative stress, lipotoxicity, glucose toxicity, inflammation and alternations in insulin and adrenergic receptor signaling as well as will explore agents investigated in animal models that could potentially be safely applied to humans. "We're seeing light on the horizon with SGLT2 inhibitors, but we'll have more insight for newer therapeutic targets that could be developed over the next five to 10 years," Dr. Abel said.

With a focus on chronic kidney disease in diabetes and cardiovascular risk, Katherine R. Tuttle, MD, professor of medicine in the nephrology division and kidney research institute at the University of Washington Spokane, will talk about how dangerous the intersection is. "Worldwide (according to the 2020 Kidney Disease Improving Global Outcomes clinical practice guidelines) diabetes is responsible for more than 40% of all cases of chronic kidney disease, which greatly amplifies cardiovascular risk. Most of the diabetes-associated excess cardiovascular risk occurs in those with chronic kidney disease," Dr. Tuttle said.

Angiotensin-converting



Abel



Tuttle

enzyme inhibitors and angiotensin receptor blockers are the established standard of care for chronic kidney disease in diabetes, yet these agents remain underutilized. "The implementation rate is abysmally low, in the range of 35% to 40%," Dr. Tuttle said. "We've been undertreating it, which is contributing to poor outcomes."

Still, a care gap exists for patients with chronic kidney disease and type 2 diabetes. "We're at a remarkable time in which we have highly effective therapies for some of the most common complications of diabetes, particularly heart failure and kidney failure," Dr. Tuttle said. "Dissemination and implementation of new therapies is critical to delivering improved outcomes for high-risk patients with chronic kidney disease and diabetes. This is especially germane as an SGLT2 inhibitor, dapagliflozin, was found to reduce all-cause mortality by 31% on top of standard of care," Dr. Tuttle said. "The magnitude of the benefit is at the same level as beta-blockers post myocardial infarction, which is something we rarely see with any therapy for any condition." •



Industry Events Learning Studios and Industry Symposia

Monday, Nov. 15

These events are not part of the official Scientific Sessions 2021 as planned by the AHA Committee on Scientific Sessions Program.

9:30-10:15 a.m. EST

- How the Democratization of Fitness Can Improve Health Outcomes
- A Treatment Option for Patients With HFREF Following a Worsening HF Event
- Comprehensive & Expanding: Overview of MEDTRONIC's SYPRAL-HTN Global Clinical Trial Program

5-6:30 p.m. EST

- Achieving Lipid Goals: Expert Cardiologist Perspectives on Strategies Beyond Statin Therapy
- Improving Management of AF: Translating Advances in Early Rhythm Control Strategies Into Everyday Practice
- These events are not part of the official Scientific Sessions 2021 as planned by the AHA Committee on Scientific Sessions Program.



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COFFEE*continued from page 2*

randomized to receive warfarin (once daily, dose controlled by international normalized ratio (INR) between 2 and 3) or dabigatran (110 or 150 mg) twice daily for two years. After one year and at the study's conclusion at two years, patients underwent an extensive cognitive evaluation, which included the Montreal Cognitive Assessment, the Mini-Mental State Exam, Neuropsychological Battery and Computer Generated Neuropsychological testing.

**Bruno Caramelli, MD, PhD**

“In both groups, cognitive decline was very small,” said Bruno Caramelli, MD, PhD, associate professor of cardiology at the University of Sao Paulo, Brazil, the study's principal investigator. Dr. Caramelli noted, however, that time in therapeutic range in the warfarin group was 70%.

“In older patients with AF or atrial flutter who did not present

major cerebrovascular events and were adequately treated with warfarin or dabigatran for two years, there was no difference in the majority of the cognitive outcomes. We speculate that both treatments, when carried out properly and effectively, may prevent the cognitive decline that is observed in this population,” Dr. Caramelli said.

When deciding which anticoagulant to prescribe, Dr. Caramelli recommended dabigatran, if possible. “Dabigatran carries a lower risk of major hemorrhagic complications, and it's an easier drug because patients don't need frequent anticoagulation checks.”

Coffee consumption offers mixed results for the risk of common arrhythmias

Coffee increases ventricular ectopy and physical activity and reduces sleep duration, according to the Coffee and Real-Time Atrial and Ventricular Ectopy (CRAVE) trial, the first randomized trial to assess relationships between coffee consumption and common arrhythmias.

The trial enrolled 100 male and female volunteers randomly assigned to consume or avoid coffee daily for 14 days, communicated by daily texts and reminders, with the primary endpoints of change in premature

atrial contractions and premature ventricular contractions. Adherence to the randomization assignment was assessed by button presses to a continuously recording ECG device to time-stamp every coffee drink as well as daily surveys recounting coffee consumed the previous day, reimbursing all date-stamped receipts with coffee purchases and geofencing visits to coffee shops. Subjects were also monitored with a wrist-worn Fitbit, a continuous glucose monitor and a smartphone mobile application to collect geolocation data. DNA was genotyped for caffeine metabolism-related single nucleotide polymorphisms.

In intention-to-treat analysis, random assignment to consume coffee was associated with an increase in premature ventricular contractions, 1,058 additional Fitbit-based steps per day (95% CI 441-1675, $p=0.001$) and 36 fewer minutes of sleep per night. In per-protocol analysis, each additional cup of coffee consumed was associated with fewer supraventricular tachycardia episodes, 587 additional steps per day and 18 fewer minutes of sleep per night. No significant effects on premature atrial contractions or changes in glucose levels were observed.

**Gregory Marcus, MD, FAHA**

“Coffee, which is one of the most commonly consumed beverages in the world, appears to have both positive and negative health implications,” said Gregory Marcus, MD, professor of medicine at the University of California, San Francisco, the study's principal investigator. “These data provide no evidence that coffee will increase the risk of supraventricular tachycardia arrhythmias, including AF. For ventricular arrhythmias, these data suggest coffee may be harmful. To increase physical activity, coffee may be beneficial. It's a heterogeneous, complex and multifaceted effect.”

Posterior left pericardiectomy reduced postoperative AF

Posterior left pericardiectomy reduced the incidence of postoperative AF after cardiac

surgery, according to the results of Posterior Left Pericardiectomy for the Prevention of Postoperative AF After Cardiac Surgery, the PALACS trial.

In the single-center, single-blind adaptive trial, 420 patients undergoing elective interventions on the coronary arteries, aortic valve and/or ascending aorta with no previous history of AF were randomized to receive left posterior pericardiectomy, or the standard of care (no intervention).

In patients undergoing posterior left pericardiectomy, postoperative AF was 18% versus 32% in the control group, with an overall 55% reduction in the risk of postoperative AF. The use of antiarrhythmic and anticoagulation medication and electric cardioversion were significantly less in the left pericardiectomy group.

**Mario F.L. Gaudino, MD, FAHA**

“Our data confirm in an adequately powered and rigorous prospective randomized trial that posterior left pericardiectomy is associated with a large and statistically significant reduction in the incidence of postoperative AF after coronary artery bypass grafting, aortic valve and aortic surgery,” said Mario F.L. Gaudino, MD, the Stephen and Suzanne Weiss Professor in Cardiothoracic Surgery in the Department of Cardiothoracic Surgery at New York Presbyterian-Weill Cornell Medical Center, the study's principal investigator. Posterior left pericardiectomy was not associated with perioperative complications. A large multicenter trial, including the entire spectrum of cardiac surgery operations, is needed to quantify the potential clinical benefits of the intervention.

Left atrial appendage exclusion did not offer a superior advantage to standard ablation

The Lariat™ Suture Delivery System is safe and effective for left atrial appendage exclusion but was not superior to standard ablation for reducing episodes of AF, according to Outcomes of Adjunctive Left Atrial Appendage Ligation Utilizing the LARIAT

Compared to Pulmonary Vein Antral Isolation Alone: The aMAZE Trial.

The prospective, multicenter, randomized controlled study enrolled 610 patients with persistent AF at 53 sites to evaluate the safety and effectiveness of the Lariat procedure to percutaneously isolate and ligate the left atrial appendage from the left atrium as an adjunct to planned pulmonary vein antral isolation catheter ablation in subjects with symptomatic persistent or longstanding persistent AF. The 30-day primary safety event rate was 3.4%, which was statistically less than the prespecified performance goal of 10%.

“This particular approach to isolating the appendage demonstrates that it's safe and effective to exclude the appendage from the rest of the left atrium,” said David Wilber, MD, Eisenberg Professor of Medicine at Loyola University in Chicago, the study's principal investigator. The secondary outcome measure, freedom from recurrent atrial arrhythmias at 12 months, was 64.3% in the Lariat plus pulmonary vein antral isolation treatment group and 59.9% in pulmonary vein antral isolation alone group, which did not reach the standard needed for superiority.

**David Wilber, MD**

“The Lariat System appears to be safe, and successfully excludes the left atrial appendage in this first prospective, rigorous and independently monitored clinical trial evaluation of the Lariat left atrial appendage ligation. But adjunctive left atrial appendage ligation was not superior to pulmonary vein antral isolation alone in reducing recurrent atrial arrhythmias in the overall persistent AF population undergoing initial AF,” Dr. Wilber said.

Dr. Wilber noted, however, that exploratory analysis suggests that in the subgroup with early persistent AF and larger left atrial volumes, adjunctive left atrial appendage ligation may provide improved rhythm control. Further investigation is needed to verify those exploratory observations. ●

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HYPERTENSION*continued from page 4*

LDL-cholesterol levels fell from a mean of 140 mg/dL at baseline to 70 mg/dL after completing the program.

“We are operating the program across the Mass General Brigham health system using a combination of physician referrals and at-risk patients identified using our electronic health record,” said Alexander Blood, MD, cardiologist at Brigham and Women’s Hospital. “We locked the data set on Oct. 1 to assess results on our first 10,803 patients, but the remote management program is ongoing.”

Both hypertension and lipids are managed much like the more familiar coumadin clinics, Dr. Blood said. The program sends patients a digitally connected blood pressure cuff and provides coaching in proper blood pressure measurement. Blood pressures are automatically integrated into the program’s platform that manages patient journeys and provides iterative medication titration recommendations.

Pharmacists assess each patient’s case and prescribe or adjust medications algorithmically — based on current professional guidelines — then use self-measured BP readings to adjust medications as needed. The lipid program operates similarly with treatment decisions based on a patient’s individual risk and LDL-cholesterol goal. Subsequent lipid testing then drives further lipid therapy intensification, if needed. Non-physician providers deliver virtually 100% of care, with patients referred to specialists as needed.

Median age of patients in the program was 65 years old. The study group was 55% female, 29% non-white, 11% of Hispanic background and 8% non-English speaking. Between January 2018 and October 2021, 92% of patients who completed the program met their BP goal and 94% ($p < 0.001$ for both) met their LDL-C goal based on AHA guideline recommendations to reach target optimization. Rates of enrollment and reductions in both blood pressure and LDL-C were similar across racial, ethnic and primary language groups, supporting the hope that remote care can maintain equal access to, and quality of, care.

“Our program unburdens providers from a tremendous amount of work. We integrated more than 400,000 blood pressure readings and 125,000

lab results, and on average made 2.5 medication changes for hypertension and 1.7 medication changes for lipid management,” Dr. Blood said. “Remote management increased patient engagement, standardized treatment and let us deliver services to a broad patient population, even in traditionally underserved populations. We are continuing to grow and expand the program.”

COVID-19 disrupts blood pressure monitoring and control

The first national study using the National Patient-Centered Clinical Research Network (PCORnet) to assess the impact of COVID-19 on blood pressure control in adults with hypertension found the number of patient encounters as well as blood pressure monitoring and blood pressure control fell during the COVID-19 pandemic in 2020 compared to similar periods in 2019.



Alanna M. Chamberlain, PhD, MPH, FAHA

“COVID-19 has resulted in a mass disruption of usual care,” said Alanna M. Chamberlain, PhD, MPH, FAHA, associate professor and manager of the Rochester Epidemiology Project at Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery. “This disruption has affected blood pressure control and blood pressure management in health systems across the United States.”

Retrospective data from the PCORnet® Blood Pressure Control Laboratory Surveillance System showed that patient encounters fell approximately 20% from 8.3 million in 2019 to 6.6 million in 2020. Blood pressure control dropped from a 2019 average of 60.5% to 53.3% at the end of 2020. BP control fell sharply during the first two quarters of 2020, coinciding with the onset of the COVID-19 pandemic, and continued to fall during the second half of 2020.

Timely follow-up visits for uncontrolled hypertension (BP > 140/90 mmHg) fell from 36.7% in 2019 to a low of about 25% during the second quarter

in 2020. Timely follow-up visits improved for most health systems in the last two quarters of 2020 to 31.7%.

The PCORnet Blood Pressure Control Registry includes 24 health systems across the United States that cared for 1,770,547 individuals with hypertension in 2019, prior to the pandemic. Hypertension was defined as BP during an ambulatory visit of greater than 140/90 mmHg. BP control was defined as the percentage of individuals with diagnosed hypertension whose most recent BP measurement during an ambulatory visit was less than 140/90 mmHg. BP follow-up was the percentage of individuals with hypertension who had a follow-up visit within the following four weeks. BP metrics were calculated quarterly and combined into a series of 13 one-year measurement periods from 2017 to 2020.

BP control was variable across health systems in 2019, ranging from 46%-74%, with a weighted average of 60.5%. Nearly all health systems reported drops in BP control during all four quarters of 2020, although the declines seen at individual health systems were highly variable. Some systems showed declines throughout 2020, and some showed different patterns of decline and recovery in BP control.

Declines in follow-up visits during the pandemic period were also highly variable across health systems. Follow-up visit numbers improved for most reporting systems during the last two quarters to a weighted average of 53.3% (range 33%-65%).

“Blood pressure control has not rebounded to pre-pandemic levels,” Dr. Chamberlain said. “Continued surveillance is needed to determine whether the decline in blood pressure control during the pandemic will result in future cardiovascular events.”

Village doctors beat usual care for hypertension control in rural China

A novel hypertension control program in rural China that relies on village doctors with basic medical training, reduced mean systolic blood pressure by 26.3 mmHg over 18 months. These village doctors have traditionally provided basic primary healthcare in rural China.” In one of the largest community provider based hypertension trial to date, more than half the rural residents with BP at or above 140/90 mmHg at baseline achieved their target BP of less than 130/80 mmHg compared

Hypertension does not respect borders. Once seen as a problem in higher income populations, hypertension has emerged as a global concern. More than one billion people worldwide are estimated to have elevated blood pressure, and only about 20% of them have adequate blood pressure control.

– Anushka Patel, MBBS, PhD

to 19.9% in the usual care group.

“We need to develop and establish effective, feasible and sustainable programs for hypertension control in China because only about 5.5% of the rural patients with hypertension had their blood pressure control under systolic 140 and diastolic 90 mmHg,” said Jiang He, MD, PhD, FAHA, the Joseph S. Copes chair and a professor of epidemiology and the director of the Tulane University Translational Science Institute. “The prevalence of uncontrolled hypertension is high and increasing around the globe in low- and middle-income countries, not just in China.”

The China Rural Hypertension



Jiang He, MD, PhD, FAHA

Control Project selected 326 villages across three provinces in rural China. Half the villages, 163, were randomly assigned to receive care by intervention village doctors, and 163 assigned to usual care. The program enrolled 33,995 individuals 40 years and older, with uncontrolled hypertension, defined as untreated BP at below 140/90, treated BP at or below 130/80 or untreated BP at or under 130/80 with a history of clinical cardiovascular disease.

Intervention village doctors were given additional training in BP management, protocol-based hypertension treatment based

on AHA guidelines and health coaching. They also received support from hypertension specialists and primary care physicians as needed as well as performance-based financial incentives. Study participants were given health coaching on home BP monitoring, lifestyle management and medication adherence. The primary outcome was BP under 130/80 mmHg at 18 months on an intention-to-treat basis.

At baseline, the mean age of participants was 63 years. The mean BP was 156/88 mmHg and the median duration of hypertension was seven years in the study group that was 61% female.

After 18 months, 57% of individuals in the intervention group had achieved goal BP versus 19.9% in the control group, a difference of 37.1% ($p < 0.001$). Most participants in the intervention group, (77.3%) had an ending BP less than 140/90 mmHg versus 44.5% in the intervention group, a difference of 32.3% ($P < 0.001$).

“The next stage is to continue blood pressure lowering intervention and follow the participants for clinical cardiovascular outcomes,” Dr. He said. “Working with the Chinese Medical Association and the Chinese Medical Doctor Association, we hope to expand this program to a much larger population. We also hope these programs can be adapted to other low- and middle-income countries. We have seen that working with local providers who have not been formally trained as physicians and training them to identify hypertension and use guideline-based protocols to treat it, can be successful and cost-effective.” ●

“COVID-19 has resulted in a mass disruption of usual care. This disruption has affected blood pressure control and blood pressure management in health systems across the United States.”

Alanna M. Chamberlain, PhD, MPH, FAHA