Facing Off Against Cardiovascular Disease

Annual Update 2021

Update Creators: Tanuja Rajan, Henry Mortimer, Roger S. Blumenthal
When sending out a company newsletter, keep in mind these three things. First, send out your newsletter regularly. Stick to your promise if it's going to be weekly, monthly or quarterly. The second is to have a proper layout. Make your newsletter attractive and easy to read. Lastly, ensure the quality of the content and images you will share.

Top Row: Dominique Ashen, PhD, CRNP; Gary Gerstenblith, MD; Erin Michos, MD, MHS; Roger S. Blumenthal, MD; Thorsten Leucker, MD, PhD; Michael J. Blaha, MD, MPH; Elizabeth Ratchford, MD; Kathy Byrne, CRNP

Second Row: Katherine Wu, MD; Seth S. Martin, MD, MHS; Allison Hays, MD; Steven Jones MD; Peter P. Toth, MD, PhD; Oscar Cingolani, MD; Chiadi Ndumele, MD, MHS, PhD; Francoise Marvel, MD

Third Row: Sudipa Sarkar, MD; Wendy Post, MD, MS; Richard Ferraro, MD; Lena Mathews, MD; Roberta Florido, MD, MHS; Michelle C. Johansen, MD; Khurram Nasir, MD, MPH, MSc; Dorothy Davis, MSN, RN

Fourth Row: Armin A. Zadeh, MD, PhD, MPH; Garima Sharma, MD; Marios Arvanitis, MD; Seamus Whelton, MD, MPH; Erin Spaulding, PhD, RN; Alan Jacobsen, MD; J. Bill McEvoy, MBBCh, MHS; Anum Minhas, MD, MHS

Fifth Row: Miguel Caimanos-Achirica, MD, MPH, PhD; Ty Gluckman, MD; Cathy Handy Marshall, MD, MPH; Michael Chilazi, MD; Omar Dzaye, MD, PhD, MPH; Nino Isakadze, MD, MHS; Jaideep Patel, MD; Martin Mortensen, MD, PhD

Sixth Row: David Feldman, MD, MPH; Renato Quispe, MD; Lili Barouch, MD; Shireen Khoury, MD, MPH; Hamied Alfaddagh, MD, MHS; Sherita Golden, MD, MHS; Chloe Duvall, MD; Tanuja Rajan, MD, MPH
Despite another challenging year dealing with the global pandemic, the Ciccarone Center team continued to provide excellent clinical care, education of health care practitioners as well as laypersons, and perform cutting-edge research to reduce future cardiovascular events. The year 2021 marked the one-year anniversary of the passing of heart disease prevention trailblazer Irene Pollin. Eight years ago, she made a transformational $10 million gift to the Center, which expanded our clinical research and educational initiatives for our faculty and trainees.

Thanks to Irene Pollin, we have been able to provide master’s degree-level training and advanced educational and research opportunities for some of the leading Preventive Cardiologists whom we have trained, including Drs. Bill McEvoy, Parag Joshi, Seth Martin, Haitham Ahmed, Seamus Whelton, Roberta Florida, Rhanderson Cardoso, and Hamied Alfaddagh.

A key program resulting from Irene’s gift is the Pollin Cardiovascular Prevention Fellowship. This year’s recipient is Dr. Kunal Jha, who together with Ciccarone Center Clinical Research Director Dr. Michael Blaha, established the Cardiometabolic Clinic at Green Spring Station. Along with Dorothy Davis, RN, MSN, Drs. Jha and Blaha have focused on patients with diabetes, prediabetes, and/or obesity, and helped them improve their glycemic control, body weight, lifestyle habits, and reduce their cardiovascular risk.

Dr. Blaha has trained several dozen individuals in their development of academic cardiovascular research careers. In 2018, he received the Dr. Frederick L. Brancati Excellence in Mentoring Award from the Hopkins Department of Medicine. He has been a leader in Epidemiology and Outcomes Research for more than a decade and was promoted to Full Professor at Johns Hopkins in near record time for a clinical investigator.

Dr. Blaha is internationally known for his pioneering work on biomarker and imaging-guided cardiovascular risk prediction and its implications for appropriate use of preventive therapy. I am very pleased to announce that Dr. Blaha’s latest title is Co-Director of the Ciccarone Center. It will be a distinct pleasure and honor for me to work even closer with Dr. Blaha in the coming years.

Drs. Omar Dzaye and Blaha recently published a high-profile article in JACC, which provided very useful guidance on when to consider selective use of coronary artery calcium (CAC) testing in adults with risk factors for cardiovascular disease. About one-third of younger adults with a low predicted 10-year risk of atherosclerotic cardiovascular disease have early CAC.

Drs. Whelton, Blaha and Erin Michos recently published an important article showing the importance of maintaining a high fitness level in persons who were age 70 or higher.

Just as Coach Henry Ciccarone, for whom our Center is named, recruited amazing talent at each position on the lacrosse field, the Ciccarone Center has many truly outstanding clinician researchers. Dr. Wendy Post is the Director of Research for the Hopkins Division of Cardiology. Together with Dr. Gary Gerstenblith and Division Director, Dr. Charles Lowenstein, she established a formal Faculty Cardiology Mentoring Program. This year Dr. Post also led a successful renewal of the longstanding Hopkins NIH T32 training program with Dr. Kass. The program funds research for 12 post-docs fellows each year, and is currently in its 46th consecutive year of funding. Dr. Post has been one of the leaders in the Hopkins efforts to study the long-term effects of various diseases on the cardiovascular system.
country and is a hub for training the future generation of leaders, such as trainee Michael Chilazi who won a young investigator award at the National Lipid Association meeting for his project on Lp(a).

Adjunct Faculty Member Dr. Peter Toth had another outstanding year with his many impactful publications, and he served as President of the American Society of Preventive Cardiology. Dr. Renato Quispe led an intriguing article in the European Heart Journal about the predictive power of remnant cholesterol beyond LDL cholesterol.

Dr. Leucker is the Director of the Ciccarone Center’s Basic and Translational Biology Section. He works closely with Drs. Gerstenblith and Arvanitis studying endothelial cell biology and the impact of PCSK9 (a cholesterol receptor controlling protein) on vascular function. They are also leading a collaborative research program in vascular genomics to study the genetics of atherosclerotic vascular disease.

Drs. Martin and Marvel lead our Digital Health Innovation Laboratory. Dr. Martin is Co-Director and Principal Investigator (PI) of the Johns Hopkins Center for Mobile Technologies to Achieve Equity in Cardiovascular Health (mTECH), an American Heart Association Health Strategically Focused Research Network Technology (SFRN) and Innovation Center. The overarching research theme of the work of Drs. Martin and Marvel is Precision Medicine in Preventive Cardiology. They also work closely with Dr. Nino Isakadze on innovative approaches in the management of atrial fibrillation, a project made possible by the philanthropic support of Larry and Sandra Small.

Drs. Erin Spaulding, Marvel, and Martin led a multidisciplinary team of Hopkins Physicians, Nurses, Pharmacists, Engineers, and Public Health Experts to create a mobile app known as Corrie. It serves as a management tool that alerts users (who had a prior cardiac event) to take medications and schedule follow-up appointments and it servers as a hub for patient education materials related to heart-healthy lifestyles. The Corrie project was featured as a leading health innovation in Tim Cook's keynote address at Apple's Worldwide Developers Conference, reaching >25 million people around the globe.

Their group recently published the Myocardial Infarction, Combined Device, Recovery Enhancement (MiCORE) study and showed that their digital health intervention reduced hospital readmission rates in half; in addition, more than 90%...
of the users of the app felt that they were much better prepared to manage their long-term cardiovascular risk. The study was partially funded from the Pollin Digital Innovation Fund.

**Drs. Chiadi Ndumele, Florido, and Gerstenblith** lead research related to links between diabetes, metabolic syndrome, overweight status, and heart failure. Thanks to a very generous donation from Peter and Terry Nicholl, Dr. Ndumele’s team is focused on understanding why some overweight patients develop diabetes and heart failure, while others do not.

Dr. Ndumele leads an AHA SFRN that is studying the role of adipokines (proteins secreted by fat cells and inflammatory cells) that affect metabolism. Drs. Justin Echouffo-Tcheugui and Ndumele led a team of investigators that found that the duration of diabetes is directly proportional to the risk of developing heart failure. Thus, delaying diabetes onset should augment heart failure prevention efforts and therapies to develop heart failure. Thus, delaying diabetes onset should augment heart failure prevention efforts and therapies to improve heart failure outcomes should target those with prolonged diabetes duration.

**Dr. Lena Mathews**, Director of Cardiac Rehabilitation, has worked closely with Drs. Kerry Stewart, Marvel, and Martin on a home-based cardiac rehabilitation program. Dr. Garima Sharma is the Director of Cardio-Obstetrics and the 2021 American College of Cardiology (ACC) Governor of the Maryland Chapter. She has already been a member of six AHA/ACC clinical practice guidelines or scientific statements. Drs. Sharma, Minhas, Michos, and Hays have led cutting-edge research in Cardio-Obstetrics and Women’s Cardiovascular Health. Both Drs. Sharma and Michos have been selected to serve on the prestigious ACC Clinical Policy Approval Committee (CPAC).

Dr. Oscar Cingolani leads our hypertension clinical and research program and excels in his many outpatient, inpatient, and educational duties. Dr. Elizabeth Ratchford, Director of Vascular Medicine, received the Ansell Fellowship Award to establish a Vascular Medicine Fellowship Program, and Dr. Shireen Khoury has been our inaugural fellow.

Drs. Armin Zadeh, Blaha, and Whelton lead our clinical and research efforts in cardiac CT and have led important research publications in this area. Adjunct Faculty Drs. Khurram Nasir and Miguel Caiznos-Achirica have worked closely with Michael Blaha in innovative research regarding the use of CAC-based enrichment of randomized trials and cost-effective allocation of more expensive medication.

**Dominique Ashen, PhD, CRNP**, has played a pivotal role in the medical and lifestyle management of our patients for the past two decades. Drs. Ratchford and Ashen recently published their research findings in the *American Journal of Preventive Medicine* from the cardiovascular screenings of firefighters. They concluded that the identification of coronary artery calcium greatly alters risk stratification and should prompt more aggressive medical and lifestyle management.

We are sad to announce that Dr. Ashen is retiring, but we are grateful to her outstanding contributions to the Ciccarone Center. She has been an outstanding and dedicated clinician and key partner in the growth of the Ciccarone Center. As Coach Ciccarone would say, Dr. Ashen was the unsung hero and true MVP of our team over the past 20 years and she worked tirelessly on behalf of our many patients. She is also an outstanding educator of other clinicians and patients.

**Kathy Byrne, CRNP**, is a key member of the Advanced Lipid Disorders Center and Dorothy Davis, RN, MSN, has been an invaluable resource in helping our patients optimize their lifestyle habits and understand the rationale for their management. Clearly the cornerstone of Preventive Cardiology is optimization of dietary and exercise patterns.

In September, we welcomed Dr. Jaideep Patel back to Baltimore. He directs the Ciccarone Preventive Cardiology Center at GBMC and is establishing a unique clinic to evaluate the cardiovascular risk of South Asian adults and instruct them and their family members on how to lower risk. Dr. Stacey Schott is leading the efforts to expand the Ciccarone Center Preventive Cardiology approach to Hopkins Bayview. She has a strong interest in improving quality of care and implementing cost-effective prevention strategies.

**Dr. Roberta Florida** directs our Cardio-Oncology program, which brings together experts to provide timely and specialized cardiovascular evaluation and care to oncology patients and survivors. She is working closely with Drs. Tala Al-Talib and Sharma, as well as Kim Cuomo, CRNP.

Drs. Allison Hays and Kathy Wu are experts in echocardiography and cardiac MRI. They have led several impactful projects involving imaging to predict which patients are most at risk of heart complications from COVID-19.
**Dr. Gerstenblith** is an expert on cardiovascular aging, and he helped to lead an important paper on frailty and cardiovascular outcomes that was published in the *European Heart Journal.*

**Dr. Lili Barouch** has led efforts to improve outpatient care of patients with heart failure and hopes to lead our future efforts to develop a Sports Cardiology program.

This year we also lost two long-term loyal supporters of the Ciccarone Center. **Jerome Schnydman** was one of Coach Ciccarone’s closest friends and one of Hopkins all-time great lacrosse players. He was a member of the US Lacrosse Hall of Fame, and he had many leadership positions at Hopkins over his long career.

My mom **Anita Blumenthal** contracted COVID-19 in January and passed away in February. She was the person who was my strongest supporter and gave me the greatest encouragement and best advice when I came up with the idea to honor Coach Ciccarone by developing a comprehensive clinical and research center geared to the prevention of cardiovascular disease. I think about my late parents (Dr. Stanley and Anita Blumenthal) every day and I know that they would be very proud of what the Ciccarone Center has accomplished over the past 31 years. Donations to the Ciccarone Center in memory of my mom will support a comprehensive database that Drs. Florido and Ndumele are developing for their Cardio-Oncology patients.

In summary, 2021 was the Ciccarone Center’s best year in terms of clinical care and research. Thanks to our many benefactors for making this possible. We have certainly put together a championship team that would make Coach Henry Ciccarone very proud.

**Roger S. Blumenthal, MD, FACC, FAHA, FASPC, FSCCT**

The Kenneth Jay Pollin Professor of Cardiology
Director, Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease
The Ciccarone Center publishes important original research articles, editorials, and review articles in many of the world’s top cardiology, internal medicine, epidemiology, and endocrinology journals. From December 2020 to November 2021, the Center showed amazing productivity, publishing more than 520 articles of significant basic and clinical research findings, commentaries, and review articles in many leading medical journals, including:

American Journal of Medicine 9  
American Journal of Preventive Cardiology 29  
American Heart Journal 4  
American Journal of Cardiology 10  
Annals of Internal Medicine 3  
Atherosclerosis 6  
ATVB 2  
BMJ 2  
Circulation 22  
Circ Heart Failure 3  
Circ CV Imaging 4  
Circ CV Interventions 2  
Circ CV Quality & Outcomes 11  
Diabetes Care 5  
European Heart Journal 10  
Hypertension 8  
International Journal of Cardiology 6  
JACC 21  
JACC CV Interventions 3  
JACC CV Electrophysiology 1  
JACC Heart Failure 2  
JAHA 25  
JAMA 4  
JAMA Cardiology 11  
JACC Cardio-Oncology 1  
JAMA Network Open 7  
JAMA Neurology 1  
The Journal of Cardiovascular CT 4  
JCI 1  
The Journal of Clinical Lipidology 4  
Nature 1  
NEJM 1  
PNAS 1  
PLoS One 1  
PLoS Med 1  
Radiology 2  
Stroke 2  

Our Donors Make an Invaluable Difference

While our space here is limited, please know our gratitude is not. Philanthropic support of any amount has been greatly appreciated, but we’d like to take this opportunity to thank the following donors for their extraordinary investment in our clinical research and activities over the past year.

Richie and Kathy Amato  
David and Ginger Ansell  
Terry Arenson  
Bill and Betsy Baumgartner  
Max Blumenthal  
Roger Blumenthal and Wendy Post  
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Dan Wagner  
Charlie and Sandra Zeiler

Nick and Suellen Paleologos + Jake Byrne in 2008
Dr. Wendy Post became the inaugural Lou and Nancy Grasmick Professor of Cardiology, effective January 1, 2022. Wendy is the first female faculty member to hold an endowed professorship within our division, which is a testament to her impressive scientific scholarship, clinical skills, administrative leadership, and commitment to the mentorship of both faculty and fellows.

Dr. Post is Professor of Medicine and Epidemiology at Johns Hopkins University and Director of Research for the Hopkins Division of Cardiology. She serves as the Director of the Hopkins field center for the NIH-funded Multi-Ethnic Study of Atherosclerosis. Wendy first arrived at Johns Hopkins as a cardiology fellow in 1994. Since then, she has rightfully earned a reputation as an internationally recognized leader in cardiovascular disease and epidemiology research.

Dr. Post is well-known for her seminal contributions to our understanding of subclinical atherosclerosis, cardiovascular disease risk, especially in women and racial/ethnic minorities, and genetics. She has established herself as a scientific leader in the understanding of the pathophysiology of cardiovascular disease in people living with HIV, publishing extensively on the cardiovascular risk associated with HIV infection. Most recently, she has been one of the leaders in efforts to study the long-term cardiovascular effects of COVID-19.

She spearheaded the creation of a formal faculty mentoring program within the division. She also leads the long-standing T32 postdoctoral training program in Cardiology with Dr. David Kass. She is also an Associate Editor of Circulation.

The Lou and Nancy Grasmick Professorship has been established by Dr. Nancy Grasmick, who served as the State Superintendent of Maryland Public Schools from 1991 – 2011. She was the first female superintendent in Maryland history and the longest-serving appointed superintendent in U.S. history.

In addition to endowing the Lou and Nancy Grasmick Professorship, Dr. Grasmick established both the Lou and Nancy Grasmick Research Fellowship in Cardiology and an endowment to support the physician-scientist pathway of the Osler Residency program in the Department of Medicine – all since 2018. These and other gifts from Dr. Grasmick and her late husband Lou, a former member of the Heart and Vascular Institute Board of Governors, represent an impressive history of philanthropic support. Over more than three decades, the Grasmicks’ contributions have supported the construction of the Zayed Tower, the cardiac rehabilitation program, the Ciccarone Center, and the Broccoli Center for Aortic Studies, among others.

In addition to her support of Johns Hopkins Medicine, Dr. Grasmick is a generous donor of her time and talents throughout Johns Hopkins and beyond. Earlier this year, she established the Nancy Grasmick Leadership Institute at Towson University, her alma mater, where she was named the Presidential Scholar for Innovation in Teacher and Leader Preparation in 2012. She also serves as Chair of the Board for the Peabody Institute and the Kennedy Krieger Institute and serves on the Osler Advisory Board of the Department of Medicine.

Please join us in congratulating Dr. Wendy Post for her landmark achievements at Johns Hopkins.
Drs. Omar Dzaye, Mike Blaha, and Seamus Whelton published a highly clinically-relevant paper in JACC about the best age to start clinical coronary artery calcium (CAC) scoring as a function of risk factors. The article gives guidance about younger adults with risk factors to know what an appropriate age is to consider a CAC scan to identify adults most susceptible for premature atherosclerosis.

Kudos to Dr. Blaha for receiving a $235,000 grant from Bayer for modeling the risk-benefit of aspirin in primary prevention.

Dr. Blaha recently added to his roster of “titles.” He was recently named Co-Director of the Ciccarone Center and the Vice Chair of the Diabetes Committee for the American Heart Association (AHA). Dr. Blaha is also co-PI on a new National Institutes of Health (NIH) R01 grant from the National Heart, Lung, and Blood Institute (NHLBI) entitled “Coronary Artery Calcium in the Pragmatic Evaluation of Events and Benefits of Lipid Lowering in the Elderly: CAC Preventable.” The large grant evaluates CAC and high-sensitivity troponin to help guide statin therapy in adults > 75 years of age. He is also a PI (along with Ciccarone Center alumni Drs. Andrew DeFilippis and Khurram Nasir) of another NHLBI R01 defining risk factor associations with myocardial injury (MI) types 1-5 and acute non-ischemic myocardial injury. The goal is to develop treatments specific to the different types of MI (i.e. precision medicine).

A hearty congrats to Dr. Roger Blumenthal, The Kenneth Jay Pollin Professor of Cardiology Professor of Medicine and Director of Johns Hopkins Ciccarone Center, for receiving the Outstanding Faculty Mentor Award from the Osler Medical Housestaff.

Dr. Garima Sharma has been named as the Associate Editor for JACC Advances’ Section on Women’s Health/Health Disparities, which will be a major focus for this new JACC Journal coming out in January 2022. Other JACC Advances topics include Cardiovascular Medicine-Digital Health, Artificial Intelligence, and adult congenital heart disease, and Pediatric Cardiology. Dr. Sharma also received a very prestigious Direct Invited Fellowship in the American College of Physicians (ACP). The fellowship for physicians who are recognized by ACP leaders for their personal integrity, superior competence in internal medicine, professional accomplishment, and demonstrated scholarship.

Drs. Erin Michos and Sharma were invited to serve on the ACC’s Clinical Policy Approval Committee (CPAC). Comprised of 40 college leaders, CPAC reviews and approves clinical policy documents (guidelines, performance measures, data standards, expert consensus decision pathways, appropriate use criteria, and health policy statements) on behalf of the College.

Dr. Michos served as a faculty expert speaker at two NIH workshops: on improving maternal health, with a focus on upstream interventions prior to pregnancy, and a special workshop on polycystic ovary syndrome (PCOS). She also now serves on an AHA Scientific Statement Committee about improving pre-pregnancy cardiovascular health to improve maternal and fetal outcomes. And Dr. Michos has joined the AHA Epi Statistics Committee, which is chaired by Dr. Seth Martin, to develop a document to be released in 2023.

A Cardio-Obstetrics paper ”Racial Disparities in Cardiovascular Complications With Pregnancy-Induced Hypertension in the United States” led by Drs. Michos and Anum Minhas was selected as a “High Impact Paper” for Fall 2021 by the journal Hypertension.

Congrats to Dr. Francoise Marvel and Dr. Martin, who were recently featured for their work on the Corrie app as a leading health innovation in Tim Cook’s keynote address at Apple’s Worldwide Developers Conference, reaching >25 million people around the globe. They and their team also published their Corrie MiCORE results, a Corrie cost-effectiveness analysis in medical care, in Circulation Quality and Outcomes, along with several other recent cutting-edge mobile health papers. Dr. Marvel, who joined the faculty and launched an Advanced Lipid Disorders Clinic at GBMC, has been appointed co-chair of the entrepreneurship workgroup of the ACC’s Innovation Council and hopes to involve more fellows and faculty in this workgroup.

Dr. Marvel and the Corrie Health team also took home the first-place medal at the Mid-Atlantic Telehealth Resource Center (MATRC) 2021 Breaking Barriers through Telehealth Award for Acute Myocardial Infarction Quality Improvement with Digital Health Intervention (Corrie Health) and Hopkins Research Retreat Clinical Research Fellow Award for MiCORE Study. Congratulations!
Dr. Martin was appointed to the AHA's Health Technology Advisory Group and was named incoming Chair of the AHA’s National Statistics Committee. His mTECH team made 13 presentations at this year’s AHA scientific sessions, has received a $700K collaborative grant to use technology to improve guideline directed care in heart failure, and will be collaborating with Dr. Yvonne Commodore-Mensah in the newly funded $20M Health Equity Research Network on Prevention of Hypertension program.

Additionally, Dr. Martin, who was reappointed to another four-year term on the Maryland Advisory Council on Health and Wellness, recently edited the book, Precision Medicine in Cardiovascular Disease Prevention, with great contributions from trainees and faculty in the Ciccarone Center. He also co-authored the recent NLA Statement on Lipid Laboratory Measurement.

Dr. Tess Peterson recently earned her PhD in epidemiology from the University of Minnesota, where her work focused on biological determinants of cardiac structure and function among both the general population and persons living with HIV. She will continue her work in this field through her postdoctoral training as a T32 fellow mentored by Drs. Wendy Post and Katherine Wu; she is applying novel approaches to advance our understanding of heart failure and the role HIV infection plays in elevating cardiovascular risk. Her long-term objective is to contribute to the science that will lead to earlier heart failure intervention, more refined risk prediction, more precise characterization of clinical disease, and mitigation of heart failure progression.

Congratulations to Drs. Steve Hsu and Anum Minhas for presenting their original research as finalists at the prestigious Northwestern Cardiovascular Young Investigators’ Forum. Dr. Hsu, named the 1st Place Awardee in the Junior Faculty Basic Science Section, presented his work on recruiting myosin to restore sarcomere contractility in human right heart failure. Dr. Minhas presented her findings on the association of gestational diabetes with subclinical cardiovascular disease on echocardiography and endothelial function testing for the clinical fellows section. Keep up the outstanding work!

Dr. Elizabeth Ratchford was recently reelected to second term as secretary for the Society for Vascular Medicine (SVM), serving as chair of the membership committee, the founder and co-director of the SVM mentorship program, and as a member of the program committee. She is the co-editor for the patient information page for the journal Vascular Medicine; together with Dominique Ashen, PhD, CRNP, she recently published the results of a study looking at cardiovascular risk assessment and prevention among firefighters in the American Journal of Preventive Medicine.

Drs. Thorsten Leucker and Gary Gerstenblith, who study endothelial cell biology, received a $286,000 grant from Merck to examine whether the impact of pro-inflammatory stimuli can be abrogated by an intervention which bypasses the adverse effects of these stimuli on endothelial cell nitric oxide function. The impact of pro-inflammatory conditions, such as aging and diabetes, on accelerating atherosclerosis and its consequences, including myocardial infarctions and strokes, is mediated in part by inflammation-induced decreased endothelial cell nitric oxide bioavailability.

Also receiving a new grant was Dr. Chiadi Ndumele, a co-PI with Dr. Lisa Cooper, and Drs. Lena Mathews and Gerstenblith who are serving as faculty contributors, as part of a larger P50 grant to address cardiometabolic health disparities (called MACCHE: The Mid Atlantic Center for Cardiometabolic Health Equity). The 5-year R01 is a randomized controlled trial called UNLOAD-HF (UNderstanding and addressing the risks of LOw socioeconomic status And Diabetes for Heart Failure) designed to address the synergistic risk for myocardial dysfunction and heart failure that is associated with the combination of diabetes and low SES.

They will be testing the effectiveness of an innovative multi-level intervention that includes problem-solving training (to address social barriers to self-care), exercise training and community health worker support for improving cardiorespiratory fitness and risk factor management in patients with diabetes, obesity, low SES and asymptomatic cardiac dysfunction. The intervention will be delivered at community recreation centers that provide access to exercise equipment and also have classrooms for problem solving training in Baltimore City and Washington County.
**News & Highlights**

**Dr. Ndumele** also serves as Co-Center Director of the JHU AHA Strategically Focused Research Network (SFRN) on Cardiometabolic Health, which is focused on examining the role of adipokines in explaining the heterogeneity of metabolic risk progression to heart failure and examining the effects of weight loss on these associations. He recently started a newly funded collaborative project across the four AHA Cardiometabolic SFRN Centers, examining whether there are unique biological signatures linked to the development of heart failure vs ASCVD among individuals with diabetes. Additionally, he is principal investigator of an ongoing R01 that is evaluating the role of adipokine levels and trajectories in mediating and predicting the association of obesity with the development of heart failure.

Cheers to **Dr. Gerstenblith**, who was recently reappointed to a four-year term with the Maryland Department of Health’s State Advisory Council on Health and Wellness, beginning October 2021.

Several Johns Hopkins Cardiology and Cardiothoracic Surgery faculty were selected as 2021 “Top Doctors” by *Baltimore Magazine*, including **Drs. Tala Al-Talib, Garima Sharma, Hugh Calkins, Roger Blumenthal, Jon Resar, Rani Hasan, Steven Schulman, Elizabeth Ratchford, James Gammie**, and **Ahmet Kilic**.

Congrats to **Drs. Sharma and Blumenthal** whose report, “Men and COVID-19: A Biopsychosocial Approach to Understanding Sex Differences in Mortality and Recommendations for Practice and Policy Interventions,” was voted the 2020 most talked about article from the CDC journal *Preventing Chronic Disease*.

**Dr. Sharma** and **Dr. Andreea Creanga** received a NIH R03 grant for their study, “Cardiovascular Disease in Pregnancy and the Postpartum Period in Maryland.”

And **Dr. Sharma** was named Associate Vice Chair for Women’s Careers in Academic Medicine and Chair of the Task Force on Women’s Academic Careers in Medicine.

**Dr. Minhas** is the 2021 recipient of The Charlotte Ferencz Scholarship in the Department of Epidemiology. Congratulations!

**Here’s some exciting news:** **Drs. Michael Blaha and Kunal Jha**, along with **Dorothy Davis, RN, MSN**, recently opened The Johns Hopkins Cardiometabolic Clinic to promote “harmonious unification of cardiometabolic disorders management” under one cardiology team trained in the diagnosis and treatment of cardiovascular disease, type 2 diabetes mellitus, and obesity. By providing care in one location, their team hopes to decrease polypharmacy, improve patient convenience, and provide optimal and unified care to high-risk patients by optimizing guideline-recommended therapies and prescription coverage assistance. The Cardiometabolic Clinic team hopes to provide future opportunities for philanthropic partnerships, research, and education funding, is seeing patients who need specialized cardiometabolic care.

A new report, “Clinical Predictors of User Engagement with a Digital Health Intervention for Post-AMI Recovery,” authored by **Drs. Erin Spaulding, Marvel, and Martin**, among others, was awarded first place for original research at the Preventive Cardiovascular Nurses Association’ 27th Annual Cardiovascular Nursing Symposium. Congratulations Dr. Erin Spaulding and team!

**Dr. Roberta Florido** has been named the Director of the new Hopkins Cardio-Oncology program. Bringing together experts in the fields of cardiology and oncology to provide timely and specialized cardiovascular care to oncology...
patients and survivors of all ages, the team, which includes Tala Al-Talib, MD, Dominique Ashen, CRNP, PhD, Kim Cuomo, CRNP, and Kavita Sharma, MD, provides comprehensive cardiovascular risk assessment for identification of cancer patients who are at high risk for suffering cardiac toxicities from cancer therapies; advanced imaging for the early identification of changes in cardiac function during cancer treatment; and long-term follow-up of cancer survivors who received cardiotoxic treatments for early identification and management of cardiovascular disease.

Congratulations to Dr. Mathews for receiving the Johns Hopkins Clinician Scientist Award in July. In an effort to promote the research career development of young faculty physicians in the clinical departments, the School of Medicine has created a fund for the provision of salary and fringe benefits. Allocations from this fund are based on a competitive application process which is tied closely to concurrent efforts to obtain external support of research. Kudos to Drs. Kunal Jha and Hamied Alfaddagh for being the Pollin Cardiovascular Prevention Fellows. This award was named in honor of Irene Pollin, an amazing champion of Preventive Cardiology who was a partner in several of our research endeavors.

Dr. Michelle Johansen recently received an outstanding fundable score on an NIH R21 submission. With Dr. Blaha as her mentor, she is researching atrial fibrillation, Alzheimer’s Disease risk factors, and brain changes with MRI, and is a future Ciccarone star!

The Preeclampsia Foundation Canada announced that Dr. Minhas is a recipient of one of its 2021 Vision Grants. These highly competitive monetary awards recognize the best junior investigators with novel research ideas in preeclampsia and related hypertensive disorders of pregnancy. Dr. Minhas’ research, “Racial Disparities in the Cardiovascular Effects of Preeclampsia,” analyzes whether Black women have more abnormal function of coronary vessels and higher inflammation compared to White women after experiencing preeclampsia during their pregnancy, with the hope of identifying better therapeutic targets for Black women in the future. Dr. Minhas also received funding for her research from AMAG Pharmaceuticals through its Prematurity and Preeclampsia Research Grants Program in 2019.

Dr. Gabriel Shaya was selected as the Semyon and Janna Friedman award recipient. The award, created by patients of Dr. Post, is designed to fund research/research training for a cardiology fellow. Dr. Shaya plans to use the funding to support his work on a MESA project. Congratulations!

This year we lost a long-term and loyal supporter of the Ciccarone Center, Jerome Schnydman, one of Coach Ciccarone’s closest friends and one of Hopkins’ all-time great lacrosse players. In addition to serving as a key ally in the establishment of and promotion of the Ciccarone Center, Jerry was also the honoree at the last Heartfest in 2013. He held many leadership positions at Hopkins over his nearly four-decade career, including assistant lacrosse coach, admissions director, alumni director, executive assistant to two university presidents, and secretary of the board of trustees. Schnydman, who was 77, was co-captain of the 1967 Hopkins lacrosse team that won a share of the national championship that year and in 1998 was inducted into the Johns Hopkins Athletic Hall of Fame. In 2003, he was inducted into the National Lacrosse Hall of Fame and was also in the halls of fame of the Greater Baltimore Chapter of the National Lacrosse Foundation and Baltimore City College High School.

Tammy Schnydman, Bob Scott, Jerome Schnydman
Dr. Arvanitis studies genetic mechanisms of coronary disease, seeking to discover regions of DNA and genetic variants that are associated with the risk of heart disease in humans. He then develops and employs novel computer algorithms to identify target genes and pathways of those genetic variants and conduct experiments in human cells to discover the mechanisms via which those genes work to cause coronary disease. He also studies genetic screening approaches, known as polygenic risk scores, that can be used to characterize each individual person’s genetic risk of coronary disease in order to identify people who may be at risk of disease at a young age and who may benefit from aggressive treatment and prevention measures.

Dr. Mathews’ research focuses on a prevention strategy called Cardiac Rehabilitation, an outpatient program that consists of supervised exercise, education on heart health, and stress management, all in a group setting for patients who have had a heart attack or cardiac surgery. Because only 20% of patients who are eligible for cardiac rehab ever attend, Dr. Mathews seeks to uncover the barriers to patient participation, particularly among patients with low income in Baltimore, by doing in-depth interviews and designing an intervention based on these findings that can be used to boost cardiac rehab use among patients with heart disease and prevent future heart disease complications.

Dr. Marvel’s research at Johns Hopkins is focused on early detection and prevention of cardiovascular disease using digital health technology. This includes smartphone “apps,” “smart” watches, and sensors, such as Bluetooth-enabled blood pressure monitors. Working together with Apple at their headquarters in California, Dr. Marvel and others helped to design these intuitive technology tools for patients. Her research goal is to gather important cardiovascular data to determine risk and protect patients from cardiovascular disease and events. She also studies how these tools can better engage patients and their families in an American Heart Association guided care plan to improve health outcomes. We are so grateful for the years of generous support that the Schafer family, board, and many volunteers have provided for our junior cardiology faculty.

Three new PJ Schafer awardees were recently announced: Drs. Lena Mathews (2020), Francoise Marvel and Marios Arvanitis (2021). Due to restrictions from the pandemic, we were unable to provide the award in 2020, so Dr. Mathews received her award with this year’s winner. The PJ Schafer Cardiovascular Research Fund Award was established in memory of PJ Schafer who died of premature heart disease suddenly while playing lacrosse in college.

**Study Shows ‘Corrie’ App Leads to Lower Hospital Readmission Rates for Heart Attack Survivors**

It appears that efforts to reengineer the recovery process for patients who have a heart attack may be leading to a better treatment. Data collected from a group of 200 heart attack survivors using an app known as “Corrie” — a play on the word “cor,” the Latin word for “heart” — which can track a patient’s heartbeat and daily activity by using a smartwatch and acts as a management tool that alerts users to take medications and schedule follow-up appointments and serves as a hub for patient education materials related to heart-healthy lifestyles. The study, designed to navigate the recovery process, such as medication management and lifestyle changes, showed that app users experienced hospital readmission within the first 30 days of discharge at half the rate of a comparable group given standard aftercare without the app.
“Historically, we too often hand a stack of papers about very complicated guidance to patients and then expect them to significantly change their lives,” said Dr. Francoise Marvel, who, along with Dr. Seth Martin, led a multidisciplinary team from Johns Hopkins to conduct the MiCORE (Myocardial infarction, Combined Device, Recovery Enhancement) study, which tested whether a patient who experienced a heart attack and uses a digital health program (an app integrated with a smartwatch and wireless blood pressure monitor) would have a lower risk of 30-day hospital readmissions.

The MiCORE study showed that patients who used the digital health intervention had a 52% lower risk of going back to the hospital within 30 days of discharge for any health issue, compared with the historical group. The findings, published in the July issue of Circulation: Cardiovascular Quality and Outcomes, also suggested those using the app were more motivated to improve their quality of life, with more than 90% of users saying they felt prepared to manage their health at home.

“Providing more than just a day or a snapshot of data, you get a fuller picture of someone’s daily life [and] enhance patient and clinician collaboration in improving their health,” says Martin, adding that the team is creating a computer dashboard for clinicians to access patients’ key cardiovascular metrics in real time as part of a virtual cardiac rehab program that could be used to better inform in-person visits.

A 1969 School of Arts and Sciences grad (and a third generation Hopkins alum), Neil is an avid lacrosse fan who created an iconic cartoon of the Hopkins Blue Jay as an undergraduate — the “NAG Jay” — which has been synonymous with the JHU lacrosse program for five decades.

Neil is also a prolific writer. A veteran newspaperman, he has 10 books to his name, including a biography of James Thurber, histories of Johns Hopkins neurosurgery and Johns Hopkins Bayview Medical Center, and a hefty tome published in 2012, Leading the Way, that recounts the history of Johns Hopkins Medicine in fascinating detail.

Neil has retired from Johns Hopkins, marking the end of an era. Around JHMI we’ll certainly miss his quick grin and curmudgeonly quips. And the larger university community will undoubtedly miss his encyclopedic knowledge of — and passion for — all things Johns Hopkins.

News & Highlights

A 1969 School of Arts and Sciences grad (and a third generation Hopkins alum), Neil is an avid lacrosse fan who created an iconic cartoon of the Hopkins Blue Jay as an undergraduate — the “NAG Jay” — which has been synonymous with the JHU lacrosse program for five decades.

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Saluting the Man Behind the ‘NAG Jay’

Congrats to Neil A. Grauer, who was instrumental in helping to found the Ciccarone Center in 1990 and created our iconic logo. Grauer is stepping down after 20 years as Class Notes Editor of Hopkins Medicine magazine, from which this tribute is excerpted:

Neil A. Grauer is a bespectacled fellow known for his trademark bow tie and summer seersucker suit, the towers of papers in his office, and his vast knowledge of Hopkins history.
Dr. Post Joins Dr. Fauci in Fight against COVID-19

Congrats to **Dr. Wendy Post, MD, MS**, who has been selected to serve on a top-level National Institutes of Health (NIH) committee to study the long-term effects of Covid-19, alongside such infectious disease luminaries as Dr. Anthony Fauci, the director of the National Institute of Allergy and Infectious Diseases and the Chief Medical Advisor to the President, and Dr. Gary Gibbons, director of the National Heart, Lung, and Blood Institute (NHLBI).

Dr. Post, who serves as the Director of Research for the Hopkins Division of Cardiology and is one of the leaders in the Hopkins efforts to study the long-term cardiovascular effects of COVID-19, will serve as an external expert member on the Executive Committee for NIH’s new Researching COVID to Enhance Recovery (RECOVER) Initiative.

In recognition of the public health need to better understand and develop strategies to treat and prevent the post-acute sequelae of SARS-CoV-2 infection (PASC), Congress appropriated $1.15B to NIH for research and clinical trials related to long-term studies of COVID-19. The new RECOVER program will define the clinical spectrum of PASC, elucidate its underlying pathobiology, and assess the effectiveness of treatment and preventive strategies.

Among the many public health issues that RECOVER will aim to address are the impact of vaccines on PASC; whether SARS-CoV-2 infection initiates/promotes the pathogenesis of conditions that evolve over time to cause organ dysfunction or increase the risk of developing other disorders; and the potential effects of SARS-CoV-2 infection during pregnancy on maternal and fetal outcomes.

At the heart of the initiative is a meta-cohort of patients with a history of SARS-CoV-2 infection that leverages a variety of NIH clinical platforms, including large and long-standing longitudinal studies; COVID-19 clinical trials/networks; large-scale electronic health records (EHR)/health systems-based cohort studies; and COVID-19 clinics, registries, and observational studies. These will be augmented by utilization of social media and digital health strategies for patient recruitment and follow-up.

As a member of the Executive Committee, which reports to the NIH Director, Dr. Post—who in 2022 also will become the first female cardiologist at Hopkins to receive an endowed professorship—will provide high-level guidance to ensure that the Initiative is effectively meeting its scientific objectives and mission; assess progress, quality, and safety of RECOVER cohort studies; and recommend strategy and programmatic plans.

The committee will be co-chaired by three NIH Institute directors (Drs. Anthony Fauci, Gary Gibbons, and Walter Koroshetz), and will include a patient representative who is a co-chair of the RECOVER Community Engagement Panel, and four external experts. What a tremendous honor for the Ciccarone Center’s Dr. Wendy Post!
To David Kotick, lovingly known to his family as “Uncle Bernie,” there were no strangers — only friends he had not met yet — and he counted Elizabeth Ratchford, among them. Dr. Ratchford, director of the Johns Hopkins Center for Vascular Medicine, met Uncle Bernie five years ago over lunch with his nephew Stanley Goldstein, a patient of Ratchford’s. Uncle Bernie was grateful for the care she provided to Goldstein, whom she treats for peripheral artery disease (PAD) and wanted to learn more about her work.

The luncheon was the only time Ratchford and Uncle Bernie met in person, but they remained in touch, thanks in part to Uncle Bernie’s expert editing skills. Dr. Ratchford is co-editor for the Patient Page section of the journal Vascular Medicine. When she learned of Uncle Bernie’s long career in the publishing industry, she invited him to serve on the journal’s patient panel, volunteers who review articles to ensure they make sense to a lay audience.

Grateful for the care she provided his nephew Stan Goldstein, Uncle Bernie made a legacy gift to support Dr. Ratchford’s research in the non-invasive diagnosis and treatment of vascular diseases. Uncle Bernie passed away in March 2021, at the age of 94. Dr. Ratchford says that gifts like those from Uncle Bernie not only help her work; they can further her goal to support other researchers through a permanent vascular medicine fellowship program at Hopkins.

Legacy Gift Honors Friendship and Outstanding Care

The Johns Hopkins Ciccarone Center for the Prevention of Heart Disease was established in memory of Coach Ciccarone in 1990.

Heartfest was the brainchild of Joe Ciletti (left) and Dave Schroeder (right). Ciletti, owner of The Wine Merchant & Schroeder, a former co-owner of The Wine Merchant provided and served wines to complement each of the heart-healthy dishes served at Heartfest.

They generously supported the heart-healthy evening of dining, dancing and education that benefits The Johns Hopkins Ciccarone Center for the Prevention of Heart Disease.

Both Graduates of The Johns Hopkins University and student athletes, Schroeder played varsity football and Ciletti played the legendary Lacrosse Coach Henry A. "Chic" CCiccarone.

Kevin Kilner, Roger S. Blumenthal, Brian Goodman at YVT Benefit for Ciccarone Center
Antiplatelet/Antithrombotic

Mohamed MO...Michos ED...Mamas MA. Sex differences in distribution, management & outcomes of combined ischemic-bleeding risk following ACS. Int J Cardiol. 2021 Apr 15;329:16-22.

Summary: ACS patients with dual high-risk for bleeding & recurrent ischemia are less likely to receive guideline-recommended Rx & experience worse outcomes.


Summary: Comparisons of various antiplatelet monotherapies & of ticagrelor monotherapy versus clopidogrel + aspirin will be important to inform clinical practice & guidelines.

Vavuranakis MA...Leucker TM, Vavuranakis M. Comparison of Ticagrelor Versus Clopidogrel on Cerebrovascular Microembolic Events & Platelet Inhibition during TAVI. Am J Cardiol. 2021 Sep 1;154:78-85.

Summary: Ticagrelor resulted in fewer procedural high intensity transient signals (HITS), compared with clopidogrel, in patients undergoing TAVI, while achieving greater platelet inhibition.

Arrhythmias


Summary: We review the findings that implicate the NLRP3 inflammasome in the pathogenesis of AF, discuss evidence behind the use of anti-inflammatory agents for AF, & discuss the future role that anti-inflammatory agents may play in the treatment of AF.


Summary: Among hospitalized patients with Afiib, there was no difference in mortality between those with & without iron deficiency anemia.


Summary: There is a need for additional large clinical trials to assess the value of ICD implantation in cardiac sarcoidosis patients with EF >55% & without documented LV arrhythmia.


Summary: The success rate of first repeat ablation is significantly higher among patients with recurrent atypical AFL as compared to recurrent AF after index AFL ablation.
This past year, Dr. Chiadi Ndumele received several new grants. Along with Drs. Lena Mathews and Gary Gerstenblith, he will be serving as a faculty contributor to a larger P50 grant to address cardiometabolic health disparities (called MACCHE: The Mid Atlantic Center for Cardiometabolic Health Equity). The 5-year R01 is a randomized controlled trial called UNLOAD-HF (UNDerstanding & addressing the risks of LOw socioeconomic status And Diabetes for Heart Failure) designed to address the synergistic risk for myocardial dysfunction and heart failure that is associated with the combination of diabetes and low SES.

Dr. Ndumele also serves as Co-Center Director of the JHU AHA Strategically Focused Research Network (SFRN) on Cardiometabolic Health, which examines the role of adipokines in explaining the heterogeneity of metabolic risk progression to heart failure and examining the effects of weight loss on these associations. He recently started a newly funded collaborative project across the four AHA Cardiometabolic SFRN Centers, examining whether there are unique biological signatures linked to the development of heart failure vs ASCVD among individuals with diabetes.

Additionally, he is Principal Investigator of an ongoing R01 that is evaluating the role of adipokine levels and trajectories in mediating and predicting the association of obesity with the development of heart failure. He was also named PI for a new AHA cholesterol management quality improvement initiative involving 40,000 patients and six health systems, designed to enhance adherence to the 2018 Cholesterol Guidelines (for which he and Dr. Roger Blumenthal served on the writing committee).

Dr. Ndumele has contributed to several major AHA Scientific Statements this year related to obesity and cardiometabolic risk, including the main AHA statement on obesity & CVD (Circulation); obstructive sleep apnea & CVD (Circulation); and weight loss strategies for the prevention and treatment of hypertension (Hypertension).

Recent leadership activities include contributing to the prevention and cardiometabolic programming for this year’s AHA Scientific Sessions, such as leading the development of the main events for prevention and for health equity. Also, he is the chair of the AHA Lifelong Learning Committee and the Health Equity Committee. Dr. Ndumele also serves on the Scientific Publishing Committee, which oversees operation of the AHA Journals, and on the Editorial Boards of Circulation and Circulation Research.

Summary: CAC testing can rule out obstructive CAD & the need for revascularization in patients presenting to the ED with chest pain at low risk for ACS.


Summary: The optimal age for a first scan is approximately 37 years for men & 50 for women with diabetes, & 42 years for men & 58 for women without risk factors for premature atherosclerosis.


Summary: It would be best to enroll adults with elevated CACs cores into randomized trials.


Summary: We need to focus on both leisure & work time to improve CVD health.


Summary: A thoracic artery calcium score of >300 provides added prognostic & reclassification value.


Summary: Emotions & personal values are key drivers of individual human behavior; through targeted conversation, clinicians can enhance patient motivation.


Summary: Systematic consideration of borderline risk South Asians as statin candidates might result in overtreatment; further risk assessment with CAC may personalize statin allocation.


Summary: IBD is associated with higher prevalence of CV risk factors. Early screening & risk mitigation strategies may improve CVD outcomes.


Summary: CAC testing improved risk classification in borderline risk patients with 10-year ASCVD risk of 5% to <7.5%.


Summary: CAC scoring is more accurate than risk enhancing factors in determining who might benefit from statin therapy.


Summary: The MESA study has led to major improvements in CVD risk assessment.


Summary: Both traditional risk factors & a CAC score should be obtained to more accurately assess CVD risk in young adults.


Summary: The competing risk-adjusted SCORE2-OP model can help communicate CVD risk & facilitate shared decision-making.


Summary: Both traditional risk factors & a CAC score should be obtained to more accurately assess CVD risk in young adults.


Summary: Any CAC in symptomatic young patients indicates susceptibility for atherogenesis & should facilitate discussions on initiation of preventive measures.

Osei AD, Obisesan OH, Blaha MJ, Adelhoefer S...

CVD events, non-CVD outcomes, & mortality ≥1000 are at substantially higher risk for High CAC (≥1000) & Association With CVD Dzaye O, Obisesan OH...Nasir K...Bødtker Peng AW, Dardari ZA, Blumenthal RS, Risk, retaining very good risk discrimination.

Using Traditional Risk Factors & Coronary JH. Derivation of a Coronary Age Calculator Blaha MJ...Cainzos-Achirica M, Dardari the clinical value of CAC.

Summary:

CAC in Individuals With Absent CAC: MESA. Artery Plaque With CV Events & Incident CAC among middle-aged individuals with an initial CAC score of 0.


Summary: Improvements in standardizing reporting of CAC findings across gated & nongated studies, such as the CAC Data & Reporting System, show promise for improving the clinical value of CAC.


Summary: The newly derived coronary age is a convenient transformation of MESA CHD Risk, retaining very good risk discrimination.


Summary: Individuals with very high CAC (≥1000) are at substantially higher risk for CVD events, non-CVD outcomes, & mortality with event rates similar to those of a stable treated secondary prevention population.


Summary: CAC ≥100 is seen in a distinct patient group, & a CAC of 0 is a reliable negative risk factor, identifying patients at low risk of both CVD & non-CVD mortality.


Summary: South Asians have lower CAC volume compared to Whites but similar compared to non-whites; CAC density is higher among South Asians.


Summary: Plaque burden, not stenosis, is the main predictor of CVD risk & death. Patients with a comparable calcified atherosclerosis burden carry a similar risk for CVD events regardless of whether they have nonobstructive or obstructive CAD.


Summary: High CAC scores used as study entry criteria can improve the efficiency & feasibility of primary prevention RCTs evaluating the incremental efficacy of novel add-on therapies.


Summary: The comprehensive machine learning (ML) model was superior to ASCVD risk, CAC score, & an ML model fitted using CT variables alone in prediction of CVD & CHD death.


Summary: Evidence-based guidance would be to consider rescanning in 3 to 7 years depending on individual demographics & risk profile.


Summary: Google Trends, a valuable tool for assessing public interest in health topics, suggests that the increased interest in CAC is linked to reports of CAC testing in world leaders & endorsement in major guidelines.


Summary: Both CAC scores & percentiles are strongly predictive of CVD & total mortality among older adults, with greater risk-stratification among females; both low CAC scores 0-9 & <25th percentile define low risk older adults.


Summary: Our findings support the use of the Pooled Cohort Equations regardless of whether they have nonobstructive or obstructive CAD.


Summary: The comprehensive machine learning (ML) model was superior to ASCVD risk, CAC score, & an ML model fitted using CT variables alone in prediction of CVD & CHD death.
Duffy EY, Ashen D, Blumenthal RS, Davis DM, Gulati M, Blaha MJ, Michos ED, Nasir K, Cainzos-Achirica M.


**Summary:** Five communication approaches are proposed that enhance preventive cardiology conversations, from addressing values & priorities such as common health concerns, love for family, desire of social recognition, financial stressors, & desire to receive personalized advice; this facilitates more effective bonds with patients & enhances adherence to recommendations.


**Summary:** About 1 in 10 patients admitted for type 2 MI died during admission, & 1 in 5 patients were readmitted at 30 days after discharge.


**Summary:** The 10 CVD risk factors include unhealthful nutrition, physical inactivity, dyslipidemia, hyperglycemia, high blood pressure, obesity, considerations of select populations (older age, race/ethnicity, & sex differences), thrombosis/smoking, kidney dysfunction, & genetics.


**Summary:** The prevalence of favorable CVH is low with <20% of U.S. adults meeting ≥5 metrics at ideal levels; significant racial/ethnic disparities persist.


**Summary:** Targeted interventions aimed at vulnerable populations are required to improve stroke-related outcomes.

Osibogun O, Oggunmoroti O, Mathews L, Okunrintemi V, Tibuakuu M, Michos ED.

Greater Acculturation is Associated With Poorer Cardiovascular Health in MESA. J Am Heart Assoc. 2021 Apr 20;10(8):e019928.

**Summary:** Greater US acculturation was associated with poorer CV health (CVH); promotion of ideal CVH should be encouraged among immigrants.


**Summary:** The presence & extent of carotid plaque are associated with long-term coronary risk & incident CAC among middle-aged asymptomatic individuals with an initial CAC score of 0.


**Summary:** Unfavorable CVM metrics cluster together; multi-pronged strategies targeted for health promotion are likely to be more effective than targeting any one single factor in isolation.


**Summary:** A CAC scan identifies firefighters at increased CVD risk; a comprehensive CVD prevention program implemented early in a firefighter's career will reduce disability in this high-risk population.


**Summary:** Combined CTA-CT perfusion imaging yields at least equal 5-year prognostic information as combined invasive coronary angiography-SPECT assessment in patients presenting with suspected CAD; noninvasive cardiac CT assessment may eliminate the need for many diagnostic cardiac caths.


**Summary:** The use of secondary prevention of CVD was low, with lower aspirin & combination GDMT for Blacks with CAD. Efforts to improve GDMT use at the patient & provider levels are needed to improve morbidity & reduce disparities.

Kwok CS...Michos ED...Mamas MA. Location of death among patients presenting with CVD to the ED in the US. Int J Clin Pract. 2021 Apr;75(4):e13798.

**Summary:** Inpatient CVD admissions & death may not be a robust measure of national burden of CVD since ED deaths, which are common for some conditions, are not captured.


**Summary:** Bypass graft occlusion is often associated with non-fatal events rather than death, while graft failure due to competitive flow is generally benign; graft occlusion in a graft-dependent circulation is associated with clinical symptoms.


**Summary:** Radiomics-based precision phenotyping indicated that conventional risk factors, cocaine use, & HIV infection each had different effects on CT angiographic morphologic changes in atherosclerosis.


**Summary:** UHR-CT may be effective in overcoming the limitation of conventional CT for accurately evaluating coronary stenoses in severely calcified vessels.


**Summary:** One third of young adults with a low burden of traditional risk factors developed premature atherosclerosis; lower calcium-phosphate homeostasis, & low sodium intake were associated with long-term absence of carotid plaque.

**RESEARCH PUBLICATIONS**

**Aguirre AD, Arbab-Zadeh A...**

**Summary:** OCT data supports the evolving understanding of CHD as a panvascular process associated with inflammation; plaque ruptures often occur at multiple sites in the coronary arteries. Plaque progression & healing are dynamic processes modulated by systemic risk factors.

**Sreenivasan J...Michos ED...Panza JA.** Rate, causes, & predictors of 90-day readmissions & the association with index hospitalization coronary revascularization following NSTEMI in US. *Catheter Cardiovasc Interv.* 2021 Jul 1;98(1):12-21.

**Summary:** Readmissions following NSTEMI carry higher mortality than the index hospitalization; revascularization for NSTEMI is associated with a lower readmission rate at 90 days.


**Summary:** Classification & regression tree (CART) analysis streamlines the identification of very high risk patients based on a limited number of rules & risk factors. This may improve decision making by simplifying ASCVD risk assessment.


**Summary:** Despite rising trends in autopsy rates among decedents of CVD, demographic disparities expanded over time.


**Summary:** Patients with stable chest pain can be triaged into 4 management categories using traditional angiographic grading. Whole-heart atherosclerosis imaging will need to demonstrate its clinical superiority over this simple, familiar approach.


**Summary:** In statin-naive nonelderly individuals, high CAC scores are indicative of a markedly increased CVD risk compared with same-age peers with lower scores.


**Summary:** The 5-year risk for CVD events & death varies substantially in symptomatic patients undergoing CTA, even in the presence of obstructive CAD. Individual risk assessment improves potential benefit when allocating preventive therapies following CTA.


**Summary:** The diagnostic value of a CAC score of 0 to rule out obstructive CAD beyond clinical variables was dependent on age, with the added diagnostic value being smaller for younger patients.


**Summary:** In patients with suspected CAD & multiple risk-factors, plaque burden adds incremental prognostic value over CCTA & SPECT to predict CVD outcomes.


**Summary:** We can detect & treat higher risk, younger patients with multiple risk factors with a CAC scan for facilitating shared decision making when considering aggressive risk factor control & early statin Rx.


**Summary:** The prevalence of CRMNA is 10% among US adults & is higher among those with common chronic diseases.


**Summary:** Half the nonelderly US population with CKD experiences financial hardship from medical bills that is associated strongly with lack of insurance. Clinical & policy interventions are needed.


**Summary:** A more favorable CVD health score was associated with a lower prevalence of NAFLD.


**Summary:** Although the overall prognostic significance of AVC was attenuated after accounting for CAC, high AVC was independently associated with all-cause & CVD deaths in patients with low CAC burden.


**Summary:** A lower SWCS may provide reassurance among higher-risk groups such as those with diabetes or severe hypercholesteremia with CAC zero.


**Summary:** We discussed the importance of CAC in advanced risk stratification, as well as the beneficial value of aggressive preventive therapy in those with CAC ≥1000.


**Summary:** Only through policies that prioritize primary & primordial prevention can we balance the complex economic-health care equation.


**Summary:** Studies of polypills in primary prevention must ensure that the control group receives the best proven interventions, rather than minimal care interventions.


**Summary:** The onus on practitioners of CVD prevention to provide personalized medicine.
Dr. Erin Michos has had an amazing year in the field of Preventive Cardiology. She became Co-Editor-In-Chief with Nathan Wong, PhD, of the American Journal of Preventive Cardiology, and the changes that they enacted recently led to the new journal now being accepted for Pub Med Central. All of the articles from the journal’s inception in 2020 have been uploaded into Pub Med for easy accessibility. Drs. Michos and Wong have assembled many of the world’s leaders in Prevention for their editorial board.

Dr. Michos received a Mentoring Award for inspiring Hopkins medical students in clinical research. She has had more than 50 mentees, and she has been the recipient of two other major mentoring awards.

Dr. Michos’s scholarly output has been unsurpassed in recent years. Her research focuses on cardiovascular disease in women, physical activity and nutrition, risk prediction for cardiovascular disease, lipids and cholesterol lowering therapy, and vitamin D and other supplements. Since joining the Ciccarone Center faculty in 1997, she has co-authored more than 450 peer-reviewed publications and 9 book chapters.

She has given virtual Medical or Cardiology Grand Rounds and CME conference presentations all over the world. Her recent international invited talks have been in 16 different countries. In the past few years, she has given Grand Rounds at 34 leading academic medical centers. She has also been a featured speaker at numerous medical society’s Annual Scientific Sessions.

Dr. Michos is the co-chair of the planning committee for the Prevention and Health Promotion pathway for the ACC22 Scientific Sessions, and she is an integral member of the Research Leadership Academy Planning Committee for the American Heart Association (AHA). She has co-authored three AHA Scientific Statements that have recently been published or in progress. Dr. Michos has been a leader in the Cardiorenal and Cardiometabolic areas and she has worked closely with the American Society of Nephrology (ASN) and American Diabetes Association.

She co-authored the 2020 Kidney Disease Improving Global Outcomes (KDIGO) Guideline on Diabetes Management in chronic kidney disease, and she is actively working on the 2022 update. She authored the ASN cardiovascular education module and was co-author of the National Institute of Diabetes, Digestive and Kidney Disease (NIDDK) Diabetes in America textbook chapter on cardiovascular disease.


Summary: In patients with 3-vessel or left main disease undergoing PCI or CABG, medication status at 5 years had a significant impact on 10-year mortality; patients on OMT with GDMT at 5 years had a survival benefit.


Summary: There is a clear need to reduce hospital-level & patient-level variability in preventive care.


Summary: During the early pandemic, risk-adjusted survival to hospital discharge increased over time for critical care patients.


Summary: We describe the inception of the Cardiovascular Quality Improvement & Care Innovation Consortium that seeks to rapidly improve cardiovascular care.


Summary: The risk for adverse CV events decreased substantially in adults with chronic coronary syndrome from 2004 to 2016.


Summary: There is an urgent need for efforts to improve recruitment of Asian participants of heterogeneous socioeconomic backgrounds in national surveys & to perform a thorough assessment of risk factors & disease in this population.


Summary: We provide a unique validated PsRS for ASCVD in a national sample of US adults.


Summary: MiHeart will provide novel insights into the pathophysiology of early subclinical atherosclerosis & its role in the genesis of clinical CVD.


Summary: CAC testing as part of the inclusion criteria used in clinical trials may result in identifying high-risk individuals who were previously not included while achieving favorable absolute risk reductions.

Summary: The authors focus on the role of CAC informing the personalized allocation of statins & aspirin in the general population, as well as therapies for diabetes or severe hypercholesterolemia.


Summary: The given limitations of relying solely on computer algorithms to identify CVD outcomes, validation with clinical review is essential to guide interpretation.


Summary: Hypertriglyceridemia predicted peripheral arterial revascularization, new heart failure diagnosis & new-onset renal disease; it was also significantly associated with increased healthcare resource utilization & costs.


Biomarkers/ Inflammation


Summary: We discuss the role of inflammation in ASCVD, discuss the predictive value of various biomarkers involved in inflammation & summarize trials that evaluated the capacity of various pharmacologic interventions to attenuate the intensity of inflammation.


Summary: Although these anti-inflammatory approaches were relatively well-tolerated, they did not improve coronary endothelial function in patients with stable CAD.


Summary: Temporal change in CRP is associated with HF only in women & statin users, & other CVD in both women, men, & statin users.


Summary: Promotion of ideal PA may be an important way to reduce the risk of subclinical & future clinical CHD in African Americans.


Summary: Future studies should focus on whether biomarker-directed management strategies can improve clinical outcomes.


Summary: Odds of myocardial injury, ischemic stroke & mortality, but not MI, are significantly higher in men compared to women with COVID-19.


Summary: IL-6 was associated with AFib but not GlycA.


Summary: Higher cGMP levels were associated with increase in LVM over 10 years independent of risk factors & NT-proBNP in men, perhaps reflecting compensatory changes.


Summary: Further investigation is warranted on the utility of pro-BNP for clinical prognostication in coronavirus disease 2019 as well as implications of abnormal pro-BNP in the pathophysiology of myocardial injury.


Summary: Colchicine was not associated with a significant decrease in CV endpoints & mortality in patients with CAD.


Summary: This international survey will provide a unique picture of CHD patients; their cardiometabolic, renal & biomarker status; lifestyle & therapeutic management; & the quality of preventive care provided in WHO regions.


Summary: Individuals with concomitant elevated Lp(a) & systemic inflammation have greater ASCVD risk & mortality, and may merit closer surveillance & more aggressive risk management.


Blood Pressure


Summary: We identified an at-risk population of young women who may benefit from early screening & intervention for chronic diseases to prevent early mortality. We must not pull the shade on this unique window.

control increase with advancing age & are disparities in hypertension control with JNC7 guidelines; a CAC>100 may be pharmacotherapy by ACC/AHA as compared with JNC7 guidelines; a CAC>100 may be better at informing hypertension management in American South Asians.

Awad K…Blaha MJ…Toth PP…Banach M. Association of statin use in older primary prevention group with risk of CVD events & mortality. BMC Med. 2021 Jun 22;19(1):139. Summary: Statin therapy in people aged ≥ 65 years without CVD was associated with a 14%, 20%, and 15% lower risk of mortality, CVD death, & stroke, respectively.

Jacobsen AP…Whelton SP…Nasir K, Blaha MJ…Blumenthal RS, Post WS, McEvoy JW. A cohort study & meta-analysis of isolated diastolic hypertension (IDH): searching for a threshold to guide treatment. *Eur Heart J*. 2021 Jun 1;42(21):2119-2129. Summary: The lack of consistent excess in CAC or CVD suggests that emphasis on healthy lifestyle rather than drug Rx is sufficient among the millions of middle-aged or older adults who now meet the 2017 ACC/AHA criteria for IDH.


Kovell LC…Michos ED. Hypertension in Young Women: Implications of PCOS & Opportunities for Prevention & Research. *J Clin Endocrinol Metab*. 2021 Aug 18;106(9):e3775-e3777. Summary: Hypertension is common among women with PCOS & may represent an important mediator for subsequent CVD risk.

Wang FM…Ndumele CE, Matsushita K. Increase in arterial stiffness measures after bariatric surgery. *Atherosclerosis*. 2021 Mar;320:19-23.(BP) Summary: Further studies are necessary to elucidate the underlying mechanism & prognostic implications of this elevation in arterial stiffness measures after bariatric surgery.

Goldberg RL…Florido R….Banach M.. *JACC*. 2021 Feb 9;325(6):586-596. Summary: Suppressed renin activity & higher aldosterone:renin ratios were associated with higher SBP & DBP in the office & during the awake & asleep periods on ABP.

Jacobsen AP…Whelton SP…Nasir K, Blaha MJ…Blumenthal RS, Post WS, McEvoy JW. Cohort Study & Meta-Analysis of Isolated Diastolic Hypertension: Searching for a Threshold to Guide Rx. *Eur Heart J*. 2021;42(21):2119-2129. Summary: The lack of consistent excess in CAC or CVD suggests that emphasis on healthy lifestyle rather than drug Rx is sufficient among the millions of middle-aged or older adults who now meet the 2017 ACC/AHA criteria for IDH.


Kaze AD…Golden SH…Echouffo-Tcheugui JB. Plasma Leptin & Blood Pressure Progression in Blacks: Jackson Heart Study. *Hypertension*. 2021 Apr;77(4):1069-1075. Summary: Leptin is possible mediator between adiposity & hypertension; leptin could be a potential biomarker for early detection of hypertension & progression of BP.

**Summary:** Emphasis should be on the prevention of obesity to reduce the burden of hypertensive CV & kidney diseases & subsequent mortality.


**Summary:** The CAC score is an effective tool to identify individuals across racial subgroups with elevated BP or low-risk stage I hypertension who are at a higher risk of incident CHD, stroke, HF, & adverse CVD events.


**Summary:** Younger persons (< age 50) with IDH do have elevated relative risk for CV events & may therefore benefit from intensive lifestyle interventions & antihypertensive medications.


**Summary:** Intensive SBP control led to large absolute differences in death & HF among patients with abnormal hsTnT & NTproBNP levels; thus, risk associated with elevation of these biomarkers is modifiable with intensive BP control.


**Summary:** For the SBP target of <130 mmHg, the supporting evidence is strong & also supports the use of this target for patients with diabetes & higher CVD risk.


**Summary:** Participants with stage 1 hypertension but elevated NT-proBNP had greater CV risk compared with those with stage 2 SBP but lower NT-proBNP.


**Summary:** The lack of association between IDH & CVD events may not apply to very young adults.


**Summary:** We found no independent association of baseline on-treatment potassium concentrations with all-cause or CV death, & the benefit of intensive BP control was not affected by serum potassium.

**Cardio-Obstetrics**


**Summary:** Eliminating disparities will necessitate a nationwide obligation to ensure health care equity via enhanced health insurance coverage, resource investment, & public and clinician accountability.


**Summary:** As public health interventions promoting lifestyle changes remain a challenge, maternal obesity may prove to be the “Achilles’ heel” of sustainable efforts to reduce maternal mortality.


**Summary:** The prevalence of preeclampsia & other CVD risk factors is lower in foreign-born than in US-born NHB women. The healthy immigrant effect, which typically results in health advantages for foreign-born women, wanes with longer duration of US residence.


**Summary:** We reviewed concepts around interconception care, focusing on preconception care for patients with chronic medical conditions & postpartum care for those with complicated pregnancies.


**Summary:** This policy statement outlines the inequities that influence disparities in maternal outcomes & policy approaches to improving maternal health.


**Summary:** Women who develop preeclampsia with severe features have a high incidence of hypertension within 4 years of delivery.

Summary: Angiotensin II type 1 receptor autoantibodies (ATIR-Ab) may be useful as a predictive tool for identifying women at risk of developing heart failure; they may provide an avenue for potential targeted Rx with ARBs.


Summary: The role of the pregnancy heart team is to offer preconception counseling, determine pregnancy risks & educate women, develop an antenatal & delivery plan, & ensure appropriate follow-up.


Summary: This review focuses on the safety of drug Rx for COVID-19 in pregnant women treated with antihypertensive medication.


Summary: The CV risk factors & health profile in US born Black women was worse than in Hispanics & Whites.


Summary: Future efforts should focus on strategies to increase maternal postpartum follow-up, improve accessibility to interventions across diverse racial & cultural groups, expand awareness of risk factors, & define evidence-based precision prevention strategies.


Mehta LS, Sharma G…White CJ. AHA Advocacy Coordinating Committee, Call to Action: Maternal Health & Saving Mothers: Policy Statement from AHA. Circulation. 2021;Oct 12;144(15)e251-269.

Summary: We outline the inequities that influence disparities in maternal outcomes & current approaches to improving maternal health & suggest additional actions to improve maternal outcomes & save mothers’ lives.

Dr. Garima Sharma is a national leader in Women’s Health and Preventive Cardiology. This year she was named Director of Cardio-Obstetrics at Johns Hopkins and an Associate Vice Chair for Women’s Careers in Academic Medicine. She is also the Chair of the Task Force on Women’s Academic Careers in the Department of Medicine. Her interest in diversity, health equity, and gender are the result of her experiences as a first-generation immigrant to the US and a woman navigating a career in Cardiology, a subspecialty where women are under-represented.

Her clinical and research interests focus on adverse pregnancy outcomes and associated cardiovascular risk, post-partum prevention of complications from hypertensive disorders of pregnancy, and equity for clinicians and patients. She specializes in high-risk cardiovascular problems in pregnancy such as coronary artery and aortic dissections and valvular heart disease.

In 2021, Dr. Sharma became the Governor of the Maryland Chapter of the ACC. She has led several national initiatives for professional development of Cardiology Fellows in training. She was Vice-Chair of an AHA Policy Statement “Call to Actions: Maternal Health and Saving Mothers.” In this document, Dr. Sharma and her co-authors provided comprehensive recommendations to improve maternal health. The authors advocated for policies to remove barriers to health care access and quality, systematically address social and structural determinants of health, incentivize care coordination among providers across the maternal care continuum, and cultivate and expand partnerships that empower community members to promote cardiovascular health in their communities.

She was lead author of a high-profile 2021 article in JACC entitled “Global Prevalence and Impact of Hostility, Discrimination, and Harassment in the Cardiology Workplace.” This research found a surprisingly high global prevalence of a hostile work environment in cardiovascular medicine, including discrimination as well as emotional and sexual harassment. The authors (including the Ciccarone Center’s Dr. Roger Blumenthal) concluded that this is both a professional issue and a patient care issue. Moreover, there needs to be a renewed focus on organization structure, processes, and practices to reform the culture of medicine to reduce these problems in the interest of the well-being of the health care workforce and their ability to provide optimal medical care.


Summary: The mortality gap between cancer & heart disease is decreasing among women <65 years. Intensive CV health interventions are required focusing on vulnerable young demographic subgroups and underserved regional areas.

**Cardio-Oncology**


Dzaye O...Dardari ZA, Mortensen MB, Marshall CH, Nasir K, Budoff MJ. Blumenthal RS, Whelton SP, Blaha MJ. CAC is associated with increased risk for lung & colorectal cancer in adults: MESA. Eur Heart J Cardiovasc Imaging. 2021 Jun 4;jeab099. Summary: CAC may be useful for identifying cancer patients at high CVD risk who might benefit from more intense preventive cardiovascular therapies.


Khan SU...Hays AG, Michos ED. Comparative analysis of premature heart disease- & cancer-related mortality in women in the USA, 1999-2018. Eur Heart J Qual Care Clin Outcomes. 2021 Feb 8:gaat099. Summary: The mortality gap between cancer and heart disease is decreasing among women <65 years. Intensive CV health interventions are required focusing on vulnerable young demographic subgroups and underserved regional areas.

**Marshall CH...Eisenberger MA. Timing of Androgen Deprivation Treatment for Men with Biochemical Recurrent Prostate Cancer in the Context of Novel Therapies. J Urol. 2021 Sep;206(3):623-629. Summary:** The PROMISE consortium provides a powerful clinical-genomic platform to address data gaps that have arisen with increased genomic testing in the management of prostate cancer.

Whelton SP, Marshall CH, Cainzos-Achirica M, Dzaye O, Blumenthal RS, Nasir K, McClelland RL, Blaha MJ. Pooled Cohort Equations & the competing risk of CVD vs cancer. Am J Prev Cardiol. 2021 Jun 14;7:100212. Summary: There is higher risk for cancer when the PCE risk is <7% & above this score the risk of incident CVD outperformed cancer risk; the cumulative incidence of both was higher with higher PCE risk.

**Marshall CH...Joshu C. Reversing the effects of androgen-deprivation therapy in men with metastatic castration-resistant prostate cancer (mCRPC). BJU Int. 2021 Sep;128(3):366-373. Summary:** Bipolar androgen therapy led to significant improvements in body composition, lipids, & quality of life; this has promising implications for the long-term health of men with mCRPC.

**Marshall CH...Antonarakis ES. Randomized Phase II Trial of Sipuleucel-T with or without Radium-223 in Men with Bone-metastatic Castration-resistant Prostate Cancer. Clin Cancer Res. 2021 Mar 15;27(6):1623-1630. Summary:** There is greater clinical activity with the combination of sipuleucel-T and radium-223 in men with asymptomatic bone mCRPC, despite the paradoxically lower immune responses observed.


**Markowski MC...Marshall CH...Denmeade SR. A Multicohort Open-label Phase II Trial of Bipolar Androgen Rx in Men with Metastatic Castration-resistant Prostate Cancer (RESTORE). Eur Urol. 2021 May;79(5):692-699. Summary:** BAT shows clinical activity in mCRPC patients & may be more effective at resensitizing to enzalutamide vs. abiraterone.

**Valero-Elizondo J, Nasir K. ASCVD, Cancer, & Financial Toxicity Among Adults in US. BAT shows clinical activity in mCRPC patients and may be more effective at resensitizing to enzalutamide versus abiraterone. JACC CardioOncol. 2021;3(2):236-246.**

**Cholesterol**


Karagiannis AD...Blumenthal RS...Sperling LS. How low is safe? The frontier of very low (<30 mg/dL) LDL-C. Eur Heart J. 2021 Jun 7;42(22):2154-2169. Summary: Given the potential for CVD benefit & short-term safe profile of very low LDL-C, it may be advantageous to attain such low levels in high-risk populations.

Hoeckstra M...Post WS...Engert JC. Genome-Wide Association Study (GWAS) Highlights APOH as a Novel Locus for Lipoprotein(a) Levels Arterioscler Thromb Vasc Biol. 2021 Jan;41(1):458-464. Summary: APOH is a novel locus for Lp(a) in individuals of European ancestry; studies are needed to determine the precise role of beta2-glycoprotein I in influencing Lp(a) levels & its potential as a therapeutic target.

**Blaha MJ, Daubert MA. Assessing the Impact of Coronary Plaque on the Relative & Absolute Risk Reduction With Statin Rx. JACC Cardiovasc Imaging. 2021 Aug 11:S1936-878X(21)00557-X. Summary:** Evidence is building for a new model that places plaque assessment at the center of preventive decision making; there is a graded increase in absolute risk reduction across increasing plaque burden.

Summary: More than 40% of statin eligible individuals with baseline CAC = 0 had long-term healthy arterial aging; statin eligible candidates with persistent CAC = 0 had a very low 15-year ASCVD risk.


Summary: Treatment to achieve LDL-C levels <70 mg/dL using intensive lipid-lowering therapy can safely reduce the risk of mortality.


Summary: Recommendations were made on optimal timing for repeat calcium scoring, use of CAC in those taking statins, & its role in informing the clinician patient discussion on aspirin & BP Rx.

Janovsky CCPS, Blaha MJ, Jones S, Toth PP, Benseñor IM. Unfavorable Triglyceride-rich Particle (TRLPs) Profile in Subclinical Thyroid Disease: ELSA-Brasil. Endocrinology. 2021 Feb;162(2).

Summary: Subclinical hypothyroidism is associated with very small & very large TRLPs, which are related to an unfavorable atherogenic profile, subclinical hypothyroidism is associated to lower very small TRLPs.


Summary: CAC scoring retains robust risk prediction in statin users, & the changing relationship of CAC density with outcomes may explain the slightly weaker relationship of CAC with outcomes in statin users.


Summary: We discuss why the VA/Department of Defense (DoD) & AHA/ACC may have reached different conclusions on key issues & why the VA/DoD guidelines were factually incorrect.


Summary: In ASCVD-free individuals, elevated remnant cholesterol (RC) levels were associated with ASCVD independent of traditional risk factors, LDL-C, & apoB levels; the mechanisms of RC association with ASCVD beyond apoB, & the potential value of targeted RC-lowering need to be investigated.


Summary: Bempedoic acid is a first-in-class, oral, inhibitor of cholesterol biosynthesis that is approved for use in patients with ASCVD & for primary prevention in individuals with heterozygous familial hypercholesterolemia (HeFH).


Summary: Treatment to achieve LDL-C <70 mg/dL using intensive lipid-lowering can safely reduce the risk of major cardiac events.


Summary: This study provides the first clinical proof for a functional reverse cholesterol pathway in humans. The marked reduction in low-density necrotic core plaques, with preß-HDL infusions fills a long-sought HDL-targeted Rx gap for high-risk patients.


Summary: Half of young persons with metabolic disorders & elevated LDL-C had discordantly normal ApoB & a low burden of carotid atherosclerosis; ApoB best represents the atherogenic lipid burden.


Summary: The authors review the next ASCVD reducing therapies that have been recently approved or likely to be approved in the next year.


Summary: In this RCT, apabetalone was associated with improved cognition as measured by MoCA scores in those with baseline scores of <21. BET protein inhibitors warrant further investigation for late life cognitive disorders.


Summary: By under-treating patients with inadequate doses of statins & underutilizing adjuvant lipid lowering therapies, clinicians are leaving high risk patients susceptible to plaque progression, inflammation, & instability.

Summary: We lack prospective, randomized outcomes with an intervention that conclusively demonstrates that reducing TGs decreases risk for ASCVD events.


Summary: Although there was no association between cannabis vaping & asthma or other respiratory symptoms, the increasing trends of high-risk behaviors & adverse respiratory symptoms, plays a vital role in preventive therapy decision-making for the primary prevention patient with muscle complaints.

Cigarette Smoking/Tobacco

Boakye E, Obisesan OH... Dzaye O, Osei AD...Bla Ha MJ. Cannabis vaping among adults in the US: Prevalence, trends, & association with high-risk behaviors & adverse respiratory conditions. Prev Med. 2021 Sep 11;153:106800. Summary: Although there was no association between cannabis vaping & asthma or other respiratory symptoms, the increasing trends of cannabis vaping among young adults, raises great concern.
Covid/ Infectious Disease

Summary: Endothelial exocytosis plays a central role in the pathogenesis of severe COVID-19.

Summary: During the early pandemic, risk-adjusted survival to hospital discharge increased over time for critical care patients.

Summary: Return to Play algorithms and consensus statements for athletes after COVID-19 advocate for a multimodal assessment of myocardial injury before cardiac MRI.

Summary: The prevalence of e-cigarette use among LGBT adults was 13%, nearly twice that of heterosexual adults.

Summary: Prior use of e-cigarettes, cigars, & other non-cigarette products were associated with subsequent cigarette initiation. However, White and Hispanic youth were more likely to initiate cigarettes through e-cigarette use, while Black youth were more likely to initiate cigarettes through cigar use.

Summary: Previous studies may overlook the critical role of cigar products as a pathway into cigarette smoking among US youth, particularly black youth.
Over the past 18 months, Dr. Oscar Cingolani has been appearing regularly on radio and TV news and health programs in Central and South America (Argentina, Mexico, Colombia, Panama, Chile, Venezuela, and Brazil), discussing strategic approaches and mitigation measures for cardiovascular complications during the pandemic, as well as general cardiology and prevention, unrelated to Covid. He has appeared several times on Univision Miami, France 24 and CNN in Spanish.

He recorded a Master Class in Hypertension for a new, free educational platform called MEDU (https://medu.mx/), intended to reach patients and physicians in Mexico and Latin America. He also delivered talks for the annual Argentine cardiology meeting and participated in health care forums involving health care authorities (ministers of health) from Argentina and Chile.

Before the start of the pandemic, he attended a bioethics seminar, held at The Vatican, that included a meeting with Pope Francis. He is hopeful that, as soon as pandemic-related restrictions are lifted, he will be invited back to Rome to serve as a keynote speaker for this annual symposium.


Summary: Reduced myocardial work efficiency is associated with higher interleukin-6 levels and increased in-hospital mortality.


Summary: CV manifestations of COVID-19 include myocarditis, stress cardiomyopathy, MI, & arrhythmia.


Summary: Imaging modalities including CT & cardiac MRI have emerged as useful adjuncts in select patients with COVID-19 infection, particularly those with suspected ischemic and nonischemic myocardial injury.


Summary: Remdesivir use in patients with moderate or severe COVID-19 was associated with significant increase in rates of recovery and hospital discharge & lower rates of serious adverse events.


Summary: Evidence supports the use of the influenza vaccine in adults with CVD to reduce mortality & cardiovascular events.


Summary: Evidence supporting supplements as a treatment for viral infections remains limited.


Summary: Offering a choice of vaccine should be an essential component of vaccination strategies.


Summary: Congregational COVID-19 conversations can address the medical needs of congregations and the spiritual needs of individuals.


Summary: Strategies for increasing vaccine uptake among healthcare workers include outreach, education, and incentives.


Summary: We describe strategies to improve the uptake of influenza vaccination in CVD patients through improved understanding of key sociodemographic determinants & behaviors that are associated with vaccination, or the lack thereof. We also discuss the potential use of relevant strategies for COVID-19 vaccine uptake among those with CVD.


Summary: Pandemic COVID-19 surges were associated with higher rates of in-hospital mortality among patients without COVID-19, suggesting disruptions in care patterns for patients with many common acute & chronic illnesses.


Summary: The proportion of patients receiving hydroxychloroquine peaked at 55% in March & April & decreased to 5% in May/June and 1% in July/August. At the hospital-level, median use was 59% in March/April & decreased to 0.3% by May/June and 0% by July.


Summary: Significant decreases in CV procedural volumes occurred early in the pandemic, with disproportionate impacts by race, gender, & age.


Summary: Black & Hispanic patients bore a greater burden of mortality & morbidity because of their disproportionate representation among COVID-19 hospitalizations.


Summary: Influenza vaccine among individuals with ASCVD was lower among Blacks & Hispanics compared to Whites with significant state-level variation.

Summary: Nearly one-third of US patients with CKD did not receive influenza vaccination in the prior year, which translates to approximately 1.3 million adults annually. This should stimulate further research and policy action aimed at enhancing vaccine access, uptake, & coverage among patients with CKD.


Summary: These insights of disproportionately lower rates of influenza vaccination among vulnerable sociodemographic groups of COPD patients will guide health systems & policy makers to develop targeted public health strategies.


Summary: Given the suboptimal uptake of influenza vaccine among patients with CVD, cardiologists should take greater ownership to ensure their patients receive this important, guideline-recommended cardiovascular preventive strategy like other prevention strategies such as statins.

CV Imaging


Summary: Compared to functional assessment of CAD, coronary CTA-guided management results in improved patient outcomes by facilitating prevention of myocardial infarction.


Summary: Although CTA provides important information regarding prognosis in symptomatic patients, there is no strong evidence to support its use in primary prevention.


Summary: Clinicians benefit from a working knowledge of imaging studies applicable to the diagnosis & prognosis of CVD & CVD risk.


Summary: Acute kidney injury after repeated exposure to iodinated contrast media within a few days is uncommon even in a population of patients with highly prevalent risk factors.


Summary: A greater absolute risk difference favoring transradial percutaneous coronary intervention (TRI) was observed among patients with the highest baseline risk.


Summary: Analyses of cost-effectiveness will be critical to Radiology leadership & sustainability in the transition to a value-based reimbursement model.


Summary: 3D MRI cine offers good image quality & shows feasibility for non-invasively studying vasoreactivity-related lumen area changes along the proximal coronary artery in 3D during free-breathing.


Summary: We summarize studies of CMR for patients with COVID-19 & provide recommendations for use of CMR for patients with acute symptoms or who are recovering from COVID-19.


Summary: Quantitative coronary flow metrics are highly reproducible, especially within the same scanning session.


Summary: Investigations should focus on the effect of therapeutic interventions on myocardial stress perfusion over time & on noninvasive approaches to inform revascularization strategies.


Summary: While the concurrent assessment of perfusion & flow with PET remains underutilized, it may contribute to individualized & flow-guided revascularization strategies in patients with multi-vessel CAD.


Summary: FFR CT shows promise in identifying patients with stenosis & calcification who can be managed without further downstream testing.

Diabetes


Summary: More than 40% of adults with diabetes or metabolic syndrome (MetS) & baseline CAC=0, 42% had long-term absence of CAC, which was most strongly associated with an absence of extra-coronary atherosclerosis & a low MetS score.


Summary: We compare major points in the 2021 ADA & the 2020 AACE/ACE guidelines, in particular, the assessment & management of CVD risk in patients with diabetes.

**Summary:** Changes in ambulatory care for diabetes have taken place including moderate declines in metformin monotherapy, moderate declines in second-line sulphonylurea use, & large increases in SGLT2 use.


**Summary:** HIV-specific factors, including interactions of antiretroviral Rx with medications that either treat diabetes &/or prevent CVD, should be evaluated.


**Summary:** Triacylglycerol-enriched remnant lipoprotein particle diameter improves the prediction of diabetic patients with HbA1c <5.7%.


**Summary:** Delaying diabetes onset augments HF prevention efforts, & therapies to improve HF outcomes might target those with long diabetes duration.


**Summary:** Early intensive lifestyle intervention at ~50 y/o, in persons at high risk of diabetes may reduce frailty prevalence.

Caitlin Nass, MSN, CRNP, is an adult nurse practitioner with the Johns Hopkins Diabetes Center, serving as an instructor in medicine in the division of Endocrinology, Diabetes, and Metabolism, and as the Director of Intervention for Diabetes Self-Management Training, Baltimore Metropolitan Diabetes Regional Partnership. Beginning her career as a critical-care nurse and then earning an advanced degree in vascular anesthesiology, she joined the Ciccarone Center for the Prevention of Cardiovascular Disease, where she honed her skills as a clinician, educator, writer, and prevention advocate.

She practiced in ambulatory cardiology in both academic and community practice settings and, in 2012, she took a joint role with the divisions of endocrinology and nephrology at the VA in Providence, RI, to expand her understanding of cardiometabolic disease and to pursue her passion for interdisciplinary care. While at the VA, she developed expertise in diabetes management and collaborated closely with colleagues in primary care and cardiology to improve the care of patients with diabetes, chronic kidney disease, and heart disease. Since returning to Hopkins in 2017, Nass has partnered with Dr. Sudipa Sarkar and Mary Beth Carlin, RN, to lead the expansion of outpatient diabetes services at the Bayview Medical Center. In 2021, she became the Director of Intervention for the Baltimore Metropolitan Diabetes Regional Partnership, a five-year joint initiative with the University of Maryland and multiple community partners to greatly expand the delivery of diabetes prevention and diabetes self-management education for Medicare beneficiaries throughout her hometown.


**Summary:** BCAA predict incident diabetes in the Brazilian Longitudinal Study of Adult Health.

Carlin MB, Sarkar S. Medical management of HIV-specific factors, including interactions of antiretroviral therapy (ART) with medications that either treat diabetes &/or prevent cardiovascular disease (CVD), should be evaluated.


**Summary:** Iatrogenic hypoglycemia can be predicted in a short-term prediction horizon after each glucose measurement during diabetes care & reduce costs.


**Summary:** IDMS may play an important role in helping hospitals to improve the quality of diabetes care & reduce costs.


**Summary:** The high prevalence of depression & anxiety during the pandemic, particularly among subgroups of people with diabetes, calls for urgent public health policies to address mental health & reestablish health care access.


**Summary:** In Blacks with normoglycemia, waist circumference, liver attenuation, & visceral adipose tissue may identify those at high risk for diabetes, whereas HbA1c was the best predictor in individuals with prediabetes.

**Summary:** Insurance status is an important determinant of receiving guideline-recommended care.


**Summary:** Evaluation of emotional distress using validated measures will allow us to dissect the roles of depressive symptoms & diabetes distress, factors that require distinct approaches to screening & Rx.


**Summary:** A robust cortisol awakening response & flatter late decline slope are associated with lower & higher odds of incident diabetes, respectively, among younger to middle-aged Whites & may provide a future target for diabetes prevention.


**Summary:** More than 40% of adults with Mets or diabetes & baseline CAC=0 had long-term absence of CAC, which was most strongly associated with an absence of extracoronary atherosclerosis & a low Mets score.


**Summary:** The metabolically healthy obese phenotype was associated with excess clinical CVD, due to an excess risk of HF. hs-cTnT stratified CVD risk across all obesity phenotypes, even among obese individuals who appear otherwise metabolically healthy.


**Summary:** A history of severe hypoglycemia is associated with alterations in cardiac function & is an important marker of future CVD risk.


**Summary:** High plasma leptin & hsCRP, as well as low adiponectin & adiponectin-to-leptin ratio, are associated with higher risks of glycaemic progression; this supports the utility of these biomarkers in predicting & preventing glycaemic progression.


**Summary:** Patients with diabetes & CKD benefit from team-based, multidisciplinary care.


**Summary:** Elevated BMI & WC during young adulthood were independently associated with later life incident diabetes; insulin resistance appears to be a key mediator.


**Summary:** Prioritizing the allocation of costly medications to those most likely to benefit (CAC >100) & a more restrictive use if CAC = 0 has implications for the financial sustainability of health care systems.


**Summary:** Insulin-treated patients with T2D, low HDL-C, & ACS are at high risk for recurrent events despite use of evidence-based, contemporary therapies.


**Summary:** Residual risk reduction should consider therapeutic options adapted to specific patient needs, based on triglyceride-rich lipoproteins, inflammation, impaired glucose metabolism, high BP, & prothrombotic status.


**Summary:** Insulin use during the past 5 years remained dominated by the use of insulin analogs & pen delivery devices, with gradually increasing uptake of newer products.


**Dr. Eric Broni** is an AHA Postdoctoral Research Fellow with the SFRN on Cardiometabolic Health and Type 2 Diabetes at the Ciccarone Center. He earned his medical degree and Obstetrics and Gynecology training in Ghana and a MPH in Epidemiology and Statistical methods for Public Health from the Bloomberg School of Public Health. His research focuses on the impact of cardiovascular diseases on maternal and child health and in women from disadvantaged backgrounds.

Prior research explored the association between maternal biomarkers of cardiometabolic significance and neonatal peripartum hypoxic ischemic encephalopathy (HIE). Under the mentorship of **Drs. Chiadi Ndumele and Erin Michos**, he is examining the association between cumulative BMI with adipokine levels and heart failure within race and sex groups in the Atherosclerosis Risk in Communities Study (ARIC) dataset and further assessment of whether this association explains differences in cardiometabolic risk. His other project involves investigating the association between adipokines and greater long-term cardiometabolic risk in women with prior gestational diabetes, compared to BMI-matched control women without the condition.

**Diet/Weight**


**Summary:** Obstructive sleep apnea is strongly associated with numerous cardiovascular conditions.


**Summary:** Waist circumference is a useful and simple measure that is associated with numerous cardiovascular outcomes.

**Digital Health**


**Summary:** A mobile health intervention increased physical activity in patients with pulmonary arterial hypertension.


**Summary:** In China, over 1 in 7 individuals meet criteria for obesity, & 1 in 3 for abdominal obesity; this provides a valuable international reference.

**Obesity status is a risk factor for future decline in kidney function & development of kidney failure with replacement therapy in women, with less consistent associations among men.**

Summary: Digital health interventions can reduce hospital readmissions & associated costs following acute MI.


Summary: HIT use was low among adults with a history of ASCVD, which may represent a barrier to delivering care via emerging HIT.


Summary: LHS in CVD using technological innovations with a patient-centered lens will facilitate symbiosis in data generation & clinical practice.


Summary: Wearable technologies will have great future benefits in CVD prevention, diagnosis, & management.

Delivered via the JMIR Cardiology Facebook group at https://www.facebook.com/jmircardiology/.

Funding: None

Nino Isakadze, MD, graduated from David Tivildiani Medical University in Tbilisi, Georgia and then joined the residency program at Emory University Hospital. Dr. Isakadze has conducted clinical research to validate a smartwatch algorithm to detect arrhythmias. She achieved distinction in teaching, leadership, and innovation while serving as a medical resident.

Subsequently, Dr. Isakadze joined Johns Hopkins as a cardiology fellow, where she continues to work closely with Drs. Martin and Marvel to integrate innovative approaches in management of patients with the most common cardiac arrhythmia, atrial fibrillation.


Summary: DHI may be associated with lower risk of all-cause unplanned 30-day readmissions.


Summary: Evidence supports efficacy of mHealth in a variety of applications of CVD prevention & management.


Summary: DHI use may have a role in achieving equity in CV health given similar use by age, sex, & race.


Summary: Future directions include: conducting more studies among health-care professionals, assessing the long-term impact of IPE, objectively assessing change in collaborative behavior, & assessing the impact on patient-centered outcomes.

Spaulding EM, Marvel FA, Martin SS. Heart Rate Measurements in Patients with OSA & Afib: Prospective Pilot Study Assessing Apple Watch’s Agreement With Telemetry Data. JMIR Cardiologist. 2021 Feb 8;5(1):e18050.

Summary: Apple Watch provided acceptable agreement with telemetry heart rate measurements in patients with OSA and Afib.

Diversity, Equity, & Inclusion


Summary: DHI may be associated with lower risk of all-cause unplanned 30-day readmissions.


Summary: Evidence supports efficacy of mHealth in a variety of applications of CVD prevention & management.


Summary: DHI use may have a role in achieving equity in CV health given similar use by age, sex, & race.


Summary: Future directions include: conducting more studies among health-care professionals, assessing the long-term impact of IPE, objectively assessing change in collaborative behavior, & assessing the impact on patient-centered outcomes.


Summary: Future strategies should focus on expanding digital health technology across all subgroups of society to ensure that it does not exacerbate existing health inequalities.


Summary: IMGs play a pivotal role in delivery of cardiology services & a decrease in inflow of these international physicians will negatively affect access to health care in IMG dominant areas & specialties.


Summary: Hostile Work Environment has an adverse effect on professional and patient interactions, thus confirming concerns about well-being and optimizing patient care. Institutions and practices should prioritize combating hostile work environment.


Summary: IMGs play a pivotal role in delivery of cardiology services & a decrease in inflow of these international physicians will negatively affect access to health care in IMG dominant areas & specialties.


Summary: The 2018 AHA/ACC Cholesterol Guideline includes South Asian ethnicity as a risk enhancer when considering statin initiation.

**Summary:** There is a crucial need to diversify the physician workforce who provide care to the populations most at risk for diabetes & its complications. These efforts will reverse the impact of structural racism & advance health equity.


**Summary:** Racial & ethnic differences in self-reported health status, access, & affordability improved in some subgroups, but largely persisted.

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**Exercise**


**Summary:** Among individuals without HF, worse biaxial function, lack of LA functional reserve, & worse LV diastolic function were associated with reduced submaximal exercise capacity. Therapies aimed to improve these functional domains may increase exercise capacity & prevent HF.


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**Cardiac MRI in Athletes: Distinguishing Signal From Noise.**

**Cardiac MRI in Athletes: Distinguishing Signal From Noise.**


**Summary:** There needs to be a paradigm shift in how we approach health, from focusing on leisure time to also focusing on work time.


**Summary:** Among persons aged >70 years, there was no significant difference in survival of patients with 0 vs 3 or more risk factors, but a higher fitness level identified older persons with good long-term survival regardless of risk factor burden.

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**Summary:** In patients without CHD, frailty is a risk factor for CVD events.

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**Summary:** In patients with AMI, the DHI may increase the Availability of AEDs at Sporting Events. *Curr Sports Med Rep.* 2021 Aug;9(8):478-480.
Gender Differences


Summary: Based on its ability to identify complex plaque morphology such as low attenuation plaque, high risk non calcified plaque, positive remodeling, & fibrous cap, CCTA can be used to assess plaque characteristics.


Summary: Symptomatic women with non-obstructive CAD on coronary CTA are at higher risk for events, with the ASCVD risk score being independently associated with the occurrence of adverse events.


Summary: Disparities were pronounced in younger (<45 years) & Black women; identifying barriers, particularly among younger Black women, is crucial to ensure equitable healthcare access.

Raber I....Michos ED...McEvoy JW. Gender Differences in Medicare Payments Among Cardiologists. *JAMA Cardiol*. 2021 Sep 8:e213385.

Summary: There may be potential differences in CMS payments between men & women cardiologists, which stem from gender differences in the number & types of charges submitted.


Summary: We reviewed the inclusion of women & individuals of diverse backgrounds into CV clinical trials, focusing on prevention, & provided recommendations of best practices for improving enrollment to be more representative of the U.S.


Summary: It is important to fix the dysrhythmia of gender imbalance in the EP profession.


Summary: Compensation for general cardiologists is considerably lower for women than men after adjusting for confounders.


Summary: Menopause is associated with worse diastolic function & longitudinally with adverse LV & LA remodeling, which may contribute to the increased HFpEF risk.


Summary: Women comprised <20% of authorship of large randomized controlled trials of LLT published between 1994 & 2018; the proportion of women authorship in LLT trials did not change over time.


Summary: BAC detected on screening mammography is a noninvasive imaging marker that may enhance CAD risk prediction.

Mohamed MO....Michos ED...Mamas MA. Sex-Based Differences in Prevalence and Outcomes of Common Acute Conditions Associated With Type 2 Myocardial Infarction (T2MI). *Am J Cardiol*. 2021 May 15;147:8-15.

Summary: In-hospital mortality after T2MI differs according to the underlying acute condition, with acute respiratory failure being associated with the highest rate of mortality.


Summary: Representation of women as key authors of manuscripts published in major CV journals increased during the early COVID-19 pandemic compared with similar months in 2019.


Summary: The Women in Cardiology Twitter network has grown immensely from 2016 to 2019, with women physicians as the driving contributors.

St-Onge MP...Michos ED...Post WS....Vaidya D. Go Red for Women SFRN. *J Am Heart Assoc*. 2021 Feb;10(5):e019519.

Summary: This promotes awareness of the female-specific factors that influence CVD.


Summary: Women remain underrepresented overall, but there is sex equity in the HF & pediatric guideline committees.


Summary: The reporting of older patients and ethnic/racial minorities was poor in RCTs of AF.


Mansour C...Sharma G...Parwani P. Sexual Harassment, Victim Blaming, & the Potential Impact on Women in Cardiology. JACC Case Rep. 2021 May 19;3(6):978-981. Summary: This paper should be a call to action for further research to investigate sexual harassment in cardiology and provide the framework to address this problem.


Khraishah H...Alfaddagh A...Michos ED, Albaghdadi M. Sex disparities in the presentation, management & outcomes of patients with ACS: insights from the ACS QUIK trial. Open Heart. 2021;8(1):e001470. Summary: Women presenting with ACS in India had greater burden of hypertension & diabetes, longer delays in presentation, & were less likely to receive guideline-directed management.

Bairey Merz CN, Blumenthal RS, Plutzky J, Zwas DR. A Tribute to Irene Pollin, Pioneer in Women’s Heart Health. Cardiology Today. February 2021:22.


Summary:

Genetics


Blaha MJ. Predicting Age of Conversion to CAC >0: A Role for Polygenic Risk Scores? JACC Cardiovasc Imaging. 2021 Jul;14(7):1407-1409. Summary: We should identify CAC in susceptible individuals when it is low to leading to aggressive early prevention for those who develop CAC >0 early.

Heart Failure

Aladin AI..., Blumenthal RS, McEvoy JW...Herrington DM. Comparison of the Relation of Carotid IMT With Incident HF With Reduced Vs Preserved EF:MESA. Am J Cardiol. 2021 Jun 1;148:102-109. Summary: cIMT was associated with incident HF, but it becomes non-significant after adjustment for other traditional HF risk factors & interim events. There was no difference in the association of IMT measures with HFrEF vs HFpEF.

Pezel T...Post WS...Lima JAC. LA Coupling Index to Predict Incident HF: MESA Front Cardiovasc Med. 2021 Sep 1;8:704611. Summary: LA coupling & coupling change are independently associated with incident HF; both have incremental prognostic value for predicting events over traditional risk factors.

Pezel T...Post WS... Lima JAC. LA Coupling Index (LACI) as a Prognostic Marker of CV Events: MESA : Hypertension. 2021 Sep;78(3):661-671. Summary: Greater LACI measured by CMR imaging was associated with high risk of incident AFib, HF, CHD death, & hard CVD during 13-year follow-up.

Marshall CH...Eisenberger MA. Timing of Androgen Deprivation Treatment for Men with Biochemical Recurrent Prostate Cancer in the Context of Novel Therapies. J Urol. 2021 Sep;206(3):623-629. Summary: The PROMISE consortium provides a powerful clinical-genomic platform to interrogate & address data gaps that have arisen with increased genomic testing in the management of prostate cancer.

Wendy Post

Marios Arvanitis

Dr. Stanley & Anita Blumenthal, Harriett Little

Index to Predict Incident HF: MESA 2021;143(9):895-906.

Curve Revisited.

Nonlinear Mendelian Randomization Analyses of the Association Between Diastolic BP and CV Events: The J-
Liu L...Post WS, Szkl M. Associations of time-varying obesity &metabolic syndrome (Mets) with risk of incident heart failure (HF) & its subtypes: MESA. Int J Cardiol. 2021 Sep 1;338:127-135. Summary: Time-varying obesity & Mets were significantly associated with HF risk, with a stronger association with HFrEF than with HfPEF.

Tromp J...Blaha MJ...Ho JE. Age dependent associations of risk factors with heart failure: pooled population based cohort study. BMJ. 2021 Mar 23;372:n461. Summary: Despite a lower incidence & absolute risk of HF among younger compared with older people, the stronger association & greater attributable risk of modifiable risk factors among young participants highlight the importance of preventive efforts.

Averbuch T...Michos ED...Van Spall H. The association between SES, sex, race/ethnicity & in-hospital mortality among patients hospitalized for heart failure. J Card Fail. 2021 Oct 7:S1071-9164(21)00394-8. Summary: Clinicians should be mindful of the barriers to care that lead to disparate outcomes between socioeconomic, sex, & racial/ethnic groups.

Ferraro RA, Ogunmoroti O, Zhao D, Ndumele CE...Michos ED. Hepatocyte Growth Factor (HGF) & Incident HF Subtypes: MESA. J Card Fail. 2021 Sep;27(9):981-990. Summary: HGF was independently associated with incident HF; HGF remained significantly associated with HfPEF but not HFrEF upon subtype assessment.

Ying W...Michos ED, Shah...Haas AG. Viseral adiposity, muscle composition, & exercise tolerance in HfPEF. ESC Heart Fail. 2021 Aug;8(4):2535-2545. Summary: Menopause is associated with worse diastolic function & longitudinally with adverse LV & LA remodeling; this may contribute to the increased HfPEF risk.


AI Ghatrif M...Gerstenblith G, Lakatta EG. Longitudinal uncoupling of the heart & arteries with aging in a community-dwelling population. GeroScience. 2021 Apr;43(2):551-61. Summary: Additional studies are needed to explore the functional consequences of AV uncoupling in healthy individuals with respect to the emergence of age-associated clinical CVD, such as HfPEF.

Gilotra NA...Hays AG...Kass DA. Acute Hemodynamic Effects & Tolerability of Phosphodiesterase-1 Inhibition With ITI-214 in Systolic Heart Failure. Circ Heart Fail. 2021 Sep;14(9):e008236. Summary: Single-dose ITI-214 is well-tolerated and confers inodilator effects in adults with HFrEF.

Goerlich E...Minhas AS...Hays AG, Cingolani OH. Prominent Longitudinal Strain Reduction of Basal LV Segments in Patients With COVID-19. J Card Fail. 2021 Jan;27(1):100-104. Summary: Reduced basal LV strain is common in patients with COVID-19. Patients with hypertension, diabetes, obesity, & Black race were more likely to have reduced basal strain.

Toth PP, Gauthier D. HfPEF: disease burden for patients, caregivers, & the health-care system. Postgrad Med. 2021;133(2):140-145. Summary: Half of patients with HF have HfPEF & the incidence of HfPEF is increasing relative to HF with HFrEF.

Thomas A...Nasir K, Desai NR. Forgone Medical Care Associated With Increased Health Care Costs Among the US Heart Failure Population. JACC Heart Fail. 2021;9(10):710-719. Summary: Nearly 1 in 6 patients with HF avoided or delayed medical care, with one-half attributing it to financial reasons, and this was associated with higher overall health care spending.

Khan MS...Nasir K...Warraich HJ. Rural-Urban Differences in Mortality From Ischemic Heart Disease, HF, & Stroke in the US. Circ Cardiovasc Qual Outcomes. 2021;14(4):e007341. Summary: We found a small increase in stroke-related age-adjusted mortality rates among older adults, Hispanic people, & Blacks in large metropolitan areas & younger adults in nonurban areas.

Martinez-Amezquita P...Cainzos-Achirica M. Response by Martinez-Amezquita et al to Letter Regarding, "The Upcoming Epidemic of Heart Failure in South Asia". Circ Heart Fail. 2021;14(2):e008302. Summary: The need for specialized training in advanced HF, heart transplant cardiology, & surgery is undisputable in a region in which HF occurs at relatively young ages & often leads to poor outcomes.

Toth PP, Gauthier D. HfPEF: strategies for disease management and emerging therapeutic approaches. Postgrad Med. 2021;133(2):125-139. Summary: Diagnosis of HfPEF presents unique challenges compared with HFrEF because of factors including a high burden of comorbidities in HfPEF & difficulties in distinguishing HfPEF from normal aging.


HIV


Summary: PCE categories predict CAP progression better in HIV-uninfected compared to HIV-infected men; improved risk scores are needed to identify high risk HIV-infected men for more aggressive prevention strategies.


Summary: No difference was found in plasma LAG3 concentration by HIV serostatus & no association between LAG3 & subclinical coronary atherosclerosis in men was observed.


Summary: Four percent of men with HIV with a baseline CAC of zero developed incident stenosis over a median of 4.6 years of follow-up, but 0% developed incident coronary artery stenosis over the same follow-up period.


Summary: We found no association between HIV & AF in this cohort in which viral replication among the HIV+ men is generally suppressed.


Summary: We observed higher concentrations of CRP across 5 decades of age in men living with HIV, & steeper increases with age in men with detectable HIV RNA, relative to HIV-men. This is consistent with a contribution of inflammation to the higher risk of age-related comorbidities with HIV infection.


Summary: Comorbid conditions affect COVID-19 outcomes in people with HIV and may promote long COVID.


Summary: HIV seropositivity was independently associated with greater LV mass index, LA & RV sizes, lower RV function & diastolic abnormalities, but not LV EF, which may herald a future predisposition to HFpEF among men with HIV.


Summary: There was no significant difference in the presence or frequency of Ventricular Tachycardia/Ventricular Ectopy by HIV serostatus or HIV-related clinical markers (viral load, CD4+ cell count, & ART use) among men.


Summary: HIV seropositivity was independently associated with greater diffuse non-ischaeimic fibrosis & larger LA volume but no other differences in cardiac MRI metrics.

Kolossvary M…Gerstenblith G…Lai H. CV risk factors & illicit drug use may have a more profound effect on atherosclerosis progression in people living with HIV. Eur Radiol. 2021 May;31(5):2756-2767.

Summary: The more profound adverse effect of risk factors in HIV-infected individuals may explain the accelerated progression of CAD, as HIV infection was not independently associated with coronary plaque volume.


Summary: Recent testosterone use is associated with a shorter QTc interval. Increased testosterone use duration above a threshold of ≥ 50% of visits in the preceding 5 years was associated with a shorter QTc interval, while lesser testosterone use duration was not.


Summary: In people with HIV, preclinical atherosclerosis may be more closely correlated with eGFR using formulae that incorporate Cystatin C measurements than Creatinine alone.


Summary: Most diabetes-associated lipid species were elevated in ART-treated people with HIV infection.


Summary: In persons with HIV with no history of CAD, low-dose colchicine did not improve impaired coronary endothelial function, a predictor of CV events.

Omega-3 Fatty Acids


Summary: We analyze the findings of STRENGTH and OMEGAL within the existing omega-3 fatty acid clinical trial landscape & discuss how future trials can inform knowledge gaps.

Sharma G, Martin SS, Blumenthal RS. Effects of Omega-3 Fatty Acids on Major Adverse Cardiovascular Events; What Matters Most? The Drug, the Dose, or the Placebo? JAMA. 2020 Dec 8;324(22):2262-2264.

Summary: The importance of the specific omega-3 formulation in achieving risk reduction & the degree to which the placebo (mineral oil vs corn oil) may have affected outcomes remain unresolved. Science can be cloudy before it becomes clear.


Summary: Higher DHA levels were associated with a lower risk of hospitalization & death due to ILD & fewer lung abnormalities on CT.
Summary: Higher plasma levels of n3-FA (EPA and EPA+DHA, but not DHA) were associated with significantly fewer hospitalized bleeding events, & higher DHA levels (but not EPA or EPA+DHA) with fewer AF events.

Summary: Omega-3 FAs reduced CVD mortality & improved outcomes; risk reduction was more prominent with EPA monotherapy than with EPA+DHA.

Summary: IPE is approved as an adjunct to maximally tolerated statins to reduce CVD event risk in adults with triglyceride levels ≥150 mg/dl & either established CVD or diabetes mellitus plus ≥2 additional risk factors.

Summary: We contextualize the findings of STRength and OMEMI within the existing omega-3 FA clinical trial landscape & look ahead to future trials.

Social Determinants/Emotional Stress

Summary: MHD are common among acute MI patients & there was a concerning increase in the prevalence of major depression, bipolar disorder, anxiety disorders & PTSD; focused mental health interventions are warranted.

Summary: More studies are needed to investigate the effect of interventions that improve SDOH & lower CVD risk.

Summary: Addressing the widening racial & ethnic disparities in preventable deaths is critical as we address societal inequities.

Summary: The under-representation of women, Black, Indigenous & other People of Colour (BIPOC), older adults, & those from low- & middle-income countries threatens the generalizability of trial results & compounds existing inequities.

Summary: Consideration of psychological health is important in the evaluation & management of patients with or at risk for CVD.

Summary: Early adulthood depressive symptoms may be a risk factor for cognitive impairment independent of mid- or late-life depressive symptoms.

Summary: Creating academic settings with diverse medical & graduate students, fellows, & faculty, equally represented at all levels, will position us to address future biomedical challenges.

Summary: During the first 3 months of admissions to COVID ICUs, the # of admissions among Hispanic/Latinx & African American patients increased, while those among non-Hispanic/Latinx & Whites decreased, compared with the pre-COVID-19 period.

Bigelow BF… Golden SH, Clark JM, Page KR. Community Testing and SARS-CoV-2 Rates of admissions among Hispanic/Latinx & African American patients increased, while those among non-Hispanic/Latinx & Whites decreased, compared with the pre-COVID-19 period.


Summary: We must address poverty-related SDOH (eg, food & housing insecurity) by integrating social needs into medical care & advocate for social policies that redress SDOH.


Summary: As we have learned new protocols & prevention strategies during the pandemic to promote patient safety, we need to also indoctrinate culturally appropriate services strategies into all of our clinical operations to promote safety.


Summary: We highlight the support & resources of congregational & faith-based leaders available in an urban city with a high prevalence of gun violence.


Summary: Allocation schema for mechanical ventilators, ICU resources, blood components, novel therapeutics, ECMO, & renal replacement therapies were developed.


Summary: The proposed framework highlights the interplay between individual learning & growth & the systemic & institutional changes needed to advance antiracist practices.


Summary: Our findings provide observational evidence on the potential importance of maintaining normal potassium levels.


Summary: Education, social, economic & regional health policies could reduce health inequities.


Summary: Levels of risk factors & mortality increase with time of living in the US; associations between immigration & CVD & its risk factors are complex.


Summary: Neighborhood & socioeconomic factors have an important role in long-term post-MI survival.


Summary: Patients with HF & their families experience large out-of-pocket healthcare expenses. A large proportion encounter financial toxicity, with a disproportionate effect on low-income families.


Summary: For heart failure, the prevalence in Pakistani & Bangladeshi women was more than twice that of locals. Indians had the lowest prevalence of diabetes across South Asians, while the prevalence of CHD among Indian women was twice that of local women (2.6% vs. 1.3%).


Summary: Identifying & prioritizing individuals whose medical vulnerability is compounded by social adversity may optimize emerging preventive efforts.


Summary: Women veterans with premature ASCVD receive less optimal secondary prevention care.


Summary: Racially & ethnically diverse & socioeconomically disadvantaged communities have been disproportionately affected by public health emergencies.

Valvular Heart Disease


Summary: Black race is associated with a lower incidence of both SAVR & TAVR compared with Whites, whereas Hispanic patients have a similar incidence of both.


Summary: More than 40% of persons with significant AVC had CAC. Beyond traditional risk factors, lower serum phosphate, & lower calcium-phosphate product were associated with a higher prevalence of limited CAC.


Summary: Black & Chinese participants had a lower prevalence of aortic stenosis compared with Whites, whereas Hispanics had a similar prevalence.


Summary: Although the prognostic significance of AVC was attenuated after accounting for CAC, high AVC was independently associated with CVD deaths in patients with low coronary atherosclerosis burden.


Summary: Irish GPs displayed good understanding of contemporary valvular heart disease treatment options but reported low confidence & inconsistent practices in evaluating patients.


Vascular Medicine/Vascular Biology/ Cerebrovascular


Summary: Estrogen activation of endothelial exocytosis may lead to increased risk of venous thromboembolism in patients taking hormone replacement therapy.


Summary: Vascular risk scores are associated with cognitive performance & decline in the most common ethnic groups, but associations differ among risk scores & by ethnicity.


Summary: Higher stroke rates have been noted among young African Americans, indicating the need for tailored prevention & social efforts targeting vulnerable groups; we need primordial prevention of risk factors & enhanced healthcare access.


Summary: There is a larger aorta diameter in subjects with COPD & severe emphysema compared to COPD related to chronic bronchitis or bronchial wall thickening.


Summary: There is a larger aorta diameter in subjects with COPD & severe emphysema compared to COPD related to chronic bronchitis or bronchial wall thickening.


Summary: Improving public health messaging about aggressively controlling CVD health risk factors is critical for brain health.


Summary: In healthy, high-risk individuals, the presence & volume of coronary plaque are associated with larger white matter hyperintensity volumes, appearing the strongest for periventricular white matter hyperintensities; this suggests a disease relationship in 2 different vascular beds due to genetic predisposition.


Summary: Tenecteplase will continue to play an important role in the Rx of acute ischemic stroke patients & may in the future be combined with other medications that address other thrombus components.

Summary: In critically ill patients with COVID-19, we observed lower than expected cerebral blood flow velocities in setting of low arterial oxygen content & low hematocrit.


Summary: The authors examine the relationship between cardiac disease, cerebrovascular disease, & cognitive decline.


Summary: There is no evidence of an increased risk for symptomatic intracranial hemorrhage after IV rtPA or endovascular therapy (ET) for those with AFib or heart failure. rtPA should not be given to patients on anticoagulation or with LVADs, but ET should be offered to them when eligible.


Summary: Larger infarcts were significantly associated with both cardioembolic & large-artery atherosclerotic strokes (no difference in degree of association) & decreased odds of lacunar stroke. Multiple infarcts were associated with cardioembolism.


Summary: Markers of left atrial structure & function were associated with cardioembolic stroke. Similar associations were not found for cryptogenic stroke.


Summary: Telemedicine platforms should be used for research purposes; many data repositories are available to conduct virtual experiments that may not have been accessed previously.


Summary: We assessed the association of multiple lipid measures with incident PAD.


Summary: The quantification of global cardiac atherosclerotic burden by the ACCS is suited for management triage & monitoring of disease progression.


Summary: CVD risk factor treatment in early adulthood could benefit late-life cognition, but treatment in very late life may not be as helpful.
Summary: High doses of vitamin D affect the risk of certain fall types differently; doses between 1000 and 4000 IU/day might increase the risk of first time falls with fractures.

Summary: No studies have specifically evaluated the direct benefits or harms of screening for vitamin D deficiency. Further data are needed to determine whether a broad populated-based screening approach is superior to a selective targeted measurement approach or to no measurement of 25(OH)D at all.

Summary: The MESA INVITe trial will use rigorously collected data to advance understanding of individual determinants of vitamin D response.

Summary: Calcium supplementation has suggested potential for cardiovascular harm & should be used cautiously.

Summary: Vitamin D3 supplementation at doses of 1000 IU/d or higher did not prevent falls compared with 200 IU/d.

Summary: Calcium supplementation should be restricted to patients with a strong indication who cannot meet the required amount of calcium intake through diet alone.

Summary: Diet can influence both systemic & vascular inflammation, to varying extents, according to the individual nutraceutical constituents.

Summary: The aim of this Position Paper is to provide the first attempt at recommendations on the use of nutraceuticals with effective anti-inflammatory properties.

Summary: There is some effectiveness of red yeast rice, plant sterols & stanols, soluble fibers, berberine, artichoke extracts, bergamot polyphenol fraction, garlic, green tea, & spiruline.
RESEARCH PUBLICATIONS

Drs. Ed Kasper and Roger Blumenthal

Dr. Charles Lowenstein and Sue Hall, CRNP
Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease