The Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease

Facing Off Against Heart Disease

Annual Update 2017
The staff members and fellows of the Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease include:

**TOP ROW** Mahmoud Al Rifai, MD, MPH; Dominique Ashen, PhD, CRNP; Eve-Marie Bensen, MD; Michael J. Blaha, MD, MPH; Roger S. Blumenthal, MD; Miguel Cainzos-Achirica, MD, MPH; Zeina Dardari, MS

**SECOND ROW** Oluwaseun Fashanu, MD; Roberta Florido, MD; Gary Gerstenblith, MD; Ty Gluckman, MD; Sherita Golden, MD, MHS; Eliseo Guallar, MD; Cathy Handy, MD, MPH

**THIRD ROW** Rupert Hung, BA; Steven Jones, MD; Karan Kapoor, MD; Sina Kianoush, MD, MPH; Seth S. Martin, MD, MHS; Francoise Marvel, MD; Lena Mathews, MD

**FOURTH ROW** J. Bill McEvoy, MBBC, MHS; Erin Michos, MD, MHS; Hassan Mirbolouk, MD; Khurram Nasir, MD, MPH; Chiadi Ndumele, MD, MHS, PhD; Jaideep Patel, MD; Wendy Post, MD, MS

**FIFTH ROW** Faisal Rahman, MD; Vishal Rao, MD; Elizabeth Ratchford, MD; Vasan Sathiyakumar, MD; Luke Silverman-Lloyd, BA; Vinita Subramanya, MD; Peter Toth, MD

**SIXTH ROW** Martin Tibuakuu, MD; Jane Wang, BA; Stephanie Wang, MD; Seamus Whelton, MD, MPH; Wendy Ying, MD; Di Zhao, PhD
With 2017 almost in the books, I am excited to report that the Johns Hopkins Ciccarone Center has had its most productive year since its founding in 1990. Much of this productivity can be attributed to our efforts to widen the focus of our work to heart failure, atrial fibrillation, and peripheral vascular disease. Dr. Elizabeth Ratchford is our prominent Director of Vascular Medicine. As a result, we have now formally changed our name to the Ciccarone Center for the Prevention of Cardiovascular Disease.

A significant factor driving our success is Irene Pollin’s $10 million dollar gift in 2013, which has enabled us to develop and expand our clinical research and education initiatives. Irene is a remarkable person, and we are extremely grateful for her generosity and leadership. A pioneer in the field of preventive cardiology herself, with a special focus on women and cardiovascular disease, Irene founded Sister to Sister, which performed large screening and educational programs to educate and motivate women and men to follow better lifestyle habits and achieve better heart disease risk factor control.

As the first Kenneth Jay Pollin Professor of Cardiology, an endowed professorship named in memory of Irene’s and her late husband Abe’s son, who died from complications of congenital heart disease at 13 months of age, I am personally indebted to Irene for her friendship and partnership in the field of prevention.

Most members of our Ciccarone Center team, in fact, have been involved in research that has been supported by the Pollin gift. Drs. Seamus Whelton and Roberta Florido were our Pollin Cardiovascular Prevention Fellows last year, and Roberta received master’s degree-level training at the Bloomberg School of Public Health. Roberta has worked closely with Dr. Chiadi Ndumele on innovative research projects looking at the important roles that physical activity and diet play in the development of heart failure. She also is pursuing research in the association of a history of cancer and subclinical heart muscle damage as measured by blood tests.

Roberta also received the prestigious Miriam E. Brailey award from the Department of Epidemiology based on her thesis research and scholastic accomplishments. Our Pollin Cardiovascular Prevention Fellows also have benefited tremendously from collaborations with the Welch Center for Prevention, Epidemiology, and Clinic Research and their leaders, including Drs. Elizabeth Selvin, Eliseo Guallar, Mariana Lazo, Joe Coresh, and Larry Appel.

Speaking of Seamus, I am very pleased to announce that he joined the Ciccarone Center faculty in July. He recently received a Mentored Clinical and Population Research Award from the American Heart Association (AHA), with Dr. Mike Blaha as his mentor. They are studying the role of coronary artery calcium scoring results in predicting cardiovascular vs. cancer causes of death across the lifespan.

Congratulations also go to Mike, our Director of Clinical Research at the Ciccarone Center, for his recent promotion to Associate Professor of Medicine. In 2017, Mike partnered with Dr. Kuni Matsushita from the Welch Center to receive an NIH-sponsored R01 grant to describe the role of subclinical cardiovascular disease in adults age 75 and older. He also teamed with Dr. Ana Navas-Acien to submit another successful R01 grant to the FDA investigating the role of metal exposure and electronic cigarettes on cardiovascular health. Mike also received two other grants from the AHA and he is also co-investigator on two other funded studies in pulmonary hypertension and mobile health.

Mike is working closely with Drs. Gary Gerstenblith, Thorsten Leucker, and Steve Schulman on a randomized controlled trial looking at addition of a novel cholesterol-lowering medication in persons who present to the hospital with a heart attack or unstable angina. Thorsten, our head Cardiology Fellow, is a superb clinician and vascular biologist. He has a special research interest in the role of PCSK9 (a cholesterol receptor controlling protein) in coronary artery endothelial cells, which are intricately involved in heart muscle blood flow and the development of atherosclerosis.

Our Associate Director of the Ciccarone Center, Dr. Erin Michos, has had another superlative academic year. She continues to do innovative work in vitamin D and cognitive decline, and is a national thought leader in cardiovascular risk assessment. She is our leader in research on women and cardiovascular disease, which has been Irene Pollin’s passion for decades.
Dr. Lena Mathews on projects related to the impact of psychosocial stress on cardiovascular health, as well as sex hormones on endothelial function. In collaboration with Drs. Di Zhao, Vinita Subramanya and Wendy Ying, Erin has also examined the relationship of sex hormones with cardiovascular risk, heart failure, left ventricular remodeling, aortic stiffness, and coronary atherosclerosis, as well as brain natriuretic peptides. Erin is also an endurance athlete and completed her 30th state marathon in November — just 20 more states to go!

Drs. Steve Jones and Seth Martin direct our rapidly growing Advanced Lipid Disorder Program and have become national leaders in the care of patients with genetic cholesterol disorders and use of novel lipid-lowering drugs. They have mentored many fellows and residents, including Osler senior resident Dr. Vasant Sathiyakumar. Their paper investigating the impact of fasting status on LDL-cholesterol measures was published in Circulation, and they are currently assessing the modern day prevalence of dyslipidemia using the Very Large Database of Lipids that they designed. Their work has had a major clinical impact as exemplified by the growing national and international adoption of their algorithm for LDL-cholesterol, the most common lipid measure used in clinical practice.

Dr. Seth Martin has led the Ciccarone Center’s pioneering work on digital and mobile health. Seth has partnered with Hopkins Bayview Chief Medical Resident Dr. Francoise Marvel in leading a large multi-disciplinary team on the Corrie Project to enhance preventive strategies after a heart attack. With funding from the Coulter Translational Research Partnership, Maryland Innovation Initiative, and Hopkins Patient Safety and Advisory Council, their promising pilot results have been recognized with competitive awards from the American College of Physicians and High Value Practice Academic Alliance. Many of us from the Ciccarone Center were also present to witness Seth’s recent wedding and we look forward to spending many fun occasions in the future with Drs. Seth and Nguyen Martin.

Dr. J. Bill McEvoy recently led an innovative randomized controlled trial, published in Circulation, that looked at the effects of a commonly used medication administered in the cardiac catheterization lab on the absorption of an antiplatelet agent Ticagrelor and its effect on platelet inhibition in persons undergoing percutaneous coronary intervention. He was also the lead author in several important papers dealing with hypertension. And we congratulate Bill and his wife, Katherine, on the birth of their daughter Rose, who joined her big sister, Aoife, in June.

Dr. Wendy Post was recently selected to be in the inaugural group of the Mary Elizabeth Garrett Executive Leadership for Women Faculty Program. She leads the cardiovascular working group of the Multicenter AIDS Cohort Study and is the principal investigator of the Hopkins Field Center for the NIH-funded Multi-Ethnic Study of Atherosclerosis (MESA), which now begins its 18th year. Wendy, Erin, Mike, Dr. Khurram Nasir, and I have co-authored many important clinical research papers from this landmark study.

Chiaidi and I are on the writing group of the 2018 ACC/AHA Guidelines on Cholesterol Management, which contains a large section on one of the Ciccarone Center’s main areas of interest — improvements in cardiovascular risk assessment. As co-chair of the ACC/AHA subcommittee on the prevention guidelines, I am very pleased with the recently released 2017 comprehensive hypertension guidelines.

Dr. Gary Gerstenblith, Chiaidi, and I have led a unique collaboration with the Atlantic Coast Athletic Club to examine the physiologic effects of a multi-faceted intervention to improve cardiovascular health, reduce body fat, and improve physical fitness in adults with the metabolic syndrome (prediabetic state). This project builds upon the pioneering efforts of Irene Pollin to deliver comprehensive lifestyle modification to both women and men.

In summary, the legendary Hall of Fame lacrosse coach and player, Henry Ciccarone, has truly inspired an expanding team of educators, researchers, and clinicians to better prevent and manage cardiovascular disease. And our work is made possible thanks to the leadership and sustained support of our friends, such as Nick and Suellen Paleologos, Mario Manuli, Hal and Jane Magruder, Ginger Gomprecht, Thad and Totty Shelley, Don and Rosie Shepard, and so many others.

All of our benefactors and research partners are our true Most Valuable Players and All-Americans.
This past year has been a momentous one for the Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease. We continue to achieve our goals and our work in creating excellent clinical care, educating health care practitioners, and studying better ways to prevent heart disease, stroke, and peripheral arterial disease.

Congratulations to Tiffany Eatz, a recent graduate of Johns Hopkins University with a triple major in neuroscience, writing seminars, and medicine, and a minor in theater. With assistance from Drs. Roger Blumenthal and Seth Martin, Tiffany published two cardiology-related articles at the US News “Health Care” website, “Patients and Clinicians Unite Part One: the ABCs of Heart Disease,” and “Tailored Treatment Is the Best Fit.” Tiffany also served as the coordinator of Arts for Hearts, a Hopkins-sponsored American Heart Association performing arts benefit showcase, which she created in 2015.

Elizabeth Ratchford, MD, also made a contribution to the US News “Health Care” site, providing the April column about peripheral arterial disease (PAD), “Problems Walking? It May Be Your Arteries, Not Your Age.” Dr. Ratchford, a vascular medicine specialist, hopes the article will serve as a good reference for patients who are at risk for PAD.

Drs. Ratchford and Martin also recently co-authored a Patient Information Page entitled “Statins” for Vascular Medicine, the official journal of the Society for Vascular Medicine. Dr. Ratchford serves as the co-editor of the section, which is an excellent resource on a variety of vascular conditions, and also authored another recent patient article on “The Swollen Leg.”

Kudos to Dr. Martin and Francoise A. Marvel, MD, a Chief Resident in Internal Medicine at Johns Hopkins Bayview Medical Center and a HEXCITE Fellow in the Technology Innovation Center, who were tapped this summer to tell the story of their Corrie Digital Health Project in Cardiology Today. Running in the August issue, the article chronicles the complexities, challenges, and ultimate success of creating the first cardiology-focused Apple CareKit app with Apple Watch iOS. Working in close collaboration with Apple Inc., Drs. Martin, Marvel, and team developed a digital platform, nicknamed “Corrie,” to enhance the recovery process for acute MI patients across the care continuum from the inpatient setting to home. The app provides an opportunity for patients to become more actively involved in their health care management during hospitalization, to learn medications and build skills, and to be better prepared for hospital discharge.

Congratulations to Michael J. Blaha, MD, MPH, who was promoted to the rank of Associate Professor of Medicine in the Division of Cardiology in January 2017. Dr. Blaha is one of the most prominent young investigators in the field of preventive cardiology and has emerged as one of the leaders shaping the field worldwide. He joined the Johns Hopkins faculty as Assistant Professor of Medicine and Director of Clinical Research for the Ciccarone Center for the Prevention of Cardiovascular Disease in January 2013, with a joint appointment in the Department of Epidemiology at the Bloomberg School of Public Health. Since then, he has displayed tremendous productivity and international leadership in his field. Dr. Blaha’s promotion was granted based on his research contributions in the field of preventive cardiology and his national recognition with secondary emphasis on his mentorship, teaching, and clinical activities.

Are fitness trackers good for your heart health? “Yes!” says Seth Martin, MD, MHS, in a nifty new “Health Hack” video series produced by Johns Hopkins. The video, which is featured at http://www.hopkinsmedicine.org/health/healthy_heart, is based on one of Dr. Martin’s many published articles.
Under the co-directorship of Steven Jones, MD, and Dr. Martin, the Ciccarone Center Advanced Lipid Disorders Program has thrived this past year. The multidisciplinary program now involves a dietitian, genetic counselor, nurse practitioner, and the specialty pharmacy. The clinic cares for patients with genetic dyslipidemias, including familial hypercholesterolemia, familial combined hyperlipidemia, and familial hypertriglyceridemia, as well as patients with statin intolerance, HDL disorders, and elevated Lp(a). The program has seen exponential growth, with multiple daily referrals from the Baltimore region, around the country, and internationally. The Ciccarone Advanced Lipid Disorders Clinic sees over 700 new patients per year and has become a national leader in use of novel lipid lowering therapies such as PCSK9 inhibitors. The clinic has a success rate of approximately 90% in gaining insurance coverage for PCSK9 inhibitor therapy in appropriate patients as compared with a national rate of <50%.

Drs. Martin and Jones, along with their Ciccarone colleagues, published a novel algorithm for LDL-C estimation in the Journal of the American Medical Association in 2013. The algorithm uses an adjustable approach to provide a personalized, more precise LDL-C estimate.

This past year, Seamus Whelton, MD, a new Ciccarone Center faculty member, led a collaboration of Hopkins with Mayo Clinic to apply the new LDL-C algorithm to each hospital’s laboratory data, and the nationally representative NHANES cohort. The innovative analysis showed clinically important improvement using the new algorithm. The algorithm has been validated by groups in the US and abroad over the past year. It is now available as LDL Cholesterol Calculator, a smartphone app in the Apple and Android stores, and has been implemented in practice by the leading laboratory in the US, Quest Diagnostics. It has also been implemented in laboratories in Brazil, Mexico, Puerto Rico, Japan, and Korea.

Congrats to Cathy Handy, MD, MPH, a medical oncology fellow at the Sidney Kimmel Comprehensive Cancer Center. Her interest in the relationship between cardiovascular disease risk factors and cancer outcomes earned her a 2017 Young Investigator Award from the American Society of Clinical Oncology. Dr. Handy collaborated with her senior mentor, Dr. Blaha, to create the FIT-Cancer cohort examining the relationship between fitness and cancer.

Peter Toth MD, PhD, announced that he recently completed a two-year term as president of the American Board of Clinical Lipidology. He was also named chairman of the American Society of Preventive Cardiology’s advanced course on preventive cardiology.

Drs. Chiadi Ndumele, Gary Gerstenblith and Roger Blumenthal recently received a grant from the American Council on Exercise that will help fund a pilot trial of lifestyle intervention in participants with the metabolic syndrome, a highly prevalent condition that predisposes to diabetes and is associated with markedly elevated risk of cardiovascular events. The program

News & Highlights

Articles for Living a Heart-Healthy Life
Since 2014, the staff of the Ciccarone Center have been contributing cardiovascular health-related articles to “Healthy Heart,” a section of the Johns Hopkins Medicine website devoted to patient-friendly content. Written for a lay audience, the articles are designed to serve as an expert advice column and a resource to patients and others interested in improving their health. The following is a list of some of the articles written and published in the past year:

“Heart Health Tips,” written by Dr. Blaha
“Alcohol and Heart Health: Separating Fact from Fiction,” written by Dr. McEvoy
“Managing High Blood Pressure: A Personalized Approach,” written by Dr. McEvoy
“Older Adults and High Cholesterol: What You Need to Know,” written by Dr. Martin
“Erectile Dysfunction and Your Health: 5 Things You Need to Know,” written by Dr. Blaha
“Difficult Pregnancies and the Risk of Heart Disease,” written by Dr. Michos
“Are You Getting Enough (or Too Much) Calcium?” written by Dr. Michos
“Dementia and Heart Health: Are They Related?” written by Dr. Martin
“Sitting Disease: How a Sedentary Lifestyle Affects Heart Health,” written by Dr. Michos
“Better Care for All,” written by Dr. Golden
“Exercise, Good for Heart Health Too!” written by Dr. Ndumele
“Obesity, Sugar and Heart Health,” written by Dr. Ndumele

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“Obesity, Sugar and Heart Health,” written by Dr. Ndumele
includes physical activity, nutrition, sleep, and stress assessments with targeted recommendations and interventions delivered at Atlantic Coast Athletic Club (ACAC), a community-based fitness center, over a six-month period. The goal is to assess how well the program can assist the participants in changing their lifestyle goals and habits, maintaining adherence to those goals while in the program and then persistence of those changes during a follow-up period. It will also assess the impact of the program on novel cardiovascular risk factors, including inflammatory markers and mediators.

Dr. Gerstenblith was named a co-investigator on an NHLBI grant awarded to Dr. Robert Weiss that examines energetic profiles in patients with heart failure using magnetic resonance methodology. Recent studies from the laboratory demonstrated altered skeletal muscle high energy phosphate decline and recovery trajectories during and following exercise in heart failure patients as compared with those of healthy individuals. The findings were particularly marked in those with the type of heart failure more common in older individuals.

Compliments to Dominique Ashen PhD, CRNP, and Elizabeth Ratchford, MD, whose joint effort between the Ciccarone Center and the Center for Vascular Medicine led to the development of a center of cardiovascular disease (CVD) prevention for firefighters. CVD accounts for approximately 50% of deaths among on-duty firefighters; early detection and treatment of CVD risk factors may prevent disability and death. Drs. Ashen and Ratchford have completed two studies, funded by the National Fallen Firefighters Foundation, that have focused on methods of detection of subclinical atherosclerosis (CVD without symptoms) and primary prevention of CVD (avoiding its initial occurrence) in firefighters through risk assessment and risk reduction. Strategies for risk assessment and risk reduction include coronary artery calcium scan and blood work, as well as education about a healthy diet, aerobic exercise, maintenance of a normal weight, and tobacco cessation. Their first study was published in the American Journal of Cardiology. They are now working on a second manuscript to include the cost-benefit analysis of a CVD prevention program that can be utilized by fire departments throughout the nation.

In September 2017, the CVD prevention program expanded to fire departments in two Maryland counties and two clinics.

Dr. Blumenthal to Collaborate with UC Berkley on Cardiology White Papers

The Ciccarone Center is pleased to announce that Roger Blumenthal, MD, has begun collaboration with the University of California, Berkeley, School of Public Health, to produce three annual consumer health publications: the “Coronary Heart Disease White Paper,” the “Heart Attack Prevention White Paper,” and the “Hypertension and Stroke White Paper.” The UC Berkeley White Papers are a series of disease-specific publications designed for people with chronic conditions who desire accurate, comprehensive, up-to-date and easy-to-understand information to enable them to better manage their health.

Dr. Blumenthal’s involvement with these publications dates to 1996 when they were produced under a former partnership between Remedy Health Media and Johns Hopkins University. Dr. Blumenthal also reviews and edits content for a related website, HealthAfter50.com, which provides the latest evidence-based research and expert advice on the prevention, diagnosis, and treatment of a wide range of health conditions affecting adults in middle age and beyond, including cardiovascular disease.

Congratulations to Wendy Post, MD, on her selection to participate in the inaugural cohort of the Mary Elizabeth Garrett Executive Leadership for Women Faculty Program sponsored by the Johns Hopkins Office of Women in Science and Medicine.

Roberta Florido, MD, was selected by the Honors and Award Committee at the Johns Hopkins School of Public Health to receive the Miriam E. Brailley Fund award from the department of epidemiology. Dr. Florido, one of only a few students in the school to receive this award, was honored for her background, thesis research, and scholastic accomplishments. She is also working with Erin Michos, MD, looking at the association of physical activity with cardiac structure, function, and fibrosis, using MRI data.
Kudos to Ty Gluckman, MD, an adjunct faculty member of the Ciccarone Center, who was recently promoted at the Providence Health & Services in Portland, Ore., to Medical Director of a newly formed Center for Cardiovascular Analytics, Research, and Data Science.

With the guidance of Dr. Ratchford, the Johns Hopkins Center for Vascular Medicine recently opened a new, comprehensive vascular ultrasound laboratory at Green Spring Station. The new center, which will soon be expanding to Howard County, offers several vascular exams, including screening for blockages in the neck arteries, for abdominal aortic aneurysm, or for blood clots in the leg arteries.

Sherita Golden, MD, MHS, who serves as the Hugh P. McCormick Family Professor of Endocrinology and Metabolism, and is Executive Vice-Chair, Department of Medicine, at Johns Hopkins University, is the 2017 recipient of the Walter Reed Distinguished Achievement Award, presented by the University of Virginia School of Medicine, Medical Alumni Association, and Medical School Foundation.

Dr. J. Bill McEvoy was awarded second place nationally in the Junior Clinical Faculty Research Awards competition at the Northwestern Cardiovascular Young Investigators’ Forum 2017 for his article, “Effect of Intravenous Fentanyl on Ticagrelor Absorption and Platelet Inhibition during PCI: The PACIFY Randomized Clinical Trial.”

Michael Fliotsos, a second-year medical student at Johns Hopkins, worked as a summer intern in the Ciccarone Center under the supervision of Dr. Michos on a project analyzing the relationship between lifetime weight history and risk of incident heart failure and cardiovascular disease in the Multi-Ethnic Study of Atherosclerosis. Michael worked on the project for his Scholarly Concentration project through the Johns Hopkins University School of Medicine and is preparing an abstract and manuscript for submission.

Stanley L. Blumenthal, MD Cardiology Research Awards
Since 2004, the annual Stanley L. Blumenthal, MD, Preventive Cardiology Research Awards have been presented to the Hopkins postdoctoral fellows, graduate students, or housestaff submitting the best abstracts to major research meetings, such as the American Heart Association or American College of Cardiology Scientific Sessions. The awards were established in 2003 by the family and friends of the late Dr. Stanley L. Blumenthal, a Phi Beta Kappa graduate of Johns Hopkins University and the School of Medicine. Dr. Blumenthal began his pediatrics training at Hopkins before moving to the University of Michigan to be a senior resident and then to Harvard's Boston Children's Medical Center to do Pediatric Cardiology training. He then worked at the National Children's Medical Center in D.C. and George Washington University, and he had a large clinical practice in Silver Spring, Md.

Disrupting the Secondary Care Model
According to Seth Martin, MD, MHS, and the interdisciplinary team behind Corrie, a smartphone app that delivers the knowledge, skills, and tools to help patients take charge of preventive care, the technology is re-engineering secondary prevention care and has made considerable strides this past year. Dr. Martin and Francoise A. Marvel, MD, have conducted clinical testing at Johns Hopkins Hospital and Johns Hopkins Bayview, with exciting early results on app use and patient outcomes in the first 50 patients. Other hospitals taking notice of Corrie include the University of Michigan, Massachusetts General Hospital, MedStar, and Reading Hospital. The project has received research support from the Wallace H. Coulter Translational Research Partnership, TEDCO Maryland Innovation Initiative, Hopkins Patient Safety & Advisory Council, Reading Hospital Foundation, iHealth, Stanford Med X/Nokia, and Apple. The Corrie team has been recognized as an innovative digital and mobile health platform by the American College of Physicians, Stanford Medicine X Global Challenge, and at the Johns Hopkins Cardiology Research Retreat. The Corrie team also completed I-Corps, a program that prepares scientists and engineers to extend their focus beyond the university to accelerate the economic and societal benefits of research.
News & Highlights

Focusing on Gender Differences in Heart Disease
Dr. Erin Michos, Associate Director of the Ciccarone Center, continues to do innovative work in vitamin D and cognitive decline, and has emerged as a national thought leader on gender differences in heart disease and for her excellent mentoring skills. Her current projects related to heart disease in women include the following:

1. Associations of psychosocial stress and their impact ideal cardiovascular health (Baptist Health Employee Study). First author Dr. Lena Mathews. Accepted at the Journal of Women’s Health.
3. Associations of sex hormones and left ventricular remodeling in women (MESA). First author Dr. Vinita Subramanya. Published in Maturitas (2017)

Each year, the awards are bestowed following the division’s yearly cardiovascular research retreat. This year’s presentations and awards ceremony, held May 20, and organized by David Kass, MD, Director, Institute of CardioScience, featured lectures on cutting-edge cardiovascular disease science by Zoltan Arany, MD, PhD, from University of Pennsylvania, Samia Mora, MD, MHS from Harvard Medical School, as well as Narutoshi Hibino, MD, PhD, and Douglas Robinson, PhD, from Johns Hopkins. Cash prizes and handsome certificates suitable for framing were awarded to the following outstanding young cardiovascular disease researchers.

First place in the ORAL COMPETITION went to former Chief Cardiology Fellow Klitos Konstantinidis, MD, for his presentation, “CaMKII, Methionine Oxidation, and Aortic Aneurysm.” His faculty mentor is Mark Anderson, MD, PhD, The William Osler Professor of Medicine.

Four others tied for second place:
1) Thorsten Leucker, MD, PhD, for “Serum PCSK9, a Nexus for HIV-Induced Coronary Artery Endothelial Dysfunction,” with senior mentors Allison Hays, MD, and Robert Weiss, MD;
2) Kaustubha Patil, MD, for “Studying the Pathophysiology of Pulseless Electrical Activity in a Novel Swine Model,” with senior mentor Henry Halperin, MD;
3) Seamus Whelton, MD, MPH, for “Cardiomyopathy/RV Dysplasia Patients with Late Presentation,” with senior mentor Hugh Calkins, MD, William Schmidt, PhD, and Roger S. Blumenthal, MD; and
4) Aditya Bhonsale, MD, for “Cardiomyopathy/RV Dysplasia Patients with Late Presentation,” with senior mentor Hugh Calkins, MD.

First place in the BASIC SCIENCE POSTER COMPETITION went to Nicola Diny, PhD, for “Eosinophil-derived IL-4 Drives Progression of Myocarditis to Dilated Cardiomyopathy”; her senior mentor was Daniela Cihakova, MD, PhD. Second prize was awarded to Grace Kim, PhD, for “Canonical Transient Receptor Potential Channel 6 Ameliorates Increased Cardiac S-Nitrosylation”; her senior mentor was David Kass, MD. William Schmidt, PhD, took third place for “Influence of Actin Pseudocetylation on in vivo and in vitro Cardiac Performance”; his senior Mentor was Anthony Cammarato, PhD.
Osler Medical Resident Vishal Rao, MD, MPH, took first prize in the **EPIDEMIOLOGY POSTER COMPETITION** for “Anthropometric Measures vs. CT-Measures of Adiposity and Risk of Incident Heart Failure and Heart Failure with Preserved Ejection Fraction”: his senior mentor was Erin Michos, MD, MHS. Roberta Florido, MD, earned second place for “Physical Activity and Incident Heart Failure in High Risk Subgroups”; her senior mentor was Chiadi Ndumele, MD, MHS.

First place in the **CLINICAL SCIENCE POSTER COMPETITION** went to Francois Marvel, MD, for “A Novel Digital and Mobile Health Platform to Enhance Recovery from Myocardial Infarction”; her senior mentor was Seth Martin, MD, MHS. Second place went to Jiun-Ruey Hu, MPH, for “Metabolic Footprint of Bariatric Surgery”; his senior mentor was Chiadi Ndumele, MD, MHS.

Congratulations to all the winners!

**P.J. Schafer Cardiovascular Research Award**

The P.J. Schafer Cardiovascular Research Award funds the efforts of clinical investigators seeking a better understanding of how to diagnose premature heart disease and prevent sudden cardiac death. Previous recipients of this prestigious award, which is given to a junior faculty member, include Drs. Erin Michos, Richard George, Saman Nazarian, Rhondalyn McLean, Oscar Cingolani, Chiadi Ndumele, Michael Blaha, Allison Hays, J. Bill McEvoy, and Seth Martin.

The 2017-2018 P.J. Schafer award winner is Seamus Whelton, MD, MPH. Dr. Whelton joined the Johns Hopkins cardiology faculty in July as an Assistant Professor of Medicine and is a member of the Ciccarone Center for the Prevention of Cardiovascular Disease. His primary research and clinical focus is cardiovascular prevention and his research includes examining how we can best use coronary artery calcium (CAC) seen on a CT scan of the heart for the prediction of cardiovascular disease events in asymptomatic patients. He is also interested in using CAC and other traditional cardiovascular risk factors, such as fitness, to determine the risks of cardiovascular and cancer mortality.

In addition, Dr. Whelton has performed research investigating high-sensitivity cardiac troponin (a marker of damage to the heart muscle) as a risk factor for diabetes. Clinically, he has a focus on preventive cardiology and he also reads cardiac CT scans to evaluate whether or not patients without typical symptoms of a heart attack may have a narrowed or blocked coronary artery.

Hopkins Cardiology is indebted to **Paul and Vivian Schafer** and the Board of the P.J. Schafer Foundation for their hard work and generous contributions in support of cutting-edge research geared to the prevention of sudden cardiac death, which tragically took the life of their son, P.J.

To make donations or sign up for the P.J. Schafer golf tournament, visit www.pjschafer.com.

**Vasanth Sathiyakumar, MD**

Under the guidance of Drs. Seth Martin, Steve Jones, and Roger Blumenthal, Vasanth Sathiyakumar, MD, has focused his work in the past year on investigating the impact of fasting status on low-density lipoprotein cholesterol and assessing the modern-day prevalence of the Fredrickson-Levy-Lees dyslipidemias. In medical school, he helped publish over 40 articles, primarily in orthopaedics, learning to use “big data” — skills he is applying now to research involving the Very Large Database of Lipids. He has also been involved in several prospective studies, including a collaboration with the Bayview Heart Failure Bridge Clinic to study innovative preventive applications of digital devices on heart failure and a consortium to investigate the prevalence of familial chylomicronemia syndrome. He plans to continue his work over a dedicated research year at the Ciccarone Center next year, followed by cardiology fellowship, where he plans to specialize in preventive cardiology.
More Than 250!

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 October 2016 to September 2017, the Center showed amazing productivity, publishing more than 250 articles of significant basic and clinical research findings, commentaries, and review articles in many leading medical journals, including:

- American Heart Journal (4)
- American Journal of Cardiology (12)
- American Journal of Epidemiology (2)
- American Journal of Medicine (5)
- Annals of Internal Medicine (2)
- Arteriosclerosis Thrombosis & Vascular Biology (1)
- Atherosclerosis (13)
- Circulation (12)
- Circulation: Cardiovascular Imaging (3)
- Circulation: CV Genetics (2)
- Circulation: CV Quality & Outcomes (1)
- Circulation: Heart Failure (1)
- Diabetes Care (4)
- European Heart Journal (2)
- EHJ: Cardiovascular Imaging (3)
- Hypertension (1)
- Journal of the American Heart Association (9)
- Journal of the American Medical Association (3)
- JAMA Cardiology (9)
- Journal of the American College of Cardiology (6)
- JACC Cardiovascular Imaging (11)
- JACC Heart Failure (3)
- Journal of Clinical Lipidology (11)
- Lancet (1)
- Mayo Clinic Proceedings (4)
- New England Journal of Medicine (1)
- PLoS One (8)

Our Donors Make an Invaluable Difference

The impact of philanthropy is immeasurable. It enables research, education and clinical care to advance beyond the limitations of budgetary constraints and diminished federal funding. We are truly grateful to our generous contributors. They assist in our efforts and partner with us as we remain at the forefront of scientific investigation and collaboration in all areas of cardiovascular disease prevention.

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:

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- Caprice M. Uhlhorn, Ph.D.
- Mr. and Mrs. Robert Zucker
The Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease has identified a simple and effective way to reduce one’s risk of cardiovascular disease. Our “ABCDE” method — which stands for Assessment of risk, Antiplatelet therapy; Blood pressure management; Cholesterol management, Cigarette/tobacco cessation; Diet and weight management, Diabetes prevention and treatment; and Exercise — organizes the national guidelines into a comprehensive plan for managing prevention. This tool is intended to provide a brief set of instructions for people to discuss with their doctors.

A  Assessing Your CVD Risk
An adult can estimate his or her risk of heart attack or stroke over the next 10 years by using the atherosclerotic cardiovascular disease (ASCVD) risk calculator: http://clinicalc.com/Cardiology/ASCVD/PooledCohort.aspx.

B  Blood Pressure — Go Low
High blood pressure is a significant cause of heart attack, stroke, kidney disease, and dementia. Hypertension is defined as a blood pressure of >130/80. Recent clinical trial data indicates that a person over age 50 with a cardiac risk factor should likely strive for a systolic blood pressure of <125. Lifestyle interventions, including regular aerobic exercise, eating a diet low in salt and high in fruits and vegetables, losing excess weight, and reducing alcohol intake, all lower blood pressure.

C  Cholesterol Therapy a Must
Cholesterol gradually builds up on the walls of arteries over time, leading to atherosclerosis. Healthier dietary habits and increased exercise remain the two best ways to improve cholesterol, but often a statin and/or other medication is employed to lower cardiovascular risk.

D  Diabetes Prevention and Treatment
Both diabetes and pre-diabetes can lead to heart disease, stroke, kidney failure, blindness, and amputations. You can help diagnose diabetes by checking a fasting blood sugar or hemoglobin A1c (HbA1c) levels. A measured HbA1c of 5.7-6.4% represents pre-diabetes, while a level of 6.5% or more represents diabetes. Weight loss and improvements in diet and exercise help prevent the development of diabetes. If you are a diabetic, you may need medications, such as metformin or insulin, for optimal diabetes control.

E  Exercise Is Key
Exercise helps us lose weight, stay healthy, and feel better. A good exercise program consists of aerobic activity, strength training, and flexibility exercise. Guidelines recommend 3-4 sessions a week, lasting on average 30-40 minutes per session, involving moderate- to vigorous-intensity physical activity. Reduce sitting time and aim for >10,000 steps/day of walking.

Take control of your ABCs! For more information, call the Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease at 410-955-7376.

www.hopkinsmedicine.org/heart

*Personalized prevention advice is the trademark of the Ciccarone Center.*
Since 1990, the mission of the Ciccarone Center for the Prevention of Cardiovascular Disease has been three-fold:

- To create excellent clinical care for people at risk of developing heart disease
- To educate health care practitioners about how to better identify and care for patients at risk of developing heart disease
- To establish rigorous research programs to study better prevention of cardiovascular disease

Relentless pursuit of these goals over the past two decades has led to the creation of one of the fastest growing clinical and research programs at Johns Hopkins, which is highly regarded for its innovative and effective approaches to cardiovascular disease prevention and treatment.

Clinical Care
The trademark of the Ciccarone Center is its comprehensive approach, which involves both global assessment and aggressive management of multiple risk factors (not just single risk factors, such as high blood pressure or high cholesterol) contributing to the development and progression of atherosclerosis. Our clinical center is dedicated to:

- The detection and management of individuals at risk for accelerated atherosclerosis (primary prevention) to prevent or delay the onset of cardiovascular disease, and
- The management of patients with established vascular disease (secondary prevention) to reduce recurrent cardiovascular events and decrease mortality.

Education
Our educational efforts are aimed at both the medical community and the general public. The Ciccarone Center also serves as a model for teaching the art of prevention of cardiovascular disease to fellows, residents, and students at the Johns Hopkins School of Medicine and the Bloomberg School of Public Health.

Our physicians and nurse practitioners are also lecturers for medical and nursing students and physicians at Hopkins and at national meetings. Hopkins Medicine also organizes meetings to address educational issues for the public.

Research
As part of Johns Hopkins, the Ciccarone Center for the Prevention of Cardiovascular Disease is committed to conducting cutting-edge research on atherosclerosis and risk factors for heart disease. We conduct research on two levels:

- Clinical research studies of cardiovascular disease involving informed, consenting adults, and
- Basic research and experiments to decipher the molecular reactions leading to atherosclerotic vascular disease.

Khurram Nasir MD, MPH
Now an adjunct faculty member of the Ciccarone Center, Khurram Nasir MD, MPH, has had a busy year. Dr. Nasir served as the Executive Director of the Baptist Health South Florida Research Institute, as well as Director of the Center for Healthcare Advancement & Outcomes and the principal investigator for the prospective Miami Heart Study. He also currently sits on the Board of Directors of the American Society of Preventive Cardiology and serves as Associate Editor for Circulation: Quality of Care and Outcomes and an editorial board member for Circulation.

Dr. Nasir says his major focus lately has been on population health and learning health system research, with an interest in four specific areas: 1) facilitating integrative data analytics architecture to support information driven healthcare decisions; 2) creating a framework to assess processes of care to improve quality, outcomes and efficiency; 3) evidence appraisal to facilitate the transition from current fee-for-service to a value-based model; and 4) optimizing prevention programs for population health management, with an emphasis on preventing financial risk.
What is the Ciccarone Center?

- Persons with recurrent chest pain but no established cardiovascular disease
- Persons who have been intolerant of standard cholesterol or blood pressure medications

State-of-the-Art Testing
We are especially interested in individuals who develop cardiovascular disease before the age of 65. We have special expertise in the screening and management of asymptomatic family members of persons with premature atherosclerotic disease. Our team may selectively employ state-of-the-art testing to help identify factors contributing to heart disease clustering in families.

For an individual patient, we may use the latest assessment techniques to measure lipoproteins (total cholesterol, high-density lipoprotein-cholesterol [HDL-C], LDL-C, and triglyceride levels) and apolipoproteins (Lp[a], apolipoprotein B) as well as nontraditional risk factors, such as high-sensitivity C-reactive protein (hsCRP), and measurements of lipoprotein size and number. However, for many individuals these emerging risk factors are often not needed to optimize their management in a cost-effective manner.

Advanced Diagnostic Tools
Among asymptomatic adults with no history of cardiovascular disease, we may use a 64-slice or a 320-slice multidetector computed tomography (MDCT) scan of the chest to measure the amount of coronary artery calcification. The presence of elevated coronary artery calcification (e.g., >75th percentile for one’s age and gender) or thickened carotid arteries is a sign of accelerated atherosclerosis for one’s age and may lead to more aggressive attempts at comprehensive risk factor changes through both medical management and lifestyle modification. Occasionally, a cardiac CT angiogram may also be indicated in patients with atypical chest pain and inconclusive stress test results. After an initial comprehensive evaluation, we can inform a patient whether his/her management might be changed by some of the more sophisticated laboratory and diagnostic testing that we can provide.

Improving Lifestyle Habits
Dominique Ashen, PhD, CRNP, and Kathy Byrne, CRNP, nurse practitioners who specialize in helping people improve their lifestyle habits, assist patients with behavior changes such as:
- Following healthier diets
- Maintaining a prudent body weight
- Smoking cessation
- Maintaining a regular aerobic program
- Coping better with stress

Our Mission
We have built the Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease with the following goals in mind:

1. Provide a center dedicated to clinical patient care and the global assessment of risk factors for cardiovascular disease, which enables patients to receive:
   - the latest information on the prevention of atherosclerotic vascular disease,
   - comprehensive management of risk factors for cardiovascular disease, and
   - high-quality care that is integrated into the other health promotional resources of Johns Hopkins.

2. Create a center at Johns Hopkins for the education of health care providers in the area of prevention of cardiovascular disease. Teaching by our physicians and nurse practitioners broadly targets Hopkins nurses, medical students, fellows, and physicians as well as the community at large.

3. Foster cardiovascular research, including both clinical trials and translational research.

Faisal Rahman, MD

Over the past year, Dr. Faisal Rahman published an article on the adverse outcomes of low diastolic blood pressure, or the J-curve phenomenon. His current research areas of interest include exploring outcomes of patients admitted with cardiovascular disease to the hospital and preventing prolonged hospitalization and readmissions. Dr. Rahman received his medical degree from the University of Oxford, England, and did his residency at Boston University Medical Center, where he was also chief medical resident before coming to Johns Hopkins for a cardiology fellowship. He performed research on atrial fibrillation and flutter with the Framingham Heart Study while he was at Boston University.
Research Publications

A listing of the publications by the staff of The Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease, from October 2016 through September 2017.

Assessment of CVD Risk
   **Summary:** A family history of coronary disease was associated with a severe coronary artery calcium (CAC) burden in a South Asian population living in the U.S. similar to other ethnic groups.

   **Summary:** The consortium data set is uniquely positioned to expand the understanding of CAC as a predictor of mortality risk across the spectrum of disease states.

   **Summary:** Comparing the MASALA and MESA Studies. With Severe CAC in South Asians similar to other ethnic groups.

   **Summary:** Detecting subclinical atherosclerosis with coronary artery calcium supports a stronger recommendation for its use in future prevention guidelines.

   **Summary:** These guidelines will improve clinical care but situations will arise where additional information may be needed to better inform patient management.

   **Summary:** The presence of just minimal CAC is associated with a 2-fold higher risk of CVD as compared to the absence of CAC in age-matched controls.

   **Summary:** Clinicians should account for individual preferences in context of shared decision-making to guide statin prescribing decisions.

   **Summary:** This review discusses a conceptual model for developing an improved CAC score, reviewing the approaches most likely to lead to meaningful improvement in the Agatston CAC score.

   **Summary:** CAC volume and density provide the strongest prediction for CVD events and the highest correct reclassification.

Summary: Identifying calcified coronary plaque significantly increases the likelihood of initiation or continuation of pharmacological and lifestyle therapies.

Summary: A lower risk of heart failure with more favorable LS7 indicates that efforts to achieve ideal cardiovascular health would greatly reduce heart failure.

Summary: CAC helps predict total mortality as well as CVD events.

Summary: Worsening modifiable risk factors were proportionally associated with higher annual pharmaceutical expenditures among patients with established atherosclerotic cardiovascular disease (ASCVD).

Summary: Adult height may signal interactions between genetic and environmental factors and provide risk information independent of traditional risk factors and CAC score.

Summary: Higher baseline CAC was significantly associated with increased risk of dementia independent of vascular risk factor, APOE-ε4, and incident stroke.

Summary: There is a strong relationship between patient-provider communication and patient-reported outcomes, utilization of evidence-based therapies, resource utilization, and expenditures.


Summary: This statement summarizes the data regarding the prognostic value of CAC and its ability to refine risk prediction.

Summary: A favorable risk factor profile is associated with lower healthcare expenditures and utilization in CVD-free individuals across diabetes mellitus status, suggesting that these individuals require aggressive individualized prescriptions targeting lifestyle modifications and therapeutic treatments.

Summary: CAC score improved prediction, discrimination, and reclassification of CVD events better than carotid ultrasound measures, although prediction and discrimination were similar for stroke/TIA.

Summary: Improving cardiovascular health will also reduce the burden of cancer and other chronic diseases.


Summary: Clinicians treating older individuals, and those with factors associated with more risk overestimation, should interpret absolute ASCVD risk estimates with caution.


Summary: The number of coronary arteries with calcified plaque, indicating increasingly “diffuse” multi-vessel subclinical atherosclerosis, adds significantly to the traditional Agatston CAC score for the prediction of events.


Summary: CAC is strongly associated with the long-term risk of mortality in young and middle-aged men and women; in older patients, the long-term risk stratification of CAC is lower.


Summary: Residual risk of ASCVD remains high despite statin treatment and is predicted by specific risk factors and subclinical atherosclerosis.


Summary: There is a lack of randomized controlled trials comparing various routes and formulations of cross-sex hormone therapy, as well as the paucity of prospective cohort studies.


Summary: CPAP improves vitality, sleepiness, mental health, social functioning, and depressive symptoms in patients with sleep apnea and established CHD or risk factors.


Summary: There was no association in the rheumatoid arthritis group of elevated urine albumin:creatinine with measures of atherosclerosis or with cardiometabolic risk factors.


Summary: We address knowledge gaps about and further highlight the potential for CAC scanning to enrich future randomized controlled trials.


Summary: Among women at low CVD risk, CAC was present in approximately one-third and was associated with an increased risk of atherosclerotic CVD and improvement in prognostic accuracy.

Summary: We summarize factors associated with the development of heart failure in an ABCDE format.


**Summary:** Depressive symptoms may be a potentially modifiable risk factor for early prevention of cardiovascular disease, especially in younger patients.


**Summary:** The multiethnic study of atherosclerosis (MESA)惘electronic sources: The Multi-Ethnic Study of Atherosclerosis, et al. Validity of cardiovascular data from WS.


**Summary:** There is a relationship between abnormal sleep duration and quality with sub-clinical cardiovascular disease that is similar across race/ethnic groups.


**Summary:** These findings illustrate the limitations and strengths of electronic data repositories in comparison with information collected by traditional epidemiological approaches.


**Summary:** In community-dwelling elders, cystatin C, beta-microglobulin, and beta-trace protein levels are less affected than creatinine level by age and sex and are not affected by ethnicity.


**Summary:** There is a graded inverse association between CV health scores and measures of subclinical and overt cardiovascular disease that is similar across race/ethnic groups.


**Summary:** Factors other than measured glomerular filtration rate must account for the disproportionately higher burden of kidney failure in older blacks versus whites.


**Summary:** In the future there will be a growing role for genetic testing and selective use of blood based biomarkers to improve risk prediction.


**Summary:** Selective use of a coronary artery calcium score is the best way to improve ASCVD risk prediction.


**Summary:** We present an update on ways to better identify those who are at risk for premature ASCVD and those who are at very low long-term risk of ASCVD.


**Antiplatelet/Anticoagulant RX**


**Summary:** Routine use of fentanyl for sedation in patients undergoing PCI reduces ticagrelor absorption and delays platelet inhibition without good evidence of improved comfort.


**Summary:** Long-term nonplatelet thromboxane generation after coronary artery bypass graft surgery is a non risk factor for 5-year adverse outcomes including death.


Biomarkers


72. McCarthy CP, … McEvoy JW. High-sensitivity troponin as a biomarker in heart rhythm disease. American Journal of Cardiology. 2017 May 1;119(9):1407-1413. Summary: High-sensitivity troponin has value as a prognostic biomarker in atrial fibrillation and as a screening marker for patients at high risk of sudden cardiac death.


77. Pokharel Y, … Ndumele CE, Solomon SD, Bozkurt B, Selvin E, Ballantyne CM, Deswal A. Myocardial injury, obesity, and the obesity paradox: The ARIC Study. JACC. Heart Failure. 2017 Jan;5(1):56-63. Summary: Although greater pre-existing subclinical myocardial injury was associated with higher mortality after incident heart failure hospitalization, it did not explain the obesity paradox.


81. Michos ED, Blumenthal RS. Treatment concentration of high-sensitivity C-reactive protein. Lancet. 2017 Nov 13. Summary: Great reductions in hsCRP are associated with a lower risk of ASCVD events.

Blood Pressure
82. Rahman F, Al Rifai M, Blaha MJ, Nasir K, Budoff MJ, Psaty BM, Post WS, Blumenthal RS, McEvoy JW. Relation of diastolic blood pressure and coronary artery calcium to coronary events and outcomes (from the Multi-Ethnic Study of Atherosclerosis). American Journal of Cardiology. 2017 Aug 8. pii: S0002-9149(17)31300-0. Summary: Diastolic blood pressure <60 mm Hg was associated with increased risk of coronary events and all-cause mortality, especially in individuals with elevated amounts of subclinical atherosclerosis.

**Summary:** Combined CAC imaging and assessment of ASCVD risk can guide personalized systolic blood pressure goals, particularly among adults with mild hypertension.


**Summary:** Increased dietary intake of potassium can significantly lower high blood pressure readings.


**Summary:** Low diastolic blood pressure was associated with subclinical myocardial damage and CHD events.


**Summary:** This review summarizes the evidence for a J-curve in the treatment of hypertension.


**Summary:** We discuss the ways to lower the risk of hypertensive individuals who have cholesterol profile abnormalities.


**Cholesterol/Lipids**


**Summary:** PCSK9 inhibitors help physicians to achieve low-density lipoprotein cholesterol targets in their patients.


**Summary:** The ACC/AHA recommendations for statin therapy are supported by currently available, high-quality, randomized controlled trials evidence.


**Summary:** CAC scoring can be used to optimize statin allocation among individuals for whom trial-based evidence supports efficacy of statin therapy.


**Summary:** In middle-aged participants without CVD or lipid disorders requiring medication, the worst lipid profile was determined by the highest levels of triglyceride-rich lipoprotein cholesterol (TRL-C) and their cholesterol-rich remnants.

**Summary:** Estimation of very low levels of LDL-C values (by Friedewald method) is often inaccurate.


**Summary:** The triglyceride/HDL-cholesterol ratio appears to be a stronger predictor of mortality than individual components of total cholesterol.


**Summary:** Statin use increased substantially in the last decade among US adults, although the uptake was suboptimal in high-risk groups.


**Summary:** Novel adaptable LDL-C estimation performs better in non-fasting samples than the fixed Friedewald estimation, especially in settings of low LDL-C and high triglyceride.


**Summary:** Approximately one-fifth of individuals with the targeted Friedewald-estimated LDL-C level experienced significantly higher median concentrations using a novel equation.


**Summary:** We discuss the potential ability of coronary CTA to guide lipid-lowering therapy, as well as the potential barriers to its use.


**Summary:** Traditional ASCVD risk estimation is often no more accurate than successfully calling heads on a coin toss.


**Summary:** This study synthesizes evidence about effects of morning vs evening statin administration on lipid profile.


**Summary:** Meta-analysis suggested a statistically significant reduction of Lp(a) levels following tamoxifen treatment.


**Summary:** In patients with HIV, pitavastatin 4mg/dl lowered both remnant lipoprotein-cholesterol (RLP-C) and established apolipoprotein and lipid risk ratios more so than pravastatin 40mg/dl.

Michael Blaha, MD

In 2017, Dr. Michael Blaha, Director of Clinical Research at the Ciccarone Center, was promoted to to Associate Professor of Cardiology and Epidemiology at Johns Hopkins. He partnered with Dr. Kuni Matsushita from the Welch Center to receive an NIH-sponsored R01 grant to describe the role of subclinical cardiovascular disease in adults age 75 and older. He also teamed with Dr. Ana Navas-Acien to submit another successful R01 grant to the FDA investigating the role of metal exposure and electronic cigarettes on cardiovascular health. Additionally, Dr. Blaha received two grants from the American Heart Association, is partnering with Vanderbilt University on two other grants in the fields of pulmonary arterial hypertension and mobile health (mHealth), and is working with the Amgen Foundation on a large grant to begin in early 2018. Dr. Blaha also spent 2017 working closely with Drs. Gary Gerstenblith, Thorsten Leucker, and Steve Schulman on a randomized controlled trial looking at addition of a novel cholesterol-lowering medication in persons who present to the hospital with a heart attack or unstable angina. And he was named a standing member of the Endocrinologic and Metabolic Drug Advisory Committee of the FDA, working on approvals of new lipid-lowering and diabetes drugs.
Summary: Health disparities contribute to the undertreatment of US familial hypercholesterolemia patients.

Summary: The objective of this study was to examine association of LDL pattern after MI and death.


Summary: Lipoprotein management is a central feature of cardiology practice.


Summary: Elevated total cholesterol, low-density lipoprotein cholesterol, and triglycerides in midlife were associated with greater 20-year cognitive decline.

Summary: This study evaluated whether lipoprotein(a) mass and particle concentration differentially discriminated risk of calcific aortic valve disease or incident coronary disease.

Summary: There is a modest to moderate relation of HDL and circulating levels of endothelial activation markers in humans.

Summary: Uptitrination of statin dose and improvement in statin adherence would greatly reduce the eligibility of high risk patients for consideration of a PCSK9 inhibitor.

Summary: Smoking-related pulmonary vascular changes contribute to symptoms and impair cardiac filling and function without evidence of impaired ventricular relaxation.

Summary: We test the hypothesis that ACC/AHA guidelines are more accurate in identifying persons at risk for CVD.

Summary: We used trial results to determine the cost-effectiveness of a PCSK9 inhibitor and statin treatment strategy compared with a statin alone strategy.

Summary: Adoption of the 2013 ACC/AHA Cholesterol Management Guideline in cardiology practices was modest.

Summary: At current prices, PCSK9 inhibitors do not add value to the U.S. health system and their provision is not profitable for private payers.

Summary: Among adults with chronic kidney disease, elevated Lp(a) is independently associated with myocardial infarction and death.

Summary: PCSK9 variants were associated with lower LDL-C and coronary heart disease incidence, not stroke risk.


Summary: Genetic predisposition to elevated triglyceride levels was associated with the presence of mitral annular calcification, a risk factor for clinically significant mitral valve disease.


125. Hamo CE, Martin SS, Blumenthal RS. A novel approach to low-density lipoprotein estimation. Acc.org. 2017 October. Summary: Calculated LDL-cholesterol < 70 mg/dL is often inaccurate in the setting of an elevated triglyceride or low HDL-cholesterol level.


Cigarette Smoking


Summary: Smoking status, burden, and intensity were associated with inflammation (hsCRP) and subclinical atherosclerosis (carotid intima-media thickness, ankle-brachial index, CAC).


Summary: Smoking intensity was associated with early biomarkers of cardiovascular disease, particularly markers of systemic inflammation such as hsCRP.


Summary: There is an association of second-hand smoke exposure with inflammation and peripheral arterial disease.


Summary: We found no significant association of smoking intensity or burden with biomarkers of inflammation among current smokers.

Summary: Electronic cigarettes users who were previously non-smokers have different motivations and perceptions than those of current and former smokers.


Summary: Acute and chronic exposure to tobacco smoking is associated with inflammation, as quantified by both the biomarker glycoprotein acetylation (GlycA) and high-sensitivity C-reactive protein (hsCRP).


Summary: A dose-response relationship exists between intensity and duration of cigarette smoking with unfavorable changes in cardiac structure and function.


Summary: The association of smoking with incident CVD events was well captured by including a simple term for baseline smoking intensity.


Summary: High levels of recent indoor secondhand smoke exposure may be inversely associated with DNA methylation of aryl hydrocarbon receptor repressor in human monocytes.


Summary: Our review presents significant evidence in support of increased subclinical CVD burden in COPD patients independent of smoking status.

CV Imaging with CT/PET/ MR


Summary: Premenopausal women have two-fold better mean coronary endothelial function compared to postmenopausal women.


Summary: There is a significant inverse and independent relationship between coronary endothelial macrovascular function and the degree of local coronary wall eccentricity.


Summary: Continued cocaine use is associated with noncalcified plaque progression, whereas reduced cocaine use may be associated with modest noncalcified plaque regression.
Deficient vitamin D was prospectively associated with lower total cholesterol and HDL-C and a greater ratio of cholesterol to HDL-C after considering diabetes and adiposity.


Summary: Vitamin D deficiency was associated with increased 6-year change in high-sensitivity cardiac troponin T levels.


Vitamin D


Summary: Physical activity is linearly associated with higher vitamin D levels in whites, and both ethnicities may have synergistic beneficial effects on atherosclerotic CVD risk.


Summary: Deficient vitamin D is associated with elevated levels of many biomarkers of cardiovascular risk, particularly among US women.


Summary: Deficient vitamin D was prospectively associated with lower total cholesterol and HDL-C and a greater ratio of cholesterol to HDL-C after considering diabetes and adiposity.
170. Kim SM, Lutsey PL, Michos ED. Vitamin D and cardiovascular disease: Can novel measures of vitamin D status improve risk prediction and address the vitamin D racial paradox? *Current Cardiovascular Risk Reports*. 2017 Jan;11(1). pii: 3.

**Summary:** An update on some emerging measures of vitamin D status and how assessment of key metabolites might improve prognostication of risk for CVD outcomes.


**Summary:** Our findings support a possible positive association between vitamin D levels and telomere length.


**Summary:** Deficient serum 25-hydroxyvitamin D was associated with increased risk of peripheral artery disease in black and white participants.


**Summary:** An update on the most recent evidence regarding the effects of vitamin D and calcium supplements on CVD clinical outcomes.


**Summary:** Low serum vitamin D concentration, associated with incident frailty in older women, is no longer significant after accounting for the presence of cardiometabolic diseases.


**Summary:** High total calcium intake was associated with a decreased risk of incident atherosclerosis over long-term follow-up.


**Diet/Weight/Nutrition**


**Summary:** Effective primary prevention with lifestyle improvements is less costly than treating patients who have advanced ASCVD.


**Summary:** We discuss methodological issues often seen in observational nutritional research and provide recommendations to help minimize them.


**Summary:** We review recent studies addressing health technologies to promote lifestyle change and medication adherence, including text messaging, applications, and wearable devices.


**Summary:** Studies of meditation suggest a possible benefit on cardiovascular risk, although the overall quality/quantity of study data are modest.


**Summary:** Higher educational attainment had variable associations with achieved levels of ideal CV health across race/ethnic groups.


**Summary:** We tested the hypothesis that greater adiposity results in higher growth factor 23 levels among individuals with normal estimated glomerular filtration rate.


**Summary:** Within each BMI category, metabolically unhealthy patients had greater extent of CAD compared to metabolically healthy patients.


**Summary:** Short sleep duration (<6 hr) is significantly associated with a higher risk of morbid obesity.


Diabetes/Metabolic Syndrome/Endocrine


194. Martin SS, Daya N, Lutsey PL, Matsushita K, Fretz A, McEvoy JW, Blumenthal RS, et al. Thyroid function, cardiovascular risk factors, and incident atherosclerotic cardiovascular disease: The Atherosclerosis Risk in Communities (ARIC) study. The Journal of Clinical Endocrinology and Metabolism. 2017 Sep 1;102(9):3306-3315. Summary: Hypothyroidism is associated with hyperlipidemia, but the magnitude is small in mild hypothyroidism, and cardiac outcomes are similar between thyroid function groups.


198. Qiao Y, … Guallar E, Wasserman BA. Racial differences in prevalence and risk for intracranial atherosclerosis in a US community-based population. JAMA Cardiology. Forthcoming 2017. Summary: Midlife smoking and diabetes were strongly associated with late-life intracranial atherosclerosis in blacks only, whereas midlife hypertension and hyperlipidemia were associated with late-life intracranial atherosclerosis in both races.

199. Kim SM, Zhao D, … Guallar E, … Michos ED. Association of parathyroid hormone with 20-year cognitive decline: The ARIC study. Neurology. 2017 Aug 29;89(9):918-926. Summary: Our work does not support an independent influence of parathyroid hormone on cognitive decline in this population-based cohort study.


214. Aladain AI, Al Rifai M, Rasool SH, Keteyian SJ, Brawner CA, Blumenthal RS, Blaha MJ, Al-Mallah MH, McEvoy JW. Relation of resting heart rate to incident atrial fibrillation (from the Henry Ford Hospital Exercise Testing Project). American Journal of Cardiology. 2017 Jan 15;119(2):262-267. Summary: Adults with low resting heart rate at all levels of exercise capacity are at increased risk of atrial fibrillation and may benefit from heart rhythm surveillance, particularly in the presence of other risk factors.


Summary: Patients with inadequate heart rate response during exercise have an increased risk for developing atrial fibrillation.


Summary: Interventions targeting improvements in lipid profile may wish to promote adequate moderate-to-vigorous physical activity over cardiorespiratory fitness or decreased sedentary behavior.


Summary: Among black and white patients, change in cardiorespiratory fitness from low to intermediate/high fitness was associated with a 35% and 59% lower risk of all-cause mortality, respectively.


Summary: Higher levels of fitness are associated with a lower incidence of heart failure (HF) independent of HF risk factors.


Summary: In adults referred for an exercise stress test, change in maximal exercise capacity over time is inversely related to risk of all-cause mortality.


Summary: Moderate-to-vigorous physical activity was associated with more favorable inflammatory markers, independent of cardiometabolic disease risk factors, including central obesity.


Summary: The prognostic value of percentage of age-predicted maximal heart rate was significantly attenuated by beta-blocker therapy.


Summary: Physical activity might lessen the association between obesity and subclinical myocardial damage, which could represent a mechanism by which exercise reduces heart failure risk.

Genetics/Electrophysiology


Summary: Mitochondrial DNA copy number was independently associated with incident CVD in 3 large prospective studies and may improve CVD risk classification.


Summary: Our study emphasizes the importance of ethnicity in genetic risk for CVD and highlights the need to identify ethnicity-specific genetic variants associated with risk.


Summary: These findings identify novel associations in inflammatory, hypoxia signaling, and sleep pathways.

HIV


Summary: This study investigated incidence and progression of atherosclerosis assessed by serial coronary computed tomography angiography (CTA) among HIV-infected and uninfected men.
236. Lai S, Gerstenblith G, et al. Cocaine use may modify HIV/AIDS-associated myocardial steatosis and hepatic steatosis. *Drug and Alcohol Dependence*. 2017 Aug 1;177:84-92. **Summary:** This study explores whether antiretroviral therapy use is independently associated with steatosis, and examines how cocaine use influences any associations of therapy use with steatosis.


241. Drozd DR, … Post WS, Saag MS, Moore RD, Crane HM. Increased risk of myocardial infarction in HIV-infected individuals in North America compared with the general population. *Journal of Acquired Immune Deficiency Syndromes*. 2017 Aug 15;75(5):568-576. **Summary:** Early suppressive antiretroviral treatment and aggressive management of traditional risk factors are necessary to reduce heart attack risk.


**Vascular Disease/Aortic Disease/Heart Failure**


251. Remigio-Baker RA, … Blumenthal RS, OuYang P, Criqui MH. Race/ethnic and sex disparities in the non-alcoholic fatty liver disease-abdominal aortic calcification association: The Multi-Ethnic Study of Atherosclerosis. *Atherosclerosis*. 2017 Mar;258:89-96. **Summary:** Significant concurrent interaction by race/ethnicity (Chinese and Blacks vs. Whites) and sex was found in the relationship between non-alcoholic fatty liver disease and increasing abdominal aortic calcification.
**Summary:** Discussion of a patient with two rare conditions that share some common clinical presentations, including a propensity for sudden death.

**Summary:** We discuss prognosis and treatment of a patient with a simple lipoma who underwent partial resection to relieve symptoms.


**Summary:** We discuss factors contributing to exercise intolerance in heart failure, skeletal muscle energy metabolic abnormalities, and increased fatigability in HF patients.


**Summary:** We tested the hypothesis that ascending thoracic aorta calcium volume and density predict incident CVD events independently of CAC.


**Summary:** Several CVD risk factors were associated with higher abdominal aortic calcium volume, but lower density.

**Summary:** In MESA, the incremental predictive value of thoracic extra-coronary calcification beyond traditional risk factors and CAC appears to be minimal.

**Summary:** Optimal medical management is required for each patient, irrespective of the decision regarding lower extremity revascularization.


**Summary:** Researchers evaluated the epidemiologic features of heart failure patients, the 1-year key health outcomes of the disease, and the independent predictors of those outcomes.

**Summary:** The authors review critical steps in the management of patients with chronic heart failure, with a special focus on the transitions between the hospitalization phase (acute decompensation) and the chronic management of the disease.


A listing of the late-breaking clinical research data presented at major cardiology meetings by the faculty and fellows of the Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease.

Presentations at the 2017 Scientific Sessions of the American Heart Association (AHA), November 11-15; Anaheim, CA.


3. Florido R, Zhao D, Guillar E, Bluemke DA, Lima JA, Michos ED. Associations of change in physical activity levels with changes in cardiac structure and function in the Multi-Ethnic Study of Atherosclerosis (MESA).


11. Nasir, K. Cost, utilization, quality of care, and outcomes for acute myocardial infarction (AMI) related events: Results from the 2014 Medical Expenditure Panel Survey.


The Ciccarone Center for the Prevention of Cardiovascular Disease was founded in 1989 in memory of Henry A. "Chic" Ciccarone, a legendary athlete and lacrosse coach at Johns Hopkins who died at age 50 after his third heart attack.

But he was more than that. In the way he led his teams and his life, Chic embodied all that Johns Hopkins itself represents: dedication, excellence, leadership.

With intense, energetic competitiveness, pride, and engaging, infectious humor, Chic compiled an extraordinary record of achievements in athletics. As a three-time All-American midfielder and team captain, he won nearly every major Hopkins lacrosse award and was named to the All-Time Hopkins lacrosse team upon his graduation in 1962.

In 1989, the friends and former players of Coach Ciccarone began raising funds for the development of a comprehensive program geared toward the prevention of coronary heart disease events. The Ciccarone Center sought to unite the proud traditions of Hopkins lacrosse and Hopkins Medicine.

We all have a stake in winning the battle against heart disease. By joining the team at the Ciccarone Center, by sharing our enthusiasm and dedication to it, your support of coronary disease prevention will protect your life and the lives of those you love.
How to Contact the Ciccarone Center

We see patients Monday through Friday at the Johns Hopkins Ciccarone Center at Green Spring Station and on Mondays, Tuesdays, and Fridays at the Johns Hopkins Outpatient Center. Dr. Michos also sees patients at Odenton. At each location we can perform exercise stress tests, treadmill stress echo tests, echo Doppler tests, EKGs, Holter monitors, and refer patients for cardiac CT scans. Vascular ultrasound testing and consultations are available at Green Spring Station. Vascular Medicine consultations are also available at White Marsh.

Appointments at the Johns Hopkins Ciccarone Center at Green Spring Station, 10755 Falls Road, Pavilion I, Suite 360, Lutherville, MD 21093 location can be scheduled at 443-997-0275. (Drs. Blumenthal, Post, Ashen, Ratchford, Whelton, and Blaha)

Appointments at the Johns Hopkins Outpatient Center, 601 North Caroline Street, Baltimore, Maryland 21287, can be scheduled at 443-997-0270. (Drs. Jones, Ndumele, Blumenthal, Martin, McEvoy, and Gerstenblith)

Appointments at the Johns Hopkins Cardiology Center at Odenton, 1132 Annapolis Road, Suite 104, Odenton, MD 21113, can be scheduled at 443-997-0275 or 410-874-1520. (Dr. Michos)

Appointments for Vascular Medicine consultations or vascular ultrasound testing can also be scheduled through Dr. Ratchford’s Center for Vascular Medicine scheduling line at 443-997-1800. Dr. Elizabeth Ratchford serves as the Medical Director of the vascular ultrasound laboratory at Green Spring Station.

Support the Prevention of Cardiovascular Disease

Heart disease is America’s #1 killer — more than cancer and accidents combined. Our goal at the Ciccarone Center is to stop heart disease before it develops, through an aggressive program of risk assessment and comprehensive lifestyle and medical management.

Like all pioneering medical programs, however, we are in constant pursuit of funding to accelerate our progress. We depend on the support of generous donors to thrive.

The Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease has just completed its 28th year of service and is going strong. When you give to the Ciccarone Center, you’re ensuring that, if you or a loved one is at risk for heart disease or stroke, you’ll have a program to help prevent it. Or if you already have heart disease, you’ll maximize your opportunity for an active and enjoyable life.

You can help support this program by contributing to the future of cardiovascular disease research, education, and patient care. Make a tax-deductible donation to the Ciccarone Center today and help save lives tomorrow.

Gifts may be made in the form of cash, check, credit card, securities, real estate or personal property. For more information, please call the development office at 443-287-7384, email hopkinsheart@jhmi.edu or visit http://www.hopkinsmedicine.org/heart_vascular_institute/about_us/charitable_giving/.