

The Beat

A publication of
VCU Health
Pauley Heart Center



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Inside:

**T32 training program:
Meet the new fellows**

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**Pauley Heart Center
turns 15**

.....

**Celebrating our
50-year partnership
with AHA**



VCU Health[™]

Pauley Heart Center

Tomorrow's investigators

Translational research is the focus of new training program

A new training program in partnership with the National Institutes of Health allows early-stage investigators to learn the techniques used to perform and advance multidisciplinary translational cardiovascular research. The Multidisciplinary Training Program in Translational Research (T32) in the Division of Cardiology at VCU Health is designed for postdoctoral physician-scientists and Ph.Ds.

"The T32 is an exciting and important expansion of cardiovascular training at VCU Health Pauley Heart Center," said Dr. Greg Hundley, Pauley director. "We see this program as part of our mission in the pursuit of excellence in research, education and clinical science," said Dr. Kenneth Ellenbogen, chair of the Department of Cardiology, noting that the T32 supports Pauley's strategic plan.

Paired with established investigators throughout VCU's schools and specialty health centers, T32 fellows participate in translational cardiovascular science projects for the purpose of applying this knowledge to design and lead future studies directed toward the diagnosis, treatment and prevention of cardiovascular disease. Fellows do clinical rotations at VCU Medical Center and Richmond VA Medical Center.

The T32 expands Pauley's fellowship slots for M.D.s from six to seven per year and adds a year to the existing three-year program to accommodate research activities. Trainees in this program will have 2.25 years of clinical training, making them eligible for the ACMGE board certification exam. The remainder of their four-year curriculum will be dedicated to research.

The program is funded by a highly competitive \$1.5 million NIH grant. "The federal government recognized the strengths of

Meet the inaugural T32 fellows

Emily Heiston, M.Ed., Ph.D.

What attracted you to the Division of Cardiology's T32 program?

I was looking for a postdoc where I could become a more independent investigator while broadening my skills. The T32 fellowship is very attractive because it's all-around training, and you are the focus. My background is in metabolism, and in reading about the program and the investigators at Pauley, I noticed that something that wasn't being discussed as much was the metabolic piece. Because of that, I thought I would be a great addition. Not only would I be able to help the investigators with their research, but the program would help me learn new skills about different disease states while working with a clinical population.

What have you been doing since starting your fellowship last August?

I am getting another master's degree in clinical and translational sciences, and that is a huge perk of the program. Because of COVID-19, I haven't been able to do clinical hands-on research, but I've been able to submit proposals for papers I hope to write.

What do you envision for the rest of the year?

By the fall, I hope to start working with patients and collecting clinical data. Then, moving forward, I'll submit grants based on pilot data. By the end of my program, my goal is to submit a K99/R00 grant so that I can become an independent researcher.

Describe your research interests.

I'm really interested in understanding the metabolic health of the adipose tissue that we carry. There's a large multisite trial study going on right now, called UPBEAT, for women who have breast cancer and are undergoing anthracycline-based chemotherapy. I'm proposing getting and analyzing data from the study, for things like body composition and blood work. There's another project ongoing at Pauley, called PREVENT, where they're combining chemotherapy with a statin (the medication for cholesterol), which has been shown previously through clinical trials to impact adipose health and overall metabolic health. I'm interested in getting a better profile of these breast cancer patients at baseline and after treatment, and then into survivorship, to see how metabolic profiles are altered with or without a drug. Since my background and passion is in exercise physiology, I would like to then submit a grant asking: What if we combine these treatments with exercise?

What do you feel will be your impact on patient care?

I want to make a difference in patient care. My research will give us some data and ultimately help clinicians be as armed as possible, so that people who are undergoing these breast cancer therapies are getting the most precision-based medicine for the best prognosis.

What advice or message do you have for future T32 fellowship applicants?

If you are interested and feel you can either add or learn something new, don't be afraid to apply. Each person I meet makes me more energized and excited to be here. I feel like I'm being prepared and will be in the best spot possible for not only my career, but science in general. I'm confident that by the end, I'm going to be exactly where I'm supposed to be and make waves.

Emily Heiston
- B.S. in exercise science,
Shenandoah University
- Ph.D. and M.Ed. in
exercise physiology,
University of Virginia
Faculty mentors:
Antonio Abbate, M.D., Ph.D.
Salvatore Carbone, Ph.D.
Greg Hundley, M.D.
Jennifer Jordan, Ph.D.
Vanessa Sheppard, Ph.D.

"Each person I meet makes me more energized and excited to be here."

cardiovascular disease research at VCU Health, and our cardiovascular medicine and surgery as a training ground for the next generation of scientists,” Hundley said.

Private philanthropy has helped create an environment for research at Pauley. “The government recognizes we have more than just good science investigators — we also have the right resources available. We’re very appreciative to our institution as well as our philanthropic donors for providing us with the equipment and space to make this program possible,” Hundley noted.

The T32 recognizes Pauley as a place where investigators thrive, and their careers are supported. “We are creating an environment for the fellows to move along in their careers and help us perform research on combating all the adverse morbidity and mortality associated with cardiovascular disease,” Hundley said. “It’s creating

the next generation of Kenneth Ellenbogens and Antonio Abbates and Fadi Salloums.”

The ideal T32 candidate is proactive in their education, committed to excellence and prepared to take advantage of the outstanding opportunities VCU Health offers, said Dr. Gautham Kalahasty, program director, who, with Hundley and Ellenbogen, shares responsibility for the management of the fellowship program and for the successful completion of appropriate training for each fellow.

Join us
Applicants from diverse racial and gender backgrounds, and those with disabilities, are being recruited into the program. The first nonclinical trainees started last August, and the first physician-scientist trainee will start in July. To learn more about the T32 fellowship, visit intmed.vcu.edu/education/fellowship/cardiology/cardiovascular

George Wohlford IV, Pharm.D.

What attracted you to the Division of Cardiology’s T32 program?

Ten years from now, I see myself in academia mentoring a postdoc fellow and executing a grant. What better way to achieve this goal than via the T32? It is allowing me to develop the skills necessary to independently lead a research group.

What have you been doing since you started last August?

Coming from a more clinical research background moving toward bench research, there has been a knowledge gap I have been working to fill. One of the first things asked of me was to interview faculty who supported the T32 application. Then from that, identify a mentoring team. More recently, I am learning to do the basics in the wet lab. For example, just before this interview I was working on a lipid extraction for some samples we plan to process later this week. Other time has been spent following up with prior research projects and getting those manuscripts published. Also, I have been taking a data science course, learning to use software for analyzing the types of data we plan to generate.

Describe your research interests.

Inflammation clearly plays a pathophysiologic role in cardiovascular disease. I think that, historically speaking, inflammation has been viewed as a marker and not really a driver of cardiovascular disease. [Working with faculty mentors], we’re trying to understand if there are lipid mediators in the blood, mediators of inflammation, that we can measure with a simple blood draw that may help us tailor current and future therapies to individual patients and maybe even identify targets for novel therapies. This goal falls in line with a larger NIH goal of precision medicine.

What do you envision for the rest of the year?

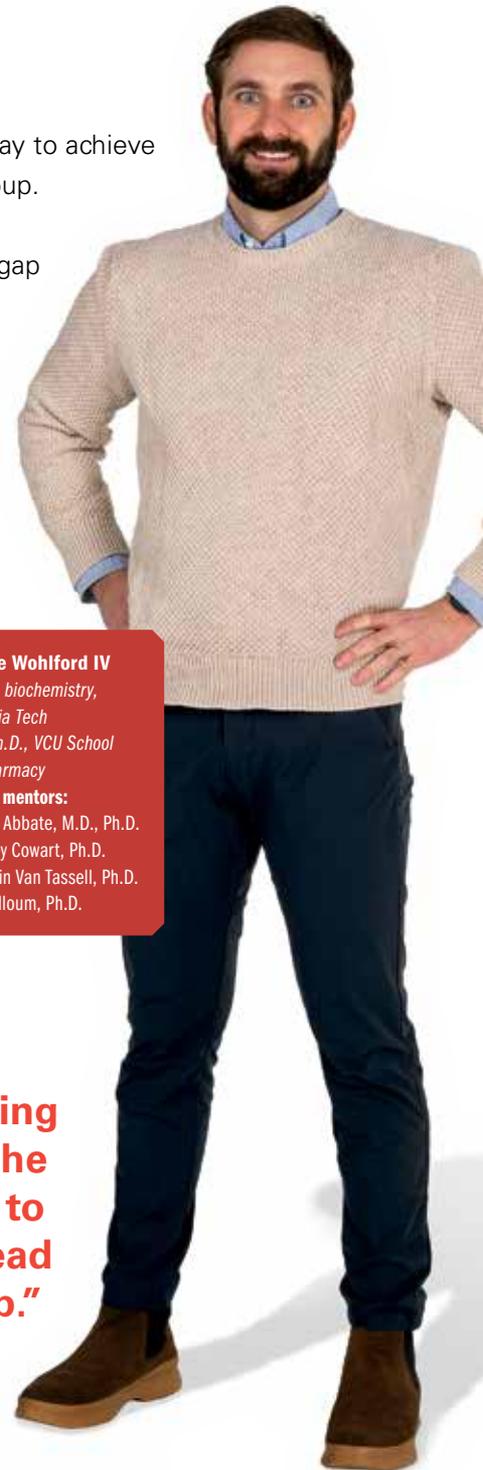
There’s an ongoing clinical trial, REDHART2, that Dr. Abbate’s and Dr. Van Tassell’s team are doing, and they have very generously offered samples collected at the baseline prior to treatment. We’re looking at those baseline samples using new high-throughput technologies to see if we can identify markers that predict who is going to improve, or who has improvement in prognostic surrogate markers, within the confines of the clinical trial. Also, I will continue classes to learn how to analyze the data generated. That’s the skill set I’m going to continue to grow.

What impact will your work have on patient care?

It comes back to precision medicine. Say we find a biomarker that can tell us one patient is going to respond well to a certain treatment and then a different patient is not going to respond well to the treatment. Maybe we only target those patients that are expected to respond well to the treatment. Maybe there’s a panel of lipids that we could look for, and we can say, based on the patient’s panel results, here is the treatment regimen that they are most likely to respond favorably to. That is the more distant future goal of how this research might be implemented into practice.

What advice or message do you have for future T32 fellowship applicants?

Everyone on this T32 grant has asked: “How can I help you?” Everyone here wants you to succeed. ❤️



George Wohlford IV
- B.A in biochemistry, Virginia Tech
- Pharm.D., VCU School of Pharmacy
Faculty mentors:
Antonio Abbate, M.D., Ph.D.
L. Ashley Cowart, Ph.D.
Benjamin Van Tassell, Ph.D.
Fadi Salloum, Ph.D.

“The T32 is allowing me to develop the skills necessary to independently lead a research group.”



Pauley Heart Center at 15

Initial gift spurs research, clinical care and education initiatives

The Pauley Family Foundation’s philanthropic support has elevated Pauley Heart Center to a preeminent national leader for saving and improving the lives of people with heart disease. The journey began with a transformational \$5 million gift from the Pauley family in 2006. Building on a history of innovation and care that started in Richmond more than 50 years ago, Pauley Heart Center has seen tremendous growth, innovation and achievement in its 15 years. Here are some milestones in key areas of impact.

RESEARCH

The initial Pauley gift helped fund a variety of new research initiatives at the center, including the creation of a Clinical and Translational Research Program in Cardiology, led by Dr. Antonio Abbate, M.D., Ph.D., the James C. Roberts Esq. Professor in Cardiology, who also served as vice chairman of the Division of Cardiology from 2014 to 2020. Abbate now leads the Kenneth and Dianne Wright Center for Clinical and Translational Research as the medical director, Clinical Research Unit.

Abbate and his multidisciplinary team have conducted several preclinical research studies at Pauley Heart Center and at the Division of Pulmonary Disease and Critical Care Medicine’s Victoria W. Johnson Center for Obstructive Pulmonary Disease Research, examining the role of inflammation in heart disease. This has led to pilot clinical studies funded by the



National Institutes of Health and the American Heart Association aimed at identifying novel anti-inflammatory therapies for patients with acute myocardial infarction, or heart failure.

Additionally, the Pauley family contributed \$25,000 a year to the center’s annual fund. By leveraging gifts from many generous donors to this fund, the center launched the Pauley Pilot Grants program in 2017. Aimed at early-stage research to advance heart health, the pilot grants program has fostered nine funded grants and secured more than \$1 million of major research grants from the American Heart Association and other external funding organizations.

Pauley Heart Center has seen tremendous growth, innovation and achievement in its 15 years.

CLINICAL CARE

In 2012, Stan and Dorothy Pauley announced another \$5 million gift to support recruitment efforts for the center’s first director. In addition, the funds supported recruitment of five new research

faculty members, along with startup funds for research staff, lab costs and equipment. The funds also created new research programs in cardiovascular disease prevention, women’s cardiovascular health and congenital heart disease.

Dr. Greg Hundley joined the Pauley Heart Center as inaugural director in 2018. Hundley was the first in the world to use magnetic resonance imaging to demonstrate that MRI stress testing can identify those at risk for a heart attack. To provide Hundley with the appropriate equipment to continue his high-caliber research, the Pauley family committed \$4 million in 2018 to build an 8,000-square-foot cardiovascular imaging suite with state-of-the-art echocardiography and MRI technology. In the clinic’s first year, the number of cardiac MRIs performed at the Pauley Heart Center increased by 95%, preventing at least 87 heart attacks.

In 2019, the Pauley Family Foundation pledged \$5 million to support the research of new comprehensive treatments for patients with cardiac arrhythmia. The gift will help VCU Health researchers perfect their diagnoses. The gift also created the Pauley Cardiology Equipment Fund, so the center can acquire clinical and noninvasive blood pressure monitoring equipment. This equipment will enable Dr. Kenneth Ellenbogen and his team to perform a range of new cardiac procedures. The gift will also fund the creation of the Pauley Heart Center hybrid catheterization suite and will outfit an outpatient cardiac imaging facility, including an advanced cardiac MRI

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Stanley Pauley (center), flanked by VCU Health faculty and leadership at the VCU Health Pauley Heart Center ribbon-cutting

scanner and a CT scanner that will expand the clinic's nonionizing radiation imaging capabilities. In addition, the Pauley family's generosity inspired VCU Health's 2020 purchase and expansion of an outpatient clinic facility at Stony Point, increasing the center's care and treatment services.

EDUCATION

Committed to academic excellence, Pauley ramped up educational offerings in 2020.

Pauley's weekly one-hour educational programs for physicians, nurses and other medical professionals allow attendees to interactively learn from rising, prominent and internationally recognized experts in the field of cardiology, including VCU Health's own experts. Attendees may earn continuing medical education credits, maintenance of certification points or both.

A new undergraduate program called REACH (Research Experience in All-Around Cardiac Health) provides students with research experience in one of four fields of health-related science, all pertaining to the diagnosis and treatment of cardiological diseases. A collaboration between Pauley and the College of William & Mary, REACH is a two-year pilot program pairing faculty guidance from Pauley with didactic training at the Williamsburg, Virginia, liberal arts school. Similar to REACH, the Pauley Heart Center Undergraduate Research Program, a 10-week research fellowship program funded through an institutional award by the American Heart Association, welcomes students from any school to experience research at VCU. The program pairs students with faculty members and provides them with experience to conduct translational, multidisciplinary cardiovascular research.

Also new, the T32 training program in partnership with the NIH allows early-stage investigators to learn the techniques used to perform and advance multidisciplinary translational cardiovascular research. The program within the Division of Cardiology at VCU Health is designed for postdoctoral physician-scientists and Ph.Ds. [Read about the T32 program in our cover story.]

All of these efforts are helping further position Pauley as a leader in the field.

Excerpted from "The Pauley Family: Celebration of Impact and Service." You can read more about Pauley Heart Center's 15-year evolution in past issues of The Beat by visiting vcuhealth.org/pauleythebeat. ❤️

In memoriam

Stanley Pauley, philanthropist and namesake of the VCU Health Pauley Heart Center

Virginia Commonwealth University and the Richmond community lost a philanthropist and a visionary. Stanley Frank Pauley, a longtime champion of advancing engineering and medical innovations, passed away on Nov. 20, 2020. Pauley was an integral part of the VCU and VCU Health community for decades. His legacy lives on through his family and the profound impact of the Pauley Family Foundation, which he and his wife, Dorothy, founded in 2011.

"We are eternally grateful for the deep commitment of Stan Pauley and his family, whose many contributions have forever shaped our institution," said Michael Rao, Ph.D., president of VCU and VCU Health System. "The Pauleys are tireless in their advocacy for innovative cardiovascular research, treatment and care, and they have ensured that VCU Health Pauley Heart Center is equipped with the necessary tools to save and significantly improve lives."

The Pauley family has committed more than \$28 million in private philanthropy to VCU, placing them among the most generous benefactors in the institution's history. In 2005, the family made an indelible mark on VCU's medical campus with a gift that named VCU Health Pauley Heart Center.

The philanthropic connection between Pauley and VCU Health's cardiology practice began in 2006. A longtime patient of Dr. Kenneth Ellenbogen, director of clinical cardiac electrophysiology and pacing at VCU Health, Pauley was impressed by the staff and the treatment he received. He directed his family foundation to make a \$5 million gift to VCU Health's heart center to support a variety of new research initiatives and comprehensive educational programs. In recognition of the gift, the center was named VCU Health Pauley Heart Center, a designation that placed it among only a few named major heart centers in the country.

"Stan Pauley is synonymous with VCU Health Pauley Heart Center. Over the last few years, we have grown into one of the top heart centers in the country because of Stan," said Ellenbogen. "To me, he is a true VIP. I am thankful to have known Stan and his wonderful family."

The gift began a long history of supporting VCU Health and advancing its world-class cardiology program.

In 2012, the Pauley Family Foundation gave another \$5 million to recruit the heart center's first director and five new research faculty members, along with startup funds for research staff, lab costs and equipment. The funds also created new research programs in cardiovascular disease prevention, women's cardiovascular health and congenital heart disease.

Cardio-oncology expert Dr. Greg Hundley was brought on as Pauley's inaugural director in 2018. To provide Hundley with the appropriate equipment to continue his high-caliber research on preventive heart care for patients at the center undergoing chemotherapy, the Pauley family committed \$4 million to build an 8,000-square-foot cardiovascular imaging suite with echocardiography and MRI technology.

"These are phenomenal tools that allow us to see what's going on inside the body, look at the effects of new therapies we're testing and see if the therapies are working," Hundley said.

"The generosity of the Pauley family in establishing VCU Health Pauley Heart Center created a tremendous momentum that has enabled us to attract the best and brightest clinicians and researchers in the country to treat heart failure and heart disease," added Dr. Peter Buckley, dean of the VCU School of Medicine and executive vice president for medical affairs at VCU Health System.

In 2020, the Pauley Family Foundation pledged another \$5 million to support the research of comprehensive treatments for patients with cardiac arrhythmia. This gift will help VCU Health researchers perfect their diagnoses and deliver innovative therapies to treat the condition in an effective, cost-efficient manner. ❤️

"Stan Pauley is synonymous with VCU Health Pauley Heart Center."

AHA, VCU Health celebrate 50 years of partnership

Fifty years ago, a single research grant signaled the aligning missions of VCU Health and the American Heart Association. Today, their collective efforts include not only patient-focused care and research, but also community education and outreach initiatives across the commonwealth.

AHA plays a critical role in how we treat cardiovascular disease, said Dr. Greg Hundley, director of Pauley Heart Center. It does this in several ways.

AHA publishes medical guidelines on cardiovascular and stroke topics. Setting the standards for patient care, these guidelines have a meticulous review and approval process. The organization also creates opportunities for the sharing and dissemination of research through publications and an annual meeting of cardiovascular providers and scientists to network and learn about the discoveries of peer scientists around the world.

AHA also provides competitive research funding for projects in the field of cardiovascular health. In 1971, the Medical College of Virginia received its first grant from AHA to study how to more successfully reinnervate (restore nerve supply to) the cardiac transplant. Since then, the association has funded 282 research projects at VCU Health, totaling \$23.5 million.

As Pauley Heart Center's second-largest source of funding for cardiovascular disease and stroke research next to the federal government, AHA has jump-started the careers of many investigators. Fadi Salloum, Ph.D., associate chair for research in the Department of Internal Medicine and professor in the Division of Cardiology,



VCU Health employees go the extra mile to support the American Heart Association.

received the AHA Young Investigator Award in 2005 and AHA's National Scientist Development Grant in 2010. "I am forever grateful for the opportunities and support that AHA has given me," he said.

Similarly, an AHA early-career development grant in 2010 gave Antonio Abbate, M.D., Ph.D., critical funding at a pivotal point in his career. "I was conducting studies on blocking Interleukin-1 in heart attacks at Pauley Heart Center," said Abbate, professor of cardiology in the Department of Internal Medicine. "The grant allowed me to plan and conduct the clinical trials."

Each fall, AHA-funded researchers discuss their work and its impact on the community at the annual Innovation of the Heart reception co-hosted by Pauley Heart Center and AHA. The 2020 virtual event also introduced participants in the new AHA-funded summer undergraduate research fellowship. The program pairs students with faculty sponsors for 10

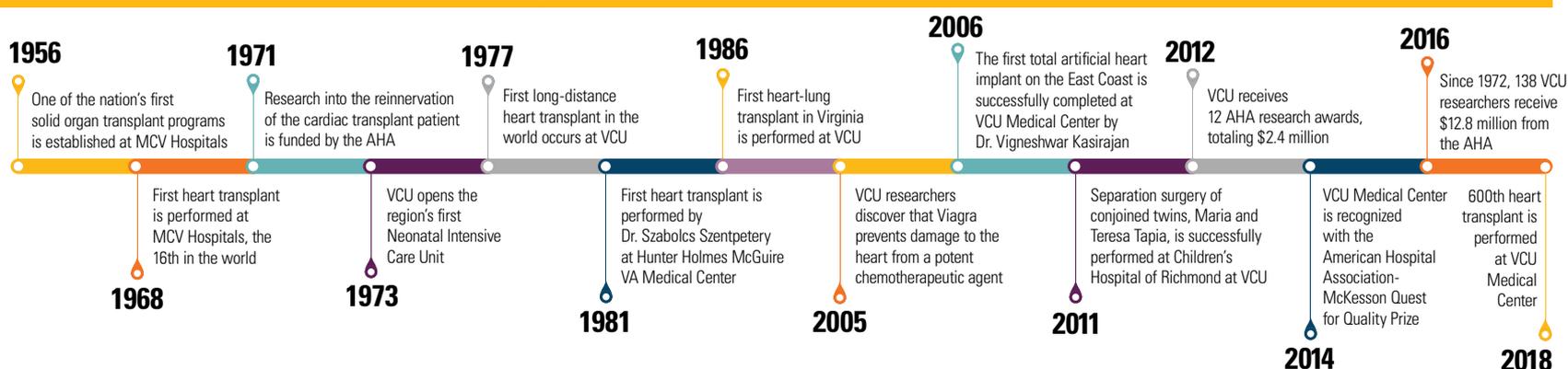
weeks, providing them with experience to conduct translational, multidisciplinary cardiovascular research.

In 2019, more than 500 walkers from VCU and VCU Health participated in the annual Heart Walk at VCU's Monroe Park, raising over \$50,000 for AHA and helping to educate the community about preventing cardiovascular disease and stroke. While the Heart Walk is perhaps the most visible example of the VCU Health and AHA partnership, the organizations have also joined forces on community initiatives spanning from CPR training to blood pressure management.

The partnership with VCU Health has enabled AHA to go into schools and underserved communities to teach hands-only CPR. And an initiative between AHA, VCU School of Pharmacy and VCU Health Hub provides blood pressure cuffs and other equipment to help individuals self-monitor their blood pressure from home. VCU Health is also a sponsor of AHA's Go Red for Women awareness campaign. Heart disease is the No. 1 killer of women, and the campaign makes women aware of their greatest health threat, their risks and what they can do to reduce them. Future projects between VCU Health and AHA will focus on issues that include nutrition insecurity.

"Every year we look at what we've been able to accomplish together and dream about what we'll do in the years to come," said Michelle Nostheide, executive director of American Heart Association Richmond. "And because we've had this long-standing relationship, it allows us to dream a little bit, rather than worrying about funding year to year. We're able to look out into the future and ask, where do we want to make our impact?" ❤️

American Heart Association and VCU Health through the years





A beacon of excellence

CICU earns prestigious award from nurses association

Congratulations to VCU Medical Center's Coronary Intensive Care Unit for earning its second Beacon Award for Excellence (silver level) from the American Association of Critical Care Nurses. Beacon award hospital units show exemplary practice in providing the best care for patients and families every day.

"Beacon awardees set the standard for excellence in patient care environments by collecting and using evidence-based information to improve patient outcomes, patient and staff satisfaction, and credibility with consumers," explained Jennifer Graham Powers, M.S.N., RN, CCRN, nurse manager of Pauley Heart Center's Coronary Intensive Care Unit. "We are so proud of the exceptional work that the Coronary Intensive Care Unit (CICU) staff does on a

daily basis and the incredible support and relationships with our interprofessional team."

VCU Medical Center is tied for the second most Beacon awards in the nation. Of the 661 Beacon units in the U.S., 14 are in Richmond, 12 of which are at VCU Medical Center.

A unit of Pauley Heart Center, the 14-bed coronary intensive care unit is a regional referral center for patients with chest pain. The unit has a post-cardiac arrest hypothermia program and provides extracorporeal membrane oxygenation to individuals in the direst conditions. On average, patients stay in the CICU for three and a half days, though individuals awaiting heart transplants may be in the unit for weeks or months. "The Beacon award is a national recognition of the care that is provided by the unit," Powers noted.

"If someone were evaluating where they wanted care for their loved one or for themselves, this award tells them our CICU would provide them the best evidence-based care that they can find."

The Beacon award also indicates a positive and supportive work environment with greater collaboration, higher morale and lower turnover — traits that help recruitment. The recognition would not have been possible without the CICU's exceptional nursing staff, Powers said. "I tell the nurses that we could not have gotten the Beacon award without you, because you are the ones making the outcomes what they are." The CICU received the Beacon award in 2020 and may reapply in three years. ❤️



The gold standard

VCU Medical Center redesignated as a Magnet® hospital for fourth consecutive time, thanks to exceptional nurses

Recognized for exceptional patient care and excellence in nursing practice, VCU Medical Center has been redesignated as a Magnet hospital by the American Nurses Credentialing Center. The Magnet Recognition Program is the highest national credential for nursing programs and is considered a gold standard.

According to ANCC, VCU Medical Center demonstrates high-quality and patient-centered care through transformational leadership, structural empowerment and exemplary professional practice. The medical center was specifically noted for its strategic initiative to reduce workplace violence and improve safety for patients and team members and the success of its Commission on Collegiate Nursing Education-accredited Nurse Residency Program to transition new graduate registered nurses, particularly with

a 100% retention rate during the COVID-19 pandemic.

Applying for Magnet designation requires a rigorous application process that takes months to complete and highlights significant workplace achievements. Detailed in the application were numerous contributions of Pauley Heart Society nurses. They included:

- **Hands-only cardiopulmonary resuscitation:** Michelle Gossip, M.S.N., RN, CCRN, volunteers to provide and coordinate the lifesaving skill of hands-only cardiopulmonary resuscitation. As a result, more than 8,000 community individuals have been educated over the past four years (Heart Center Division).
- **Use of evidence-based practice to revise an existing practice:** During their Nurse Residency Program, clinical nurses Jessica Davidson, A.D.N., RN, and Carson Nichols, A.D.N., RN, identified a relevant clinical question to perform an evidence-based practice

project, which was translated into practice.

The result was a revised nursing practice and improved medication workflow (Coronary Intensive Care Unit, Cardiac Surgery Intensive Care Unit, Cardiology Progressive Care Unit).

- **Implementation of professional specialty standards:** Nurse clinician Linda Currie, M.S.N., ACNS-BC, CCRN-CSC, assembled key interprofessional stakeholders to assess verticalization therapy as an option to mobilize critically ill patients. The interprofessional task force developed the Progression of Verticalization Therapy, and at the time of the Magnet application, 13 patients (two in the CSICU and 11 in the CICU) had been ambulated using verticalization therapy (Care Unit, Wound Care Team). ❤️



Salloum receives competitive NHLBI grant

Fadi Salloum, Ph.D., the Natalie N. and John R. Congdon Sr. Endowed Chair at Pauley Heart Center, has received an R35 Emerging Investigator Award from the National Heart, Lung and Blood Institute (NHLBI), part of the National Institutes of Health. Salloum's award was one of fewer than 10 EIA NHLBI grants awarded nationwide this year.

The seven-year, \$5.4 million award will fund Salloum's research program, Managing Cardiac Toxicities of Cancer Therapy. The goal of the research is to better understand the basis of cardiotoxicity — damage to the heart caused by chemotherapy drugs — and inform the discovery of new methods of prevention for chemotherapy-induced heart failure.

"The overall focus in our lab is on heart failure, which may be attributed to several causes, including myocardial infarction, or heart attack; FDA-approved chemotherapeutic drugs with known cardiotoxic effects; and genetic diseases such as muscular dystrophy that cause severe heart failure," said Salloum, a

professor and associate chair for research in the Department of Internal Medicine at VCU School of Medicine.

The flexibility offered by the grant will allow Salloum, also a professor in the Department of Physiology and Biophysics, to pursue all of these areas of research under a single funding mechanism, thus providing more time for mentoring trainees in the lab.

The Emerging Investigator Award is a program designed to promote scientific productivity and innovation by providing continuous support for researchers who are primary investigators on at least two active NHLBI R01-equivalent awards and whose research record demonstrates progressive promise. Salloum has been conducting research on topics such as how hydrogen sulfide protects the heart and how a pregnancy hormone called relaxin could have protective effects on the heart.

Notably, NIH says the Emerging Investigator Award is designed to fund a program, rather than just a project, which will allow Salloum the freedom and flexibility to explore groundbreaking research and explore new directions. It will also open up new opportunities for collaboration,



Fadi Salloum, Ph.D.

according to Pauley Heart Center Director Dr. Greg Hundley, especially in conjunction with the center's established clinical cardiology program, and has the potential to move the field forward and make an impact on the cardiovascular health of cancer survivors. ❤️

Pauley adds educational programs for APPs

Once again taking the lead among peer institutions, Pauley has expanded its educational programs to include monthly conferences specifically tailored to advanced practice providers. Each one-hour session allows attendees to hear from VCU Health experts in the field of cardiology and interactively learn about the latest techniques, innovations and research.

"Medicine is continually evolving," explained Kristyn G. Rudisill, PA-C, VCU Health lead advanced practice provider for heart failure and outpatient cardiology. "Our goal is the continued education of our team members and providers in the community to optimize patient outcomes."

Conferences are free, and participants do not have to register ahead of time. Additionally, selected conferences allow attendees to earn continuing medical education (CME) credits as well as continuing education (CE) credits.

Pauley Heart Center has more than 40 APPs working in the areas of cardiology, cardiothoracic surgery and vascular surgery. After surveying their interests, Rudisill developed a schedule of monthly conferences and opened them to APPs throughout the commonwealth. The programming kicked off last December when Dr. Hem Bhardwaj, associate professor/director, noninvasive cardiology, inpatient cardiology and safety/quality, spoke on the topic of echocardiography interpretation. "We had 50 providers that tuned in, which we thought was fantastic for our first conference," Rudisill said. "I think we'll see growth in participation."

Upcoming topics include transcatheter aortic valve replacement, hypertrophic cardiomyopathy, cardiorenal syndrome and diuretic resistance, and pulmonary hypertension.

Sharing Pauley's expertise with the community is another goal of the APP conferences. "This platform helps demonstrate the knowledge and expertise

of our physicians and encourages the practice of evidence-based medicine," Rudisill said.

The APP conferences support Pauley's mission to provide education and training to cardiology students and professionals. ❤️

Continuing education at Pauley Heart Center

Learn from the experts! Join us for our free, interactive seminars:

- Cardiovascular Magnetic Resonance Conference | Wednesdays at 7:30 a.m. | CME and MOC offered
- Cardiology Grand Rounds | Thursdays at 7:30 a.m. | CME and MOC offered
- Heart Failure Conference | Select Fridays at 7:30 a.m. | CME offered
- Advanced Practice Provider Conference | Monthly, rotating Tuesdays at 4 p.m. and Wednesdays at noon | CME offered

Contact shannon.winston@vcuhealth.org to sign up for our conference email list.

Alumnus spotlight: Carolyn Burns, M.D., FACC

In Virginia’s capital, state legislators are frequently faced with issues pertaining to medicine. When they are, there isn’t always a doctor “in the house” (or the Senate) to weigh in, nor is it guaranteed that public representatives know how to phone a friend from the medical community. For this reason, “It’s critical for us to have a relationship with the legislators,” said Carolyn Burns, M.D., FACC, “so that we can help to inform and serve as a voice for our patients’ interests.”

Burns is one of many physicians who willingly go beyond their career goals to put in the extra time and effort it takes to remain socially active — including the more than 2,100 members of the Richmond Academy of Medicine (RAM), for which she is president. For instance, amid the COVID-19 pandemic and under her leadership, RAM created a resource center, including webinars, programs and information to assist overwhelmed doctors. Another RAM program, Loving Lunches RVA, delivered 16,500 meals to 27 medical facilities while contributing more than \$100,000 to the local food service industry.

In addition to her role as a noninvasive cardiologist with Virginia Cardiovascular Specialists, she and a panel of around

“I realized just how important it is for us to be able to advocate for things that would make the practice of medicine better — not just for us, but for our patients.”

60 committee members also serve as on-call doctors for state representatives, actively patrolling legislation for issues they feel physicians should weigh in on.

“As a group, we go down and try to help our legislators understand things related to medicine,” Burns said. “My state senator knows who I am because I’ve been in front of her. If she has a question, she’s going to reach out and ask, ‘Hey, what do you think about this? I don’t know anything about it.’” It’s these types of open conversations that RAM was designed around more than 200 years ago. VCU faculty and physicians have always been a big part of the Richmond-based organization, she adds.

For her, the idea of public service was not innate, Burns admitted, but “I realized just how important it is for us to be able to



Dr. Carolyn Burns

advocate for things that would make the practice of medicine better — not just for

us, but for our patients.” Her leadership role with RAM is also a natural extension of her attitude about shared responsibilities, starting with physicians and patients. As a cardiologist with advanced training in lipidology who specializes in the management of elevated cholesterol and reduction of cardiovascular risk, “We should always start by talking about healthy lifestyle.”

After earning her undergraduate degree at Youngstown State University and attending medical school and residency at the University of Pittsburgh School of Medicine, Burns completed her fellowship in cardiology at VCU. Along the way, she said she came to realize, “I think there is a need for people to take some personal responsibility in their health.” Similarly, she feels there is a need for physicians to take

responsibility for issues of public health and safety. “In Richmond, the doctors were the ones who said, ‘Kids need to go outside and get fresh air,’ and also that we all need access to good, safe drinking water,” Burns pointed out.

In this same way, she believes that physicians have a moral responsibility to address issues like gun safety. She contributed an op-ed column on the subject to Richmond Times-Dispatch. “We know and see firsthand what gun violence does to our patients, families and communities,” she wrote. And when the National Rifle Association suggested that doctors stay in their lanes, she responded by pointing to seat belts, tobacco and alcohol — all of which were seen by physicians as issues of public health and safety.

Ultimately, whether it is raising awareness or helping to advance legislation, it’s rarely about finding an immediate solution, Burns pointed out. Instead, “You need debate and consideration to get it right,” she said. “It’s a message for all of us to make change happen.” ❤️

Welcome!

New faculty



Dr. Arturo "AJ"
Cardounel

Arturo "AJ" Cardounel, M.D., Ph.D.

If home is where the heart is, then Dr. Arturo "AJ" Cardounel is the ideal specialist in the ideal place.

In joining VCU Health, Cardounel has returned to Richmond after completing his cardiothoracic surgery residency at the esteemed University of Pittsburgh Medical Center. The local terrain is very familiar: He earned his undergraduate degree at the University of Richmond and his Ph.D. from VCU's Department of Physiology and Biophysics.

His doctoral and medical degrees reflect a passion for both science and patient care.

"VCU Health has a rich history as a center for innovation in surgery," Cardounel said. "This philosophy of innovation, combined with world-class clinical resources, provides the ideal environment to deliver care to our patients."

Cardounel's cardiovascular research aligns with his clinical interest in heart failure. He explores the molecular mechanisms involved in right ventricular dysfunction, which often develops following the more heavily researched left-sided failure. (While the left ventricle may not pump enough blood around the body, the right ventricle may be too weak to pump enough blood to the lungs.) Contributing factors can include high blood pressure in the lungs, pulmonary embolism, sepsis and acute lung injury.

Cardounel is particularly interested, though, in how those efforts improve outcomes in cardiac care. "I bring a deep devotion to translational research and the bench-to-bedside approach for discovery," he said, referring to the process of taking research results from the laboratory (bench)

into the clinic for the direct benefit of patients.

Katherine M. "Kate" Klein, M.D.

Dr. Katherine M. "Kate" Klein knows the prospect of heart surgery is scary.



Dr. Katherine M.
"Kate" Klein

That's why, beyond being a skilled and knowledgeable surgeon, she believes it's important to get to know the patient as a person, hear their concerns and walk them through treatment options — which may, or may not, include surgery.

"Getting to care for a patient in some of their sickest, scariest moments is a real honor, and it is one of the greatest privileges to help alleviate concerns or make a real change in someone's life," she said. "Together, we are going to review your options, decide how to best move forward and go over the details of the decision."

As a cardiothoracic surgeon, she chose one of the most demanding surgical specialties, requiring a lifelong dedication to "be the best you can be." Klein is part of a growing team at VCU Health focused on treating those with advanced heart failure, which is diagnosed in more than 670,000 people each year. In addition to HF, she treats an array of other cardiac conditions, including blocked vessels or abnormal valves. She specializes in advanced therapies, including heart transplantation and implanting assistive mechanical devices that pump blood to the rest of the body.

The field of cardiac surgery has advanced significantly in recent years, allowing for fewer open procedures or those requiring a cardiopulmonary bypass (where a machine takes over heart and lung function), in lieu of minimally invasive techniques performed with small instruments and cameras, and resulting in faster recovery and less scarring. Clinical studies are also advancing HF therapy with more medications and smaller implantable devices.

"Our operations demand perfection and the willingness to learn, grow and be humble that you get to have the best job in the world," she said. "The most rewarding part of my job is getting to know the patients and their families and seeing how our treatment plan has changed their lives."

Klein joined VCU Health after completing a fellowship in cardiothoracic surgery at VCU Medical Center, where she also spent six months at Hunter Holmes McGuire VA Medical Center treating veterans and four months at Children's National Medical Center in Washington, D.C.



Dr. Hamang Patel

Hamang Patel, M.D., FACC

Dr. Hamang Patel is a cardiologist specializing in heart failure and heart transplant care.

He helps patients who have weak hearts decrease their symptoms with medication and surgery.

As part of Pauley Heart Center's heart failure team, Patel collaborates closely with adult and pediatric cardiologists, cardiothoracic surgeons, transplant specialists and vascular surgeons, as well as interventional cardiologists and imaging specialists. As a team, they provide individualized care for patients of all ages, with every type of heart disease — from kids with congenital defects to adults requiring aortic surgery or transplants.

"It's an exceptional team at VCU Health, where we have experts in every aspect of heart care working together to provide the most comprehensive, individualized treatment plan," Patel said. "Here, there is never a doubt that you or your family will receive the best care possible."

Patel joins VCU Health from Ochsner Medical Center in New Orleans. His primary clinical focus is with VCU Health's heart failure and heart transplantation programs, working with team members from Hume-Lee Transplant and Pauley Heart centers.

Transplantation, he notes, is a last-resort option that brings with it a lifelong journey for both the patient and their family, along with physical, emotional and personal challenges. "Our field is always built on the fact that weak hearts should be optimized as much as possible, as transplantation is a gift, and we can't just take a heart off the shelf," Patel said.

The passion Patel has for cardiology goes beyond bedside care. He has participated in more than 60 clinical trials over the course of his career related to congestive heart failure, cardiac transplantation, and pulmonary hypertension. Advances in medications, which require such studies, can ultimately improve a patient's quality of life, reduce the need for surgery and improve surgical

New leadership

Virginia Commonwealth University and VCU Health System recently welcomed Dr. Arthur L. Kellermann as senior vice president for health sciences at VCU and CEO of VCU Health System.

Kellermann is leading Virginia's most comprehensive academic health sciences enterprise, which consists of the schools of Medicine, Nursing, Pharmacy and Dentistry; the College of Health Professions; VCU Health System hospitals and outpatient clinics, including VCU Medical Center, which has consistently been ranked the top hospital in the region and serves as the state's largest safety net hospital; the physician practice plan; the Massey Cancer Center; and Children's Hospital of Richmond at VCU.

Most recently, Kellermann served seven years as dean of the F. Edward Hébert School of Medicine at the Uniformed Services University of the Health Sciences in Bethesda, Maryland, which is the leadership academy for military health and the U.S. Public Health Service.

"I am incredibly honored to be serving the Richmond community and the commonwealth at VCU," Kellermann said. "I spent most of my career in public hospitals working with the community and have always been interested in positions that allow me to make a difference. As I start my journey with VCU, it feels like I have come home to an institution that understands that all people matter."

"Art Kellermann is the ideal combination of one of the nation's top medical academics, as well as an astute and effective administrator.



Dr. Art Kellermann

Photo: Jay Paul/Richmond Magazine

He has a strong record of being an effective leader who can articulate an inspiring vision and put it into action, executing the policies and practices that benefit the institution and its people — patients, students, team members," said Michael Rao, Ph.D., president of VCU and VCU Health System.

Kellermann is board certified in the fields of internal and emergency medicine. He is a fellow of the American College of Emergency Physicians and the American College of Physicians. ❤️

outcomes. Patel has also served as lead author and contributed to numerous publications in the American Journal of Cardiology, Journal of the CardioMetabolic Syndrome and other respected medical journals.



Sangeeta Shah, M.D., FACC, FASE

Congenital heart defects develop before birth and are consequently most often associated with children. But

Dr. Sangeeta Shah

the treatment of congenital heart disease doesn't stop at the end of childhood.

Adults born with structural defects in the heart must continue to manage their health throughout their lives. And that's where Dr. Sangeeta Shah has dedicated her medical training and career: caring for grown-ups who have previously undergone childhood heart surgery or other cardiac procedures and those born with syndromes

associated with heart defects. "Currently, there are more adults than there are children with congenital heart disease because of the amazing care by pediatric surgeons and cardiologists," said Shah, the newest director of Pauley's Adult Congenital Heart Disease program, established in 2020. "It is important for patients to learn about their heart history so they can be an advocate for themselves."

It is equally important, she notes, that ACHD patients see a provider specifically trained to care for those over age 18 with the condition (which is rare, and diagnosed in fewer than 200,000 infants or fetuses each year). Shah's vision is to create the first accredited congenital heart disease program in Virginia. Such designation, accredited through the Adult Congenital Heart Association, can enhance the standard of care to meet the needs of the growing ACHD population in this relatively new medical field.

Pauley Heart Center is Virginia's top-ranked hospital for cardiology and heart

care and offers the full spectrum of clinical cardiac services, from consultation to treatment of the most complex conditions, among them congenital heart disease. Through its affiliation with VCU Health, Pauley offers the most advanced levels of clinical expertise required to care for ACHD patients, including imaging, stress testing, electrophysiology, cardiac catheterization, an advanced heart failure program, and surgical procedures.

Shah comes to Richmond via New Orleans, where she led the adult congenital heart disease program at Ochsner Medical Center. On top of her cardiovascular imaging specialty in cardiology, she has additional training in ACHD care from MedStar Washington Hospital Center – Children's National. Shah has authored several articles for ACHD, lobbied on Capitol Hill to advocate for the appropriate care of adults living with the condition, and was featured as one of New Orleans Magazine's best doctors. She is a fellow of the American College of Cardiology and American Society of Echocardiography. ❤️

How the 'follow' button led to vital surgery

If recent history has taught us anything about social media, it might be that in the wrong hands, it can be detrimental. To Craig Simon, it proved that in the right hands and with the right intent, it can also save lives.

At 67 years old, Simon is managing partner at Irvine, Calif.-based Berger Kahn, where he serves the insurance sector as a top-rated West Coast attorney. As an avid snow skier and occasional scuba diver, he lives an active lifestyle. But in 2020, he said, "I could have been doing either activity, and it might have been 'lights out.'"

After learning that his brother-in-law was facing a major cardiovascular issue, Simon's wife urged him to get a test for plaque in his chest area. When that test showed a possible problem, he located a top cardiologist, Subbarao Mylavarapu, M.D., at Hoag Hospital in Newport Beach, Calif. When a noninvasive exam uncovered the possibility of coronary artery disease, he was immediately scheduled for an angiogram and possible stent-based revascularization. But that procedure was cut short after just 20 minutes.

"Dr. Mylavarapu looked at me and said, 'What you need is above my pay grade.'" Simon was referred to Lorenzo Azzalini, M.D., Ph.D., MSc, associate professor of medicine at the VCU School of Medicine and Pauley Heart Center's director of complex coronary interventions.



Dr. Lorenzo Azzalini

Just months prior to Mylavarapu's referral, Azzalini joined VCU Health, where he came to extend his work in complex percutaneous coronary intervention. After receiving his medical degree from the University of Padua in Italy, then continuing his education in Canada and Spain, Azzalini served as co-director of the Chronic Total Occlusion Program at San Raffaele Hospital in Milan, Italy, then spent a year at Mt. Sinai Hospital in New York to further refine his skills in complex coronary interventions. In search of an academic setting, he then spotted VCU Health.



Craig Simon

At just 39 years old, as a self-described "eclectic professional," Azzalini was destined to bring a fresh take to the field, including by use of social media. Recognizing what he sees as an opportunity for connecting students with practice and an open forum for information sharing, he has over 3,000 Twitter followers and more than 5,000 connections on LinkedIn. One of them is Mylavarapu.

"The whole thing was an incredible experience, from beginning to end."

Meanwhile, "When your doctor tells you that there's only one or two people in the country who can do something, I figured when I called one of those two people they would be backed up, disinterested or hard to access," Simon said.

What he discovered was just the opposite.

After Mylavarapu contacted Azzalini, Simon was headed to VCU.

With a chronic total occlusion of the right artery, two additional blockages and a moderate narrowing of the left main artery, Azzalini's team was able to provide Simon with a less invasive solution to relieve his symptoms, involving a less-intensive surgery.

Along with Azzalini and his assistant, a team of five saw him through the procedure, all of whom he now calls by

name. "These people stood out to me," he said. "I have vivid memories of everyone introducing themselves, welcoming me and then carefully explaining their roles ... They seemed right at home, had smiling faces and made it all feel so routine."

The morning after discharge, he woke a bit dizzy. Reaching for his phone, he sent Azzalini a text message, then was floored by what happened next.

"A lot of physicians, I think their attitudes are, 'I do the heavy lifting, but I don't do the pots and pans,' so to speak," he suggested. "It's like, 'If you wake up and have dizziness, call my staff.' But that's not how this guy works or how he thinks ... He was available to me every minute post-surgery," he said. "You can't charge or get paid for these things. Guys like this, they're giving away slices of their lives for free."

He added, "Dr. Azzalini and the whole university health system are on the cutting edge of technology ... It's fascinating to see how there is an entire community of younger physicians who are sharing information online, questioning one another and discussing how to accomplish things. Watching it just inspires you to want to contribute to their efforts."

Following the procedure, Azzalini's team provided Simon with a video overview, including voiceover chronicling each step. "It wasn't a mystery," he said. "They didn't say, 'Oh it went well and don't worry, we took care of it.' They showed me the whole thing ... These were standout people and an outstanding team. The whole thing was an incredible experience, from beginning to end. It was like a well-orchestrated ballet."

As a result of his experience, Simon and his wife, Joan, felt compelled to make a gift of \$10,000, establishing the Complex Coronary Interventions Fund. The endowment supports research, education and clinical work in interventional cardiology at Pauley.

"It was very early in my interactions with Dr. Azzalini when I decided I was going to do this," Simon explained. "I think it was his responsiveness and connectedness ... You just felt like you were with someone who was on your side." ❤️



How Michele survived a heart attack

Something alarming was going on inside Michele Williams-Poole's body. In summer 2019, the grandmother of five began feeling intense pressure and pain in her chest. Simple tasks, such as walking upstairs, left her out of breath. One fateful morning she walked into work and her body, finally, screamed.

"My left side hurt, my chest was pounding, my heart was racing, and I felt nauseated and dizzy," she recalled.

Within an hour, the scary symptoms subsided. Though shaken, Williams-Poole downplayed the episode's severity and brushed it off as indigestion — a decision she now regrets. "I should have gone straight to the emergency room," she said.

At the urging of friends and family, she made an appointment to see Dr. Kenneth Ellenbogen, chair in cardiology and director of clinical cardiac electrophysiology and pacing at VCU Health Pauley Heart Center. Ellenbogen administered a series of cardiac tests, and Williams-Poole later returned for MRI testing. The test revealed a myocardial infarction, indicating she had experienced a mild heart attack within the previous weeks.

"It was only a matter of time before I had a massive heart attack."

A cardiac catheterization revealed a considerable blockage. Dr. Barbara Lawson, an interventional cardiologist at Pauley, inserted cardiac stents to improve blood flow to Williams-Poole's heart.

"It was only a matter of time before I had a massive heart attack," said Williams-Poole, 57, who works in VCU Medical Center's Department of Radiology. "If I hadn't had the MRI that Dr. Ellenbogen ordered, the blockage would have progressed, and I probably would not be here today."

With a triple-threat of pre-existing conditions — diabetes, high blood pressure and high cholesterol — Poole was predisposed to heart disease. Decades before she walked through the doors of Pauley, Virginia's only nationally ranked heart



Michele Williams-Poole

program, doctors had warned she shared the same risk factors that caused her mother to have a heart attack at age 52. They urged diet and lifestyle modifications. "But I just didn't pay attention," said Williams-Poole.

Poor eating habits and a sedentary lifestyle are known contributors to coronary artery disease. Williams-Poole believes her heart attack was preventable. "I did this to myself," she said matter-of-factly. "I was devastated, but I knew this was something that I had a hand in personally causing."

Surviving a heart attack was the wake-up call she needed to implement the diet and lifestyle changes recommended to her all those years before. Changes that started with eating better. "Not a diet," she emphasized. Her approach? Eating more healthy foods and vegetables, eating less fried food and sweet stuff. Cutting back on pasta and starches. Reducing portion sizes. Giving up her three-times-daily soda habit (a tough one).

And exercising as much as possible, including taking daily walks.

No surprise, her multipronged strategy — including medical treatment and lifestyle

changes — has paid off. "I can walk upstairs now and not lose my breath like I did before," she said. "I've lost weight. My blood pressure's good. I feel a lot better."

Williams-Poole's new normal means she has more time to spend with her husband, daughters and granddaughters. The chance for a longer life is a gift she gives her family — and herself — every day.

It's been nearly two years since her procedure. During that time, she continues taking her medication and follows up with her care team for yearly checkups. "I have yearly checkups that I'll have to do. Basically, if I have a problem before then, they said just to call."

According to Williams-Poole, those calls always result in excellent treatment that extends beyond her initial procedure. "The care is phenomenal," she said. "I can contact them through the portal. If I need something, it's done. Dr. Barbara Lawson did an excellent job with the procedure I had, and I had a follow-up with her, and she was just great."

"I am grateful we identified Michele's blockage when we did," Ellenbogen said. "She has an inspiring story to tell." 

Faculty spotlight:

Nimesh Patel

Dr. Nimesh Patel joined the VCU Health System faculty in 2016 and is the only left ventricular assist device, heart failure and transplant cardiology specialist within a 60-mile radius of VCU Health Community Memorial Hospital in South Hill, Virginia, where he spends most of his time seeing patients. VCU Health CMH provides health services for the south-central region of Virginia and northern North Carolina. Additionally, Patel is assistant professor of internal medicine/ cardiology at VCU and is routinely involved in educating medical students, internal medicine residents and cardiology fellows.

What interested you about the field of cardiology?

Since med school, I was very fascinated with the pathophysiology of heart disease. I felt that cardiology would be the most rewarding field and one where I could make the most impact on the patient's life.

What kinds of patients do you see in South Hill?

South Hill is a remote, underserved area, and unfortunately people wait until they have a major problem to seek medical care instead of taking advantage of preventive care. Much of the population is more than 65 years old, and these individuals have multiple risk factors for heart disease, like high blood pressure and diabetes. We are the only hospital catering to them. I treat their atrial fibrillation, I do cardioversion transesophageal echocardiography, and I also do heart catheterization. If they need a procedure that's not available at CMH, I'm the bridge who helps them get that done at VCU. I'm very proud that I'm able to help these people.

Can you tell me about a memorable patient?

A 65-year-old patient had been golfing and came in with abdominal pain. They were treating him for gallbladder disease and planning for surgery. Suddenly, he started developing chest pain. We did an EKG and found out that he had acute myocardial infarction. We had to fly him to VCU for



Dr. Nimesh Patel

a heart catheterization. He came back after he was discharged and was very appreciative that I diagnosed it early.

“I really wanted to work in a small town where I could practice everything.”

Tell me how you came to work for VCU Health.

In 2016, VCU was looking for cardiologists to work in underserved areas. In South Hill, to get proper heart health care, patients had to drive at least 60 miles. I'm a heart failure specialist, and I have multiple certifications, so I really wanted a program where I could use all my skills. I can practice noninvasive cardiology at CMH and also do heart failure and transplant medicine at VCU. Plus, being in an academic health care system, I get to keep teaching fellows at VCU. I really wanted to work in a small town where I could practice everything. I could take care of the cardiology basics like echocardiography, and managing atrial fibrillation and hypertension, but also get the opportunity to manage patients with advanced heart failure and transplant.

What's the most challenging thing about serving patients in South Hill?

The challenging part is lack of awareness of their disease and lack of social support. Many of the population are poor and cannot afford blood thinners for atrial fibrillation. So, we have a program here where we provide free medications to them. But the treatment of heart disease is not just medication. You have to have a holistic approach, where you focus on the mental and social aspect. Also, a lot of people have

depression, which is one of the reasons for worsening heart failure or heart disease. We make sure they have help for that, too.

How about the rewards?

The reward is the appreciation from the patients, especially when you see a patient whom you advised to do this, take these medications, exercise, etc., and they're doing well. They come back, and they're so happy. That's the most rewarding part — when you feel you have really impacted their life. It's so gratifying. I'll give you an example: One of my patients was obese and had atrial fibrillation. When he came to see me, his heart was very weak. I told him nobody's going to do any procedure on you because the weight is the barrier. I told him, the only way we can help you out is for you take your health in your hands and start exercising. So, I helped him out with cardiac rehab, and that's when he started learning. In the next few months, he lost 40 pounds. Then I did a transesophageal echocardiogram and shocked his atrial fibrillation into normal rhythm. Since then, he's been doing very well.

What does “a good day at the office” look like for you?

What makes a good day at CMH is the patients. The way they treat you. And the work environment. We have a great team. That's what satisfies me.

Do you have a personal philosophy?

Spread kindness and help everyone, and that will bring happiness to you.

What do you do for fun?

I enjoy gardening and watching Bollywood movies, and I love playing cricket. ❤️

COVID-19 and the heart: What we've learned



Patients with COVID-19 usually present with symptoms of fever, fatigue, cough and respiratory failure. However, COVID-19 can contribute to cardiovascular complications, including myocardial injury, dysfunction, inflammation, ischemia and arrhythmias. Infected individuals with pre-existing cardiovascular disease have a higher risk of death.

"There are multiple mechanisms by which COVID-19 can affect the cardiovascular system," said Antonio Abbate, M.D., Ph.D., the James C. Roberts Esq. Professor of Cardiology in the VCU Health Department of Internal Medicine. Abbate has guided the cardiology team at Pauley Heart Center through the COVID-19 crisis and has kept the VCU Health community up to date on disease prevalence, pathophysiology treatments and early long-term consequences for patients.

Speaking to a group of care providers recently, Abbate and Ajay Pillai, M.D., chief fellow of cardiovascular medicine, reviewed the latest research on COVID-19 and the heart, emphasizing that emerging

treatments in COVID-19 focus on supportive measures, oxygenation, antiviral therapy and blunting of the immune response.

"This disease is particularly tricky because it's heterogeneous in its manifestation," said Abbate, who researches the role of inflammation in heart disease. "Part of this is how the virus interacts with the immune-inflammatory response. ... There's not going to be a one-size-fits-all approach to treatment."

Highlights from their presentation:

- Myocardial injury in COVID-19 patients is associated with more severe illnesses and a worsened prognosis. Patients with cardiac injury are more likely to be non-white, 70+ years of age and have baseline comorbidities such as hypertension, diabetes, coronary disease, heart failure, kidney disease or atrial fibrillation.
- COVID-19 may exacerbate pre-existing cardiovascular disease and is associated with increased mortality in these patients. Studies have shown that among patients with chronic pre-existing heart failure, nearly 1 in 4 died in the hospital.

- Mechanisms of myocardial injury are varied, interrelated and demand attention to detail. These mechanisms include acute coronary syndrome, viral myocarditis, arrhythmia and thromboembolism.
- Supportive measures should focus on increasing myocardial and systemic oxygen delivery, optimizing hemodynamics/cardiac output and reducing drivers of myocardial demand. Proven treatments include supplemental oxygen, beta blockers and fever reducers.
- Thrombosis is common in patients admitted to the hospital and in particular in the intensive care units, and the data behind systemic anticoagulation is evolving. The prothrombotic state is driven by factors that include immobility, systemic inflammation, biomediated hypercoagulability, bacterial co-infection, and indwelling catheters and devices. Anticoagulation therapy should be considered in all patients.
- Acute myocarditis is rare and occurred in less than 5% of patients studied.

For the latest news about COVID-19, visit vcuhealth.org/covid-19. ❤️

New giving society supports Pauley Heart Center

To celebrate the generosity of our supporters, the Pauley Heart Center Advisory Board has created the Pauley Society.

Members of the Pauley Society are dedicated supporters of Pauley Heart Center who believe in our mission to save and improve the lives of people with heart disease and commit to providing an annual donation of \$1,000 or more to any Pauley Heart fund. Their donations provide Pauley Heart Center director Dr. Greg Hundley and his team with a reliable base of support to ensure they can continue their excellence in patient care, research and education.

"Coalescing individuals around a common goal, we can defeat heart disease," said Roger Boevé, advisory board chair.

Even in these difficult times, Pauley's world-renowned doctors and researchers are working to expand their research portfolio, recruit additional researchers and provide cardiovascular care to those that other



regional hospitals could not manage. "Without the help of our consortium of patients, faculty, staff, donors and friends, it would be impossible to continue our important work," Boevé said.

Pauley Society funds will supplement the grant money Pauley Heart Center receives from the National Institutes of Health.

"Pauley Society gifts leverage other dollars," explained advisory board member Ken Blaisdell. "Your \$1,000 (or more) to the Pauley Heart Center can be used to augment National Institutes of Health research grants,

From left: Dr. Greg Hundley, Anne Boevé, Carrie Mills and Roger Boevé

for example, as discretionary funds to cover expenses not directly covered by them. It can make a measurable difference."

NIH grants come with restrictions. Pauley Society donations allow Hundley the freedom of movement to deploy those dollars where they can best be used.

Members of the Pauley Society will have their names listed in The Beat and on the Pauley Heart Center website. Additionally, they will be invited to intimate events hosted by an advisory board member and have access to exclusive webinars featuring faculty and other consortium members.

"The Pauley Society will be a compelling force to elevate the Pauley Heart Center to the top tier of heart centers in the country," Boevé said.

To learn more, contact Brenna Monk at brenna.monk@vcuhealth.org. ❤️



Letter from the director

Much has changed in the world since our previous issue of The Beat went to press. While we continue to work and operate under COVID-19 mitigation protocols, the available vaccines have brought much-needed hope that soon we'll be back to our pre-pandemic routines.

There is nothing routine, of course, about providing cardiac care that saves and improves lives. Our dedicated faculty and staff have continued to work, thrive and innovate under the most difficult and challenging circumstances. I am immensely proud of all that we have achieved.

A theme of this issue is training. Pauley's training programs ensure that students and professionals in all stages of their careers are informed about best practices and the latest techniques and technologies. I'm excited that each week, more and more individuals are taking advantage of our interactive seminars to learn from rising, prominent and internationally recognized experts in the field of cardiology, including our own talented faculty.

Some of these same Pauley faculty are working as mentors alongside college students. The Pauley Heart Center Undergraduate Research Program, a 10-week research fellowship program funded by the American Heart Association, is one of two Pauley programs in which students learn firsthand about careers in cardiac medicine. AHA continues to be an excellent partner to Pauley, as you'll read on Page 6.

We also introduce two early-career investigators gaining valuable training in performing multidisciplinary translational research. The competitive T32 fellowship program wouldn't be possible without faculty mentors like Dr. Antonio Abbate, whose research into inflammation is informing our understanding of how COVID-19 affects the heart.

Dr. Abbate and his colleague Dr. Ajay Pillai shared their latest COVID-19 research at the VCU Health Division of Cardiology's Sixth Annual Heart Health in Women Symposium, held online in February during Heart Health Week. With registrants representing three countries, nine states and the District of Columbia, we more than doubled our usual attendance. Fantastic!

In these pages we also introduce new faculty, including Dr. Sangeeta Shah, whose vision to create the first accredited adult congenital heart disease program in Virginia will enable a continuum of care for pediatric to adult patients. Under Dr. Shah's leadership, Pauley will be able to meet the unique needs of patients in this growing medical field and keep their care close to home.

I hope you will enjoy reading this issue of The Beat.

Sincerely yours,
Dr. Greg Hundley



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HOW TO MAKE A GIFT

Gifts to VCU Health Pauley Heart Center allow us to invest resources in transforming patient care, education and research. For more information on how to honor a loved one or a caregiver, please contact Carrie Mills at (804) 828-0453 or carrie.r.mills@vcuhealth.org.

