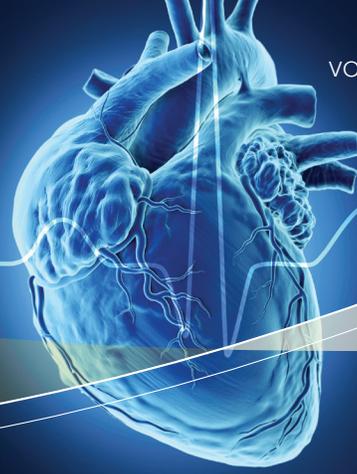


CARDIOVASCULAR
Physician



THE
Aorta

From Stem to Stern

Integrating Surgical,
Interventional, and
Medical Techniques

Bucking the Trend, Building Relationships



The success of this program, and of all of our aortic programs, depends on multidisciplinary care teams who represent a cross-section of specialties and disciplines. These inter-physician relationships have been forged throughout the Network and are a critical part of the MHVI structure. (You can read more about our aortic surgery capabilities on page 4 and the Complex Aortic Center on page 6.)

On page 12, we tell the tale of three members of the Miller Family—all patients of Scott Katzen, MD, who, during a single year, referred each to MHVI Cardiac Surgeon Christian Shults, MD. Dr. Katzen, an interventional cardiologist with MedStar Health Cardiology Associates in Annapolis, Md., is part of the network of 200 cardiovascular physicians and Advanced Practice Providers who provide critical continuity of care for patients and represent strong relationships established over the course of many years.

RELATIONSHIPS TO SECURE THE FUTURE

Perhaps the most crucial relationships to the future of cardiovascular care are those that enrich our graduate medical education programs. We understand that a robust academic environment helps ensure “bright sunlight” throughout MHVI. A teaching program means that we have multiple sets of eyes on any given issue and a well-informed interdisciplinary faculty who understand their impact on the next generation of cardiovascular specialists.

As the largest cardiovascular training program in the region, our continued success depends on an interconnected framework of clinical care, research, institutional affiliations, students, faculty, and patients.

During my own training, I had the pleasure of working with physicians like David Pearle, MD, who has long practiced an admirable blend of high-tech and high-touch medicine. We pay tribute to Dr. Pearle on page 15, and extend our gratitude as he winds down his long and distinguished career. Our patients need us to put down our tablets, look them in the eye, and pay close attention to what they tell us.

Symbiotic relationships that rely on open communication and honest deliberation don’t happen overnight. We have put in the hard work of relationship building for years, and we will continue to do so as we move forward into the next decade. It is the result of these relationships, old and new, that ultimately elevate care delivery.

Strong and enduring relationships require trust, transparency, and compromise—attributes that can sometimes be elusive. Eschewing the spirit of divisiveness that can interrupt effective care, MedStar Heart & Vascular Institute continues to build critical relationships with our patients, our referring physicians, and the community. We have created effective partnerships across specialties in order to foster optimal cardiovascular care.

We believe that efforts of clinicians, researchers, medical educators, and students are intricately woven together, each dependent upon the other. Of course, the confidence of patients and families is the linchpin in the multilayered framework of care.

LIVING RELATIONSHIPS

Our institutional relationships are nurtured by common interests—and a desire to “keep ahead of the curve.” These are “living” relationships that continue to adapt to change.

Our alliance with the Cleveland Clinic and our growing relationship with the National Heart, Blood and Lung Institute (NHBLI) have resulted in the implementation of shared care protocols across the MHVI Network, improved digital communications, and the development of innovative technology. You can read about the new devices created by Toby Rogers, MD, whose talents we share with NHBLI, in the story on a new percutaneous mitral valve procedure on page 11.

Our transcatheter aortic valve replacement (TAVR) program demonstrates the strong collaborative relationships we have developed with cardiologists throughout the region. They are more than a referral base—they are our partners in cardiovascular care delivery to their patients. And now a new TAVR nurse navigator is helping to build stronger relationships with patients and their families, as she helps them navigate through the often complex system of care.

THE Aorta

The aorta, the body's largest artery, receives all of the heart's output under high pressure, often making repairs challenging. Treating aortic disease requires the careful integration of surgical, interventional, and medical techniques to achieve the best outcome possible for patients. MedStar Heart & Vascular Institute physicians are expertly trained, highly experienced, and maintain high volumes in the most complex cases.

We treat our patients with:

- A multidisciplinary approach with cardiologists, cardiac surgeons, and vascular surgeons
- Surgical, endovascular, and medical management approaches customized to each patient

On the pages that follow, we share the details of approaches, devices, and the latest research used by our physicians to treat aortic disease.



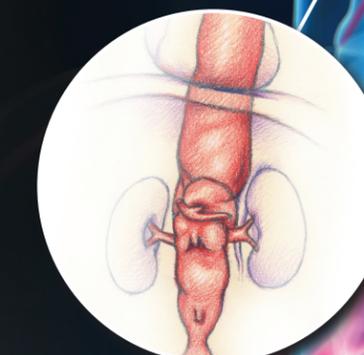
AORTIC ROOT / VALVE



ASCENDING AORTA



DESCENDING THORACIC AORTA



THORACOABDOMINAL AORTA



AORTIC ARCH

Aortic Pathology

We offer expertise for emergent, urgent, and elective evaluation and treatment of all forms of aortic pathology, including:

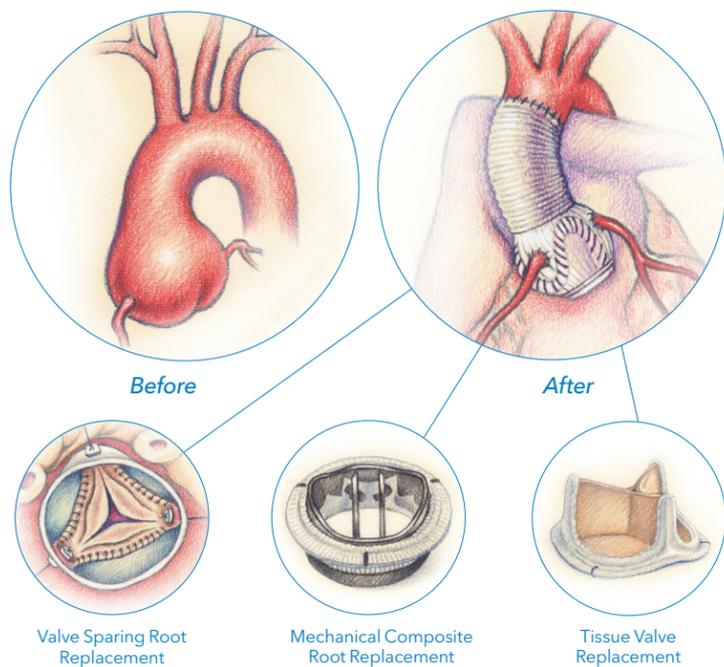
- Aneurysms
- Dissection
- Infection/Endocarditis
- Pseudoaneurysm
- Penetrating Aortic Ulcer
- Valve Stenosis
- Valve Insufficiency

Patients benefit from a wide range of treatment options, including those depicted on these pages.



Cardiac Surgeon Christian Shults, MD

For more information or to discuss a patient, please contact one of our cardiac surgeons: Christian Shults, MD, in Washington, D.C. at 202-877-7464; or Ricardo Quarrie, MD, in Baltimore, Md., at 410-554-6550.

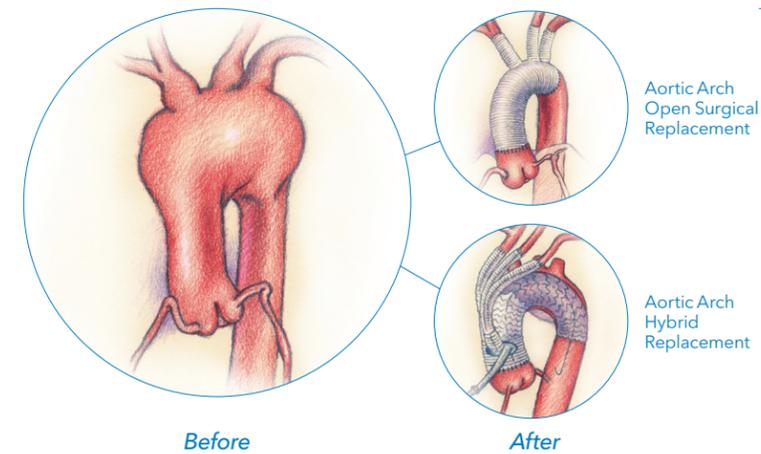


AORTIC VALVE

- Aortic valve replacement
 - Transcatheter valve replacement
 - Mechanical or tissue
- Aortic valve repair

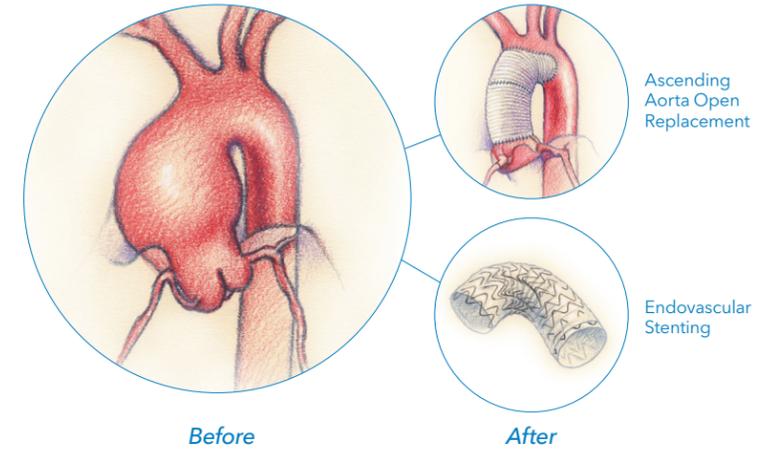
AORTIC ROOT

- Aortic root replacement
 - Valve sparing root replacement
 - + Resects aneurysm
 - + Keeps native valve
 - + Delays or avoids valve degeneration and need for anti-coagulation
 - Traditional root replacement (Bentall procedure)
 - + Introduces new generation of mechanical and tissue valves (recognized center for INSPIRIS and On-X valves)
 - + Uses minimally invasive incisions



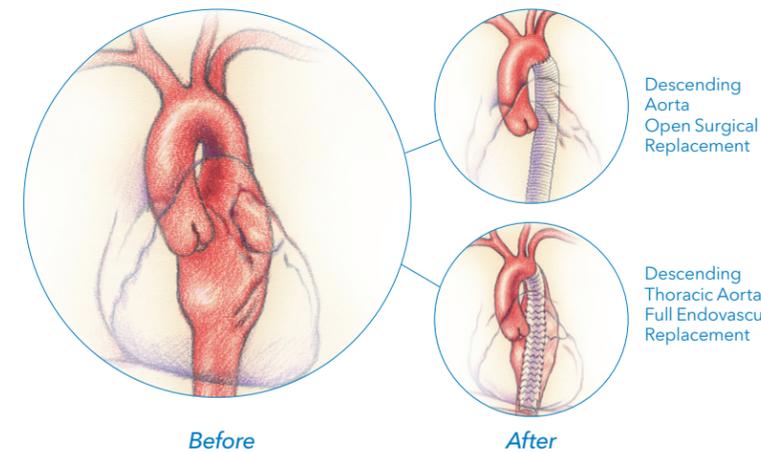
AORTIC ARCH

- Open replacement
- Hybrid replacement
 - Standard TEVAR
 - GORE® single branch (TBE)
- Coming soon: trials for total endovascular replacement



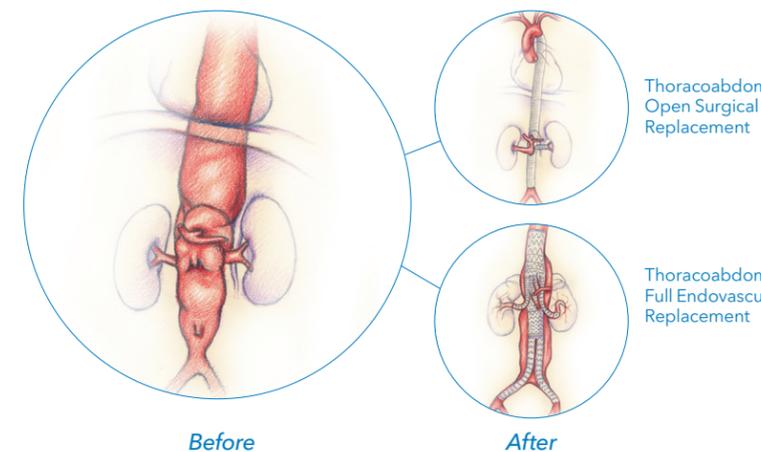
ASCENDING AORTA

- Ascending open replacement
- Ascending endovascular replacement
- Hybrid repair



DESCENDING THORACIC AORTA

- Open surgical replacement
- GORE TBE single branch endovascular stent
- Hybrid replacement



THORACOABDOMINAL AORTA

- Open thoracoabdominal
- Endovascular replacement
- GORE Tambe Trial for complete endovascular repair of thoracoabdominal aneurysm

Complex Aortic Center

New Devices, New Leadership, New Era

When Edward Woo, MD, took over the leadership of MedStar Heart & Vascular Institute's (MHVI) vascular surgery department in 2013, he and Cardiac Surgeon Christian Shults, MD, created the Complex Aortic Center—a unique multidisciplinary approach to the diagnosis and treatment of a host of aortic pathologies. From the outset, the program brought together the talents of both cardiac and vascular surgeons.



Edward Woo, MD

The program has since grown to encompass a team of surgeons trained to perform the growing number of endo-vascular approaches that feature unique technology and techniques, including hybrid procedures that combine open and minimally invasive procedures.

Dr. Woo has recently recruited a national star to serve alongside Dr. Shults. "While I will still be actively involved, Dr. Javairiah Fatima will now co-direct the Complex Aortic Center," says Dr. Woo.

Javairiah Fatima, MD, who joined the team in fall 2019, comes to MHVI from the University of Florida College of Medicine, where she was an assistant professor of vascular surgery and endovascular therapy.

"Dr. Fatima has a stellar reputation and a unique set of skills," Dr. Woo notes. "She enhances an already strong program with capabilities not available elsewhere in the region."

"The aortic disease program at MHVI is excellent, and I'm delighted to join the team," Dr. Fatima says. "The complexities of the aortic anatomy require the skills of both vascular and cardiac surgeons. We bring different approaches, knowledge, and skills to the table that are critical to the treatment of aortic disease."

DISTINGUISHED CLINICAL RESEARCH

In addition to her clinical excellence, Dr. Fatima brings exceptional clinical research expertise.

"Endovascular surgery is still evolving, and continued research is critical to develop devices and cutting-edge technology that can treat the aorta in its entirety with this minimally invasive approach," Dr. Fatima says. "I have served as principal investigator for a number of aortic clinical trials geared towards this goal."

Dr. Fatima is one of just a handful of vascular surgeons, and the only female vascular surgeon in the country, who has an approved Investigational Device Exemption (IDE) to study the use of fenestrated endovascular repair of aortic aneurysms in the thoracoabdominal aorta, as well as aneurysms secondary to aortic dissections.

This research joins a number of ongoing investigations at MHVI using innovative technology for endovascular treatment of aortic pathology.

Dr. Shults serves as principal investigator for the Relay Pro® FDA Phase II clinical trial assessing the safety and efficacy of a new aortic stent system for repair of acute complicated Type B thoracic aortic dissections. The study is underway at 22 sites across the country.

"We are also studying the efficacy of the GORE® TAG® Thoracic Branch Endoprosthesis in treating lesions of the aortic arch and descending thoracic aorta," Dr. Shults adds.

There are many other devices in the pipeline, and the aortic program is uniquely positioned to implement and evaluate these new technologies, broadening the scope of patients treated with endovascular procedures.



(l to r) Complex Aortic Center Co-Directors Christian Shults, MD, and Javairiah Fatima, MD

MHVI is a 24/7 referral center for emergent, urgent, and elective evaluation and treatment of complex aortic disease. Our helicopter and ground transport systems provide expedited access to care, regardless of patient location. We accept all transfers.

LIFETIME OF INDIVIDUALIZED CARE

"At MHVI, we are pushing boundaries of technology and using it to treat very complex disorders," Dr. Shults notes. "Because we are a regional referral center, we tend to see the more critically ill patients with complex dissections or transections."

In these kinds of emergency, practiced hands are crucial—as is speed of diagnosis and treatment. To expedite these cases, members of the aortic program team are on call 24/7, supported by online image sharing. Patients can be transferred by air or ground by MedSTAR Transport from hospitals across the region.

No matter the patient's clinical issue, treatment decision-making frequently means a discussion between cardiac and vascular surgeon.

"It's all about looking at individual patients and determining their best option. We consider age, anatomy, disease location, and extent of disease, and take the least invasive approach possible," says Dr. Shults.

When surgery is the best treatment option, vascular and cardiac surgeons will often work together in the OR, or will operate in sequence, as sometimes a patient's treatment requires both endovascular and open surgical procedures.

"Aortic disease is not a single event. Patients who have had one aneurysm are at risk for another at any point along the aorta," Dr. Shults explains. "They will require life-long surveillance and medical management by an expert team with not just cardiac and vascular surgeons, but nurse practitioners, radiologists, and interventional cardiologists, as well. We are in a lifetime partnership with our patients and their referring cardiologists."

"In order to provide patients the best care possible, I believe a collaborative, multidisciplinary team approach is essential and crucial to success," says Dr. Fatima.

We offer expertise for complex repairs, specializing in minimally invasive and hybrid techniques.

Cases may include:

- Aortic dissections
- Aneurysms
- Occlusions
- Penetrating ulcers
- Intramural hematoma
- Other aortic pathology

To refer a patient and arrange for 24/7 transfer, call: 800-824-6814.

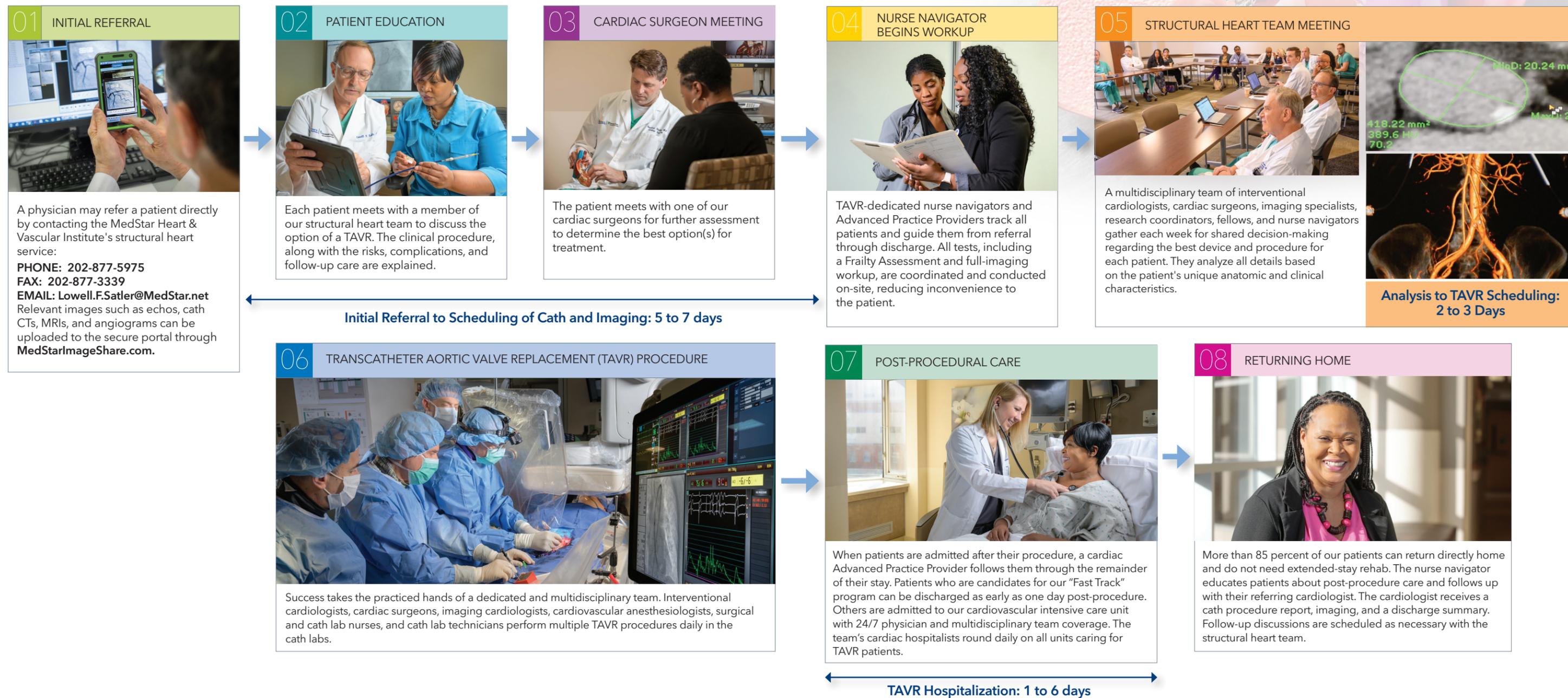
TAVR: CONTINUING TO BREAK GROUND

With more than a half dozen clinical trials under its belt, a record-breaking number of procedures performed, a partnership with the National Heart, Lung and Blood Institute, and a growing multidisciplinary team on board, MHVI is among the nation's premier centers for transcatheter aortic valve replacement (TAVR).

As more patients become viable candidates for the procedure, experience matters. MHVI has been the site for every major clinical trial testing TAVR's efficiency for more than a decade. Specialists perform nearly 500 TAVR procedures each year. In the pages that follow, we share how our robust team of providers work closely with each other, with referring physicians, and with patients, to continue to pioneer new ways to improve processes toward achieving superior outcomes.

TAVR Process Streamlined for Best Outcomes and Patient Satisfaction

Despite the full array of commercial and experimental devices available, and the various techniques we employ, the process in evaluating patients for TAVR must be customized by our team. From evaluation to treatment, the process takes two to three weeks.



TAVR INCREASING USAGE, REFINING TOOLS

INCREASING USAGE ACROSS THE RISK SPECTRUM

MedStar Heart & Vascular Institute has set the standard of care and played a critical role in advancing technology and expanding the use of TAVR for an increasing subset of patients.

This began with participation in the 2007 **PARTNER I study**, which led to the U.S. Food & Drug Administration approval for the application of TAVR in otherwise inoperable patients. In subsequent studies, MHVI played a lead role in testing updated devices and innovative approaches.

The **CoreValve® study** opened the door to TAVR for thousands more patients—those at intermediate risk for morbidity and mortality during open surgery.

In 2018, results of the prospective multicenter **Low Risk TAVR clinical trial**, for which MHVI served as the primary hub, found TAVR to be a valid treatment alternative for patients at low risk of death from open surgery. The FDA approved the use of TAVR for these low-risk surgical patients this year. A separate international study of low-risk patients was conducted at MedStar Union Memorial Hospital.

MHVI is participating in the **EARLY TAVR study** evaluating the use of TAVR compared to surveillance for patients with aortic stenosis who are asymptomatic. Eventually, we will be able to cover any need and any risk level.

REFINING TOOLS

An unusual but often fatal complication of valve-in-valve TAVR is coronary artery obstruction caused by mechanical displacement of the old valve leaflets. The **BASILICA procedure**, developed by MHVI's Toby Rogers, MD, PhD, and a team from the National Heart, Lung, and Blood Institute was created to address this devastating problem. The procedure employs an electrified guidewire to fenestrate the leaflet of the bio-prosthetic aortic valve to allow blood flow into the coronary artery.

In another example, MHVI was one of just four centers in the U.S. to participate in an FDA early feasibility study testing a first-ever **dedicated occluder device for use in transcaval TAVR**, also designed by Dr. Rogers. Transcaval access is a unique alternative approach for patients in whom transfemoral TAVR is infeasible due to small or diseased iliofemoral arteries.

Finally, MHVI is testing the use of the **JenaValve™ System** for patients without aortic stenosis, but in whom the aortic valve is leaking.

For more information about TAVR devices and trials across the region, contact:

Washington, D.C. region:

Lowell Satler, MD
202-877-5975

Director, Coronary Interventions
MedStar Washington Hospital Center
Medical Director
Cardiovascular Training and Educational Center

Baltimore region:

John C. Wang, MD
410-554-2332

Chief, Cardiac Catheterization Laboratory
MedStar Union Memorial Hospital
Scientific Director
Baltimore Cardiovascular Research

The Other Valve

An Innovative Percutaneous Procedure for the Mitral Valve



TMCA | TRANSCATHETER MITRAL CERCLAGE ANNULOPLASTY

Patients with symptomatic severe mitral valve regurgitation are benefitting from an investigational percutaneous procedure to reduce regurgitation, prevent further annular dilation, and diminish symptoms. As of this date, the procedure has been performed successfully in seven patients nationwide.

“Patients with severe, symptomatic mitral valve regurgitation with underlying cardiomyopathy have been difficult to treat before now,” says Toby Rogers, MD, an interventional cardiologist and study director at MHVI. “They can be very symptomatic, with shortness of breath, edema, and frequent hospitalizations. Surgery is rarely beneficial for these patients.”

Called Transcatheter Mitral Cerclage Annuloplasty (TMCA), the procedure involves a new technique and new devices developed at the National Institutes of Health (NIH). An Early Feasibility Study is underway at just three hospitals in the United States, including MHVI.

TMCA is performed under general anesthesia in the cardiac catheterization lab, supported by transesophageal echocardiography. Currently, the procedure is performed through the jugular vein, but researchers are modifying the device to gain access through the femoral vein.

HERE'S HOW THE PROCEDURE IS PERFORMED:

Coronary guidewires and microcatheters navigate through the veins of the heart to create a loop around the leaky mitral valve.

The guidewire is then exchanged for a permanent implant that looks like a shoe-string and incorporates a coronary

protection element. The position of the implant is adjusted so the coronary protection element lies directly over any underlying coronary artery to protect it from compression as the device is tightened.

A wishbone-shaped lock is then advanced over the two limbs of the implant suture and the desired tension is adjusted to reduce the mitral regurgitation guided by echocardiography.

The device exerts compressive force on the mitral annulus, reducing regurgitation and preventing further annular enlargement.

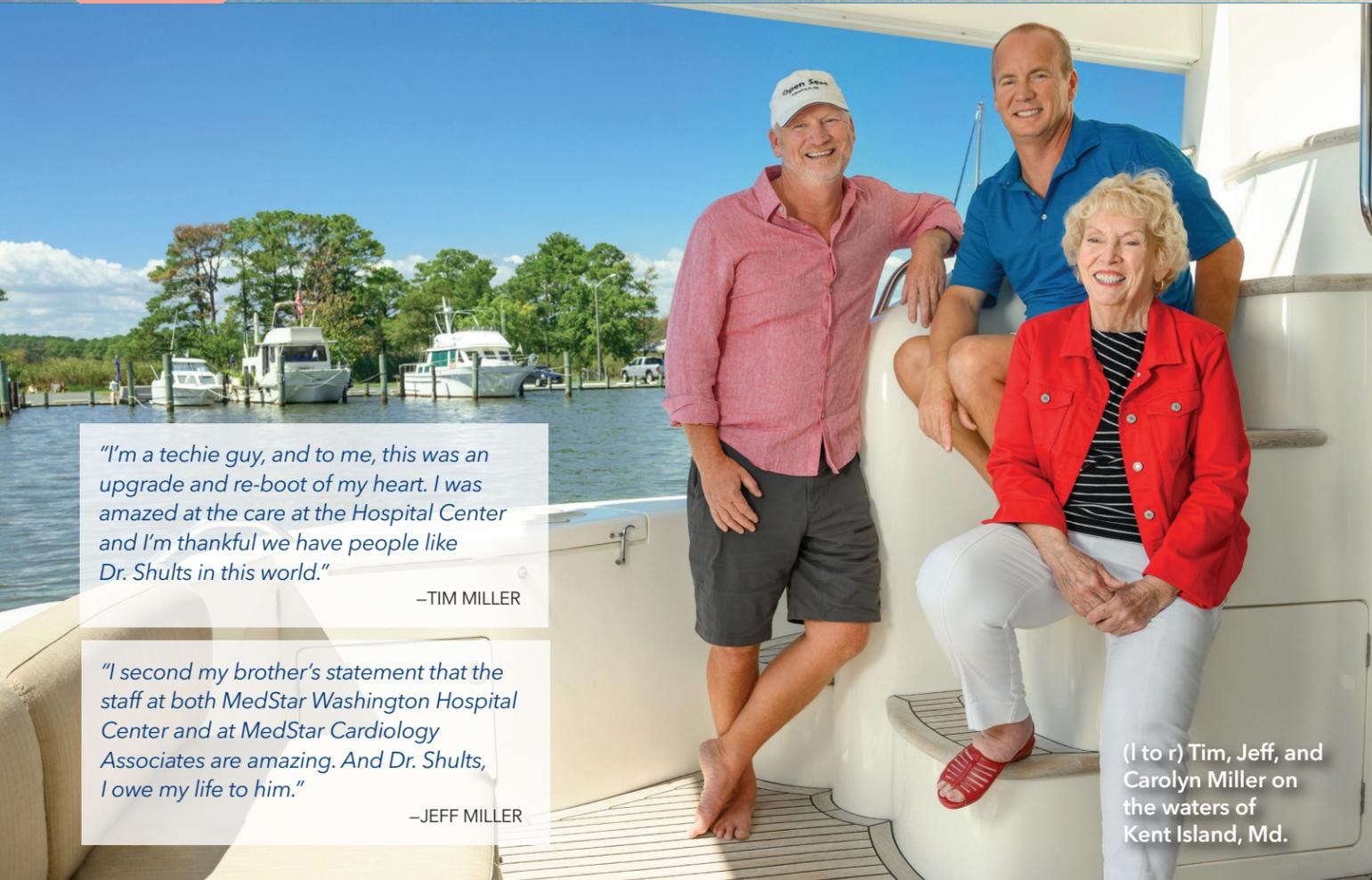
TMCA builds on preliminary success with the MitraClip™ device. In the Cardiovascular Outcomes Assessment of the MitraClip Percutaneous Trial (COAPT) published in 2018, researchers compared outcomes of patients who received the MitraClip with patients who received medical therapy alone. They found a dramatic reduction in the number of hospital admissions for patients who received the MitraClip. However, the MitraClip does not prevent ongoing enlargement of the mitral annulus, so the valve may begin leaking again in the future.

Other techniques to reduce mitral regurgitation are also being studied at MHVI, including percutaneous valve replacements using different transcatheter techniques rather than open heart surgery, Dr. Rogers says. “We’re at the forefront of a new wave of treatments for patients with symptomatic severe mitral regurgitation.”

To learn more about the procedure, please email Toby Rogers, MD, at Toby.Rogers@MedStar.net.

TRANSMURAL CERCLAGE
Fully percutaneous, reversible, right-sided, circumferential mitral annuloplasty system

3 Open-Heart Surgeries. One Family. One System.



"I'm a techie guy, and to me, this was an upgrade and re-boot of my heart. I was amazed at the care at the Hospital Center and I'm thankful we have people like Dr. Shults in this world."

—TIM MILLER

"I second my brother's statement that the staff at both MedStar Washington Hospital Center and at MedStar Cardiology Associates are amazing. And Dr. Shults, I owe my life to him."

—JEFF MILLER

(l to r) Tim, Jeff, and Carolyn Miller on the waters of Kent Island, Md.

The CT scan confirmed Jeff also had a 5.2 cm ascending aortic aneurysm in almost the exact same location as his brother's. His aortic valve, though, was intact and would not need replacement.

Dr. Katzen called Dr. Shults about Jeff's case and surgery was set for Oct. 3, 2018.

CAROLYN MILLER
Tim and Jeff's mother, Carolyn Miller, 81, had a known heart murmur, but over the years it had grown louder. Based on her sons' recommendation and praise of Dr. Katzen, along with his proximity to her home on Kent Island, Md., she sought his care as well. It was on the day of Jeff's surgery that she learned of her severe mitral valve stenosis. Once again, Dr. Katzen made a referral to Dr. Shults.

Carolyn, who in addition to her five children, has 14 grandchildren and 12 great-grandchildren, admitted to experiencing increasing fatigue and lightheadedness. She met with Dr. Shults who told her a new mitral valve would help with that.

With the holidays fast approaching, Carolyn looked ahead to the New Year and set a surgery date of Jan. 16, 2019.

THREE COMPLEX CASES
Dr. Shults is well versed in the surgical treatment of complex aortic, coronary artery, and valvular heart diseases. Even so, open heart surgery on three immediate family members was a first for him.

After reviewing Tim's transthoracic echocardiogram, which showed calcifications and significant aortic stenosis,



Christian Shults, MD

Dr. Shults recommended replacement of his valve as well as an ascending hemiarch repair of his aneurysm. The procedure involved carefully replacing his ascending aorta all the way to the arch with a graft, as well as replacement of his aortic valve with a bovine pericardial valve.

"I do this to get all the aneurysm out," explains Dr. Shults. "This leaves the patient with no aneurysm at all."

The three-hour operation involved deep hypothermia to 28 degrees Celsius, clamping the base of the aorta, and creating circulatory arrest for optimal operating conditions while providing cerebral protection.

Less than two months later, Dr. Shults performed the same graft repair on Jeff. "Jeff's aneurysm was in the exact same spot at Tim's," says Dr. Shults. "But his valve was in good shape and not stenotic at all." Jeff, however, had 80

percent blockage in a diagonal artery, which required bypass. In January, the Miller family was back at the Hospital Center when Dr. Shults replaced Carolyn's mitral valve with a bovine valve. Her severe mitral annular calcification made open surgery treacherous, so he selected a unique approach: he opened her left atrium and surgically placed a transcatheter valve.

Tim, Jeff, and Carolyn are doing well and continue to see Dr. Katzen on a regular basis.

"Dr. Shults told me I would feel better, and he was right," Carolyn says. "I feel 100 times better since my heart surgery."

It's not uncommon for some physicians to treat members of the same family, but surgeons don't typically perform open heart surgery on three, first-degree relatives, all within a six-month time span. That is, however, exactly what Cardiac Surgeon Christian Shults, MD, did after meeting the Miller family.

TIM MILLER
Dr. Shults met Tim Miller after Annapolis-based, MedStar Health Cardiology Associates' Cardiologist Scott Katzen, MD, referred him for surgical care for an ascending aortic aneurysm. Tim, 57, a technical sales leader who works out of Northern Virginia, had been regularly seeing Dr. Katzen after learning about his heart murmur several years earlier.

"I remember thinking, I don't have a heart murmur," Tim recalls when he first learned of his condition. "It's my brother who has always had the heart murmur."

But the murmur was real, related to an aortic aneurysm, and Tim began seeing Dr. Katzen for echocardiograms and regular monitoring. In the spring of 2018, he was told he would need surgery to fix his aneurysm, now 5.2 cm in size, and at risk for rupture or dissection. He also was told he would

need repair or replacement of his aortic valve, secondary to a bicuspid valve.

Tim scheduled surgery with Dr. Shults for Aug. 15, 2018.

JEFF MILLER
No one was more surprised than Jeff Miller, 53, Tim's younger brother, when he learned his elder sibling needed heart surgery.

Jeff had always known about his own heart murmur. The Ellicott City, Md., resident was diagnosed with a bicuspid aortic valve in high school and had yearly check-ups since he was a teenager.

In the summer of 2018, Jeff saw Dr. Katzen, who ordered an echocardiogram. "As soon as the echo was over, Dr. Katzen walked in and told me 'You have the same thing your brother has, let's get a CT scan as soon as possible,'" Jeff recalls.

Strength in the System

The strong relationships between cardiologists and surgeons within the MHVI system contribute to seamless continuity of patient care, before and after their surgeries. Patients are able to access premier surgical services at an MHVI hospital and then receive their ongoing care close to home.

Particularly for the Miller family, who continue to see Dr. Katzen on a regular basis, the collaborative nature of this system provides convenience and connection.

MHVI has more than 35 years of history caring for patients in the Annapolis area. Dr. Katzen is among the 200 cardiovascular physicians and Advanced Practice Providers who practice at MedStar Cardiology Associates' ambulatory sites throughout the mid-Atlantic region.



Scott Katzen, MD
MedStar Health Cardiology Associates
Annapolis, Md.

Shaping the Future of Heart Care

The Region's Largest Cardiovascular Training Program



The MedStar Georgetown University-Washington Hospital Center Cardiovascular Disease Fellowship Program is one of the nation's most respected and competitive. Six general cardiology fellows are accepted each year into the three-year program, for a total of 18 fellows. The program is slated to soon begin growing to a total of 24.

"Cardiology is pretty competitive these days nationwide," says Gaby Weissman, MD, program director. "We get hundreds of applicants each year, and we do very well in 'The Match,' routinely getting many of our top picks." About 10-20 percent of fellows come from the MedStar internal medicine residency programs.

Dr. Weissman explains that the unique advantages of the Fellowship Program—strong clinical programming, internationally renowned faculty, diversity of cases, subspecialty opportunities, and access to the most advanced technology—prepare new cardiologists to care for patients with complex heart conditions, today and in the future.

ELITE CLINICAL PROGRAM AND FACULTY

"Fellows tell us that, first and foremost, we have a very strong clinical program," says Dr. Weissman. "They get exposure to complicated patient cases as well as to cutting-edge cardiovascular medicine."

Ranked among the 50 top cardiology hospitals in the nation by *U.S. News & World Report*, MedStar Washington Hospital Center has a reputation for treating high volumes of complex conditions, providing a rich and rigorous learning environment.

DIVERSE EXPERIENCE

With rotations at four different hospitals, fellows gain experience with a diverse population, as well. "The Hospital Center is our center of gravity," Dr. Weissman explains, "as that is where most cardiology procedures are performed." About two-thirds of fellows' time is spent at the Hospital Center, with the remainder split between MedStar Georgetown University Hospital, the Washington DC Veteran's Affairs Medical Center and Children's National Hospital.

SUBSPECIALTY OPPORTUNITIES

In addition to general cardiology, the program offers subspecialty training. "We have subspecialty fellows in interventional cardiology, advanced heart failure and cardiac transplantation, electrophysiology, and cardiac imaging," Dr. Weissman says. About 60 percent of the program's cardiology fellows pursue subspecialty training, similar to the national norm.

SOPHISTICATED TECHNOLOGY

Providing access to the latest diagnostic and treatment technology is paramount to the Fellowship Program objectives. Fellows are exposed to many progressive protocols and benefit from one of the most advanced settings in the region for cardiac imaging, structural heart intervention, coronary intervention, advanced heart failure, and electrophysiology.

RESEARCH AND INNOVATION

Fellows are actively involved in research and clinical trials and are provided unique publication opportunities. Many take part in some of the 150 ongoing studies within MHVI, along with those at local institutions such as the Washington DC VA Medical Center and the NIH/NHLBI. The alliance with the Cleveland Clinic Sydell and Arnold Miller Family Heart & Vascular Institute offers further access to clinical innovation and research.

LOCATION IN THE NATION'S CAPITAL

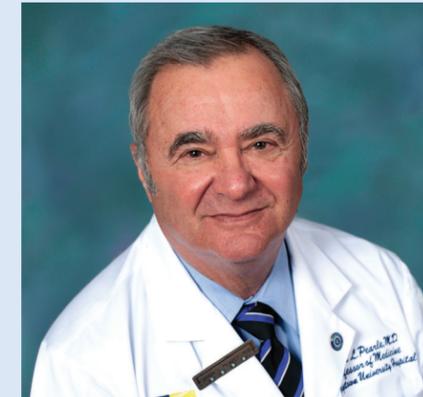
The program's Washington, D.C. location allows fellows to take advantage of the cultural and educational activities nearby, including the opportunity for proximate involvement in healthcare advocacy and policy. For example, fellows have joined the American College of Cardiology in discussions with lawmakers on Capitol Hill about issues related to cardiovascular health.

COMMITMENT TO THE COMMUNITY

Through its fellowship program, MHVI is committed to continuing to expand its network of MedStar-trained physicians who will go on to care for patients throughout the mid-Atlantic region and beyond.

Celebrating 46 Years

For Longtime Physician David Pearle, Retirement Means "See You Next Week"



David Pearle, MD, found a home as a cardiology fellow in 1972, when he came to Georgetown University Hospital.

"I loved it from the start," recalls Dr. Pearle. "The hospital was the right size for me, with a warm collegial atmosphere. I got to work with wonderful colleagues, students and patients. Everything about it was outstanding."

During the next four decades, Dr. Pearle devoted himself to building upon superlatives as clinician, teacher, and administrator. His list of leadership posts reads like a staff directory—Coronary Care Unit, Cardiac Cath Lab, Cardiology Fellowship Program, and, for six years, Chief of Cardiology at Georgetown. He also served on a national committee to create and update guidelines for treating ST-Elevation Myocardial Infarction (STEMI).

Yet after all those years of being a self-described "80-hour-a-week guy," Dr. Pearle isn't quite ready to say goodbye. Though he has curbed his weekly schedule to "only" three days in the clinic, his colleagues felt the change warranted a retirement party.

"It was really more of a 'non-retirement, retirement party,'" Dr. Pearle says with a laugh.

Raised in Dallas, Tx., Dr. Pearle is the son of Stanley Pearle, founder of the Pearle Vision Centers. Though tempted to join the family business, Dr. Pearle enrolled at Amherst College with thoughts of becoming a doctor or an English professor.

"College academics or business would have been quite different career paths," he recalls. "Not being able to help people directly the way I can as a physician would have eventually disappointed me."

After attending Harvard Medical School, Dr. Pearle completed his internship and residency at New York Hospital. During a two-year U.S. Public Health Service

stint in Washington, D.C., he was attracted to the city as well as the procedural aspects of cardiology, which at the time was on the cusp of revolutionary change.

"Cardiology is procedurally oriented, and became much more so after interventional cardiology developed, when I was already well into my career. It was a privilege to participate as an interventional cardiologist and watch cardiac mortality fall by more than 75 percent during the course of my career."

Perhaps the role Dr. Pearle has enjoyed most is that of teacher, contributing to the professional development of several generations of medical students, residents, and fellows.

"As one of the largest medical schools in the country in terms of class size, the Georgetown community is huge," Dr. Pearle says. "It was always a treat to meet graduates and former students as I traveled."

Dr. Pearle hopes to spend more time traveling with his newfound free time. One frequent destination will be the Berkshires, where he and his wife, Lynn, have a second home. That will give them more time with their New York City-based children—Andrew, an orthopaedic surgeon who is chief of Sports Medicine at the Hospital for Special Surgery and Lauren, a lawyer and producer for ABC News—and their six grandchildren. A lifelong baseball fan, Dr. Pearle also hopes to find his way to more Washington Nationals games. He asks to keep it secret, but he also has been a Dallas Cowboys fan since high school.

"Everyone's been fabulous about my desire to cut back and live life a bit more spontaneously while I'm still physically able to do so," he says. "I've developed many deep friendships at Georgetown and MedStar over the years, and it's been a privilege to have contributed to our program's growth and evolution."



(right) Cindy Bither, RN

Cindy Bither, CRNP, Honored by the Heart Failure Society of America

Cindy Bither, CRNP, received the 2019 Clinical Excellence in Nursing Award from the Heart Failure Society of America. Cindy's contributions to the nursing and medical care of heart failure patients over the years has been invaluable. We are delighted to see her talent recognized on a national level. *Congratulations, Cindy!*

Ana Barac, MD, PhD, Co-Directs American College of Cardiology Cardio-Oncology Course

Director of Cardio-Oncology at MHVI, Ana Barac, MD, PhD, was co-director of the American College of Cardiology's course, *Advancing the Cardiovascular Care of the Oncology Patient*. This is the 4th year of the course, with more than 300 international participants and speakers attending last year. The course took place in Washington, D.C. on Feb. 14-16, 2020.

This year, Dr. Barac was joined by additional MedStar Cardio-Oncology faculty: Cardiology CRNP Rachel Barish served on the Program Committee for the nursing content, and Medical Oncologist Filipa Lynce, MD, presented on the topic of breast cancer treatment and cardiovascular function.

More information is available at acc.org/education-and-meetings.



Ana Barac, MD, PhD

Landmark WRAP-IT Study

MedStar Heart & Vascular Institute was part of the landmark multi-center WRAP-IT study, which evaluated the effectiveness and safety of the TYRX™ Absorbable Antibacterial Envelope. The TYRX Envelope is an absorbable single-use device that holds a cardiac implantable electronic device. It is designed to stabilize the device after implantation while releasing antimicrobial agents. It reduced major infections by 40 percent in patients with cardiac implantable electronic devices (CIED), such as pacemakers, implantable defibrillators and cardiac resynchronization therapy devices, compared to standard-of-care pre-operative antibiotics. While infections associated with these heart device implants are rare, the consequences to a patient can be devastating (prolonged hospitalization, device removal and treatment with systemic antibiotics, increased mortality). The costs of an infection are estimated to be in the range of \$44,000-\$83,000.

The study was conducted at 181 centers in 25 countries involved 776 physicians. Nearly 7,000 patients were randomized, making it the largest, prospective, global CIED trial ever conducted. Zayd Eldadah, MD, PhD, director of Cardiac Electrophysiology, served as principal investigator at MHVI.

Results were presented in March 2019 at the American College of Cardiology Scientific Session in New Orleans and published in *The New England Journal of Medicine*.

HER2-Targeted Breast Therapy: Safe Even with Mild Heart Function Decline

A recent multi-center study called SAFE-HEaRt, published in the *Breast Cancer Research and Treatment* journal in March 2019 showed that it is safe for women with heart dysfunction to continue HER2-targeted therapies. The caveat is that they should be receiving protective heart medication managed by a cardiologist at the same time.

The trial was a collaboration that included Ana Barac, MD, PhD, director of Cardio-Oncology Program at MedStar Heart & Vascular Institute, Sandra Swain, MD, associate dean for Research Development at Georgetown University Medical Center, and Filipa Lynce, MD, medical oncologist at MedStar Georgetown University Hospital.

It is the first prospective study that demonstrated safety of HER2 targeted therapy in patients with reduced cardiac function. It is a valuable step in helping identify the best ways to protect the heart while ensuring that patients receive the most effective breast cancer treatments available.



(l to r) Filipa Lynce, MD, Ana Barac, MD, and Sandra Swain, MD

Lynce F, Barac A, Geng X, Dang C, Yu AF, Smith KL, Gallagher C, Pohlmann PR, Nunes R, Herbolzheimer P, Warren R, Srichai MB, Hofmeyer M, Cunningham A, Timothee P, Asch FM, Shajahan-Haq A, Tan MT, Isaacs C, Swain SM. Prospective evaluation of the cardiac safety of HER2-targeted therapies in patients with HER2-positive breast cancer and compromised heart function: the SAFE-HEaRt study. *Breast Cancer Res Treat.* 2019 Jun;175(3):595-603.

New Medical Staff



Abdullah Alfawaz, MD, is a vascular surgeon and teaching faculty member at MedStar Washington Hospital Center and MedStar Montgomery Medical Center. He treats all aspects of arterial and venous diseases with open and endovascular techniques, catheter-based interventions

(including stents and balloons), and complex vessel repair. Dr. Alfawaz completed his fellowship at MedStar Washington Hospital Center, and his General Surgery residencies at the University of Miami's Jackson Memorial Hospital and the Cleveland Clinic Foundation. He received his medical degree with honors from the Royal College of Surgeons in Ireland.



Margaret Arnold, MD, is a vascular surgeon and the director of the MedStar Health Baltimore surgical residency program, as well as the director of the MedStar Health Vein Centers in Baltimore, Md. Dr. Arnold treats all forms of vascular disease and is experienced in both endo-

vascular and open surgery and in the medical management of vascular issues. Her practice is primarily focused on treating venous disease such as varicose veins. She completed her fellowship at Mount Sinai Medical Center following residency at the University of North Carolina Hospitals. She received her medical degree from the University of Texas Health Science Center.



Walter Atiga, MD, is a cardiac electrophysiologist practicing in Reston, Va. He is experienced in the diagnosis and treatment of all types of cardiac arrhythmias. Dr. Atiga specializes in determining causes of syncope, as well as device therapy to treat orthostatic intolerance.

He is particularly interested in using devices to treat electro-mechanical cardiac dysfunction that can result in heart failure. Dr. Atiga completed fellowships at the Johns Hopkins Hospital and the National Heart, Lung, & Blood Institute (NHLBI) following residency at NHLBI and internship at Loma Linda University Medical Center, where he also received his medical degree.



Leah Bergman, DO, is a cardiologist at MedStar Franklin Square Medical Center. She is board certified in internal medicine, echocardiography, and nuclear cardiology. Dr. Bergman sees patients across the wide spectrum of cardiovascu-

lar diseases and has a particular interest in preventive cardiology and heart disease in women. She completed her fellowship at New York Presbyterian-Brooklyn Methodist Hospital following residency at the University of Connecticut Health Center. She received her medical degree from the New York College of Osteopathic Medicine.

New Medical Staff



Kevin Brown, MD, is a vascular surgeon at MedStar Good Samaritan Hospital and MedStar Union Memorial Hospital. Dr. Brown treats all forms of vascular disease and is interested in minimally invasive endovascular aortic repair,

cerebrovascular surgery, dialysis access creation and revision, and carotid stenting. He completed his fellowship at Emory University Hospital following residency at the Uniformed Services University of the Health Sciences National Capital Consortium. He received his medical degree from the University of Maryland School of Medicine.



Ian C. Chang, MD, is a cardiologist and cardiac imaging specialist at MedStar Washington Hospital Center. He treats general cardiology conditions with a special focus on cardiovascular care for patients with solid cancer, benign and malignant hematologic conditions, including light chain amyloidosis. Dr. Chang

specializes in cardiac imaging and also performs periprocedural and perioperative analysis for structural heart disease with these imaging modalities, including the use of transthoracic and transesophageal echocardiogram. Dr. Chang completed a fellowship program at the Mayo Clinic of Rochester following residency at the University of Minnesota. He received his medical degree from National Yang-Ming University in China.



Jeffrey Cohen, MD, is a cardiac surgeon at MedStar Washington Hospital Center. He treats the complete range of adult cardiac diseases, including aortic stenosis and regurgitation, mitral regurgitation, mitral stenosis, tricuspid valve disease, endocarditis, coronary artery disease, and aortic aneurysms and

dissections. He specializes in complex aortic surgery implementing both open and endovascular repair techniques, coronary artery bypass, and minimally invasive aortic and mitral valve surgery including transcatheter aortic valve replacement. Dr. Cohen completed a fellowship at Stanford University Medical Center following residency at the Hospital of the University of Pennsylvania. He received his medical degree from the University of Pennsylvania School of Medicine.



Javairiah Fatima, MD, is a vascular surgeon, an assistant professor of Surgery, and serves as the co-director of the Complex Aortic Center at MedStar Washington Hospital Center and Vascular Surgery Site Director of the MedStar Montgomery Medical Center. Dr. Fatima

performs the entire spectrum of vascular surgery, specializing in open and endovascular aortic surgeries, aortic dissections, and fenestrated aortic aneurysm repair surgery (FEVAR). Dr. Fatima completed a fellowship program at the Cleveland Clinic following residency at the Mayo Clinic. She received her medical degree from Aga Khan University in Pakistan.



Raktim Ghosh, MD, is a cardiologist at MedStar Union Memorial Hospital and MedStar Good Samaritan Hospital. He is board certified in both internal medicine and echocardiography. Dr. Ghosh sees a wide spectrum of patients with cardiovascular conditions and has a particular

interest in both cardiometabolic disease and co-managing diabetes and lipid disorder patients with providers from other specialties. He completed his fellowship at MetroHealth Medical Center following residency at St. Vincent Charity Medical Center, both in Cleveland, Ohio. He received his medical degree from R.G. Kar Medical School University of Calcutta.



Cyrus Hadadi, MD, is the associate director of Cardiac Arrhythmia Research at MedStar Heart & Vascular Institute and directs the application of advanced analytic techniques to large, complex patient data sets to improve outcomes for cardiac electrophysiology procedures. He specializes in the evaluation and management of heart rhythm disorders,

with clinical interests in special therapies such as epicardial catheter ablation for complex ventricular tachycardia, and in developing new device-based interventional cardiac resynchronization therapies. He completed fellowship programs at MedStar Washington Hospital Center and Geisinger Community Medical Center following residency at the University of Maryland Medical Center. He received his medical degree from Drexel University College of Medicine.



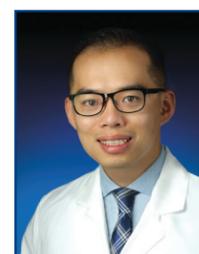
Sumbal A. Janjua, MD, is a non-invasive cardiologist and cardiac imaging specialist at MedStar Washington Hospital Center. She specializes in the diagnosis and treatment of all cardiovascular conditions with special interests in the use of cardiac CT in the pre-procedural structural assessment and advanced echocardiography in the

intraprocedural guidance of structural heart procedures. As a multimodality cardiac imager, Dr. Janjua works with cardiac surgeons and interventional cardiologists in the collaborative diagnosis, assessment and treatment of patients with structural heart disease. She completed a fellowship program at Rhode Island Hospital-Brown University following residency at St. Elizabeth's Medical Center in Boston. She received her medical degree from Aga Khan University in Pakistan.



Benjamin Kenigsberg, MD, is a cardiac intensivist at MedStar Washington Hospital Center who works primarily in the medical and surgical cardiovascular intensive care units with patients who are critically ill with heart conditions including

cardiogenic shock, acute coronary syndrome, heart failure, and multi-organ failure. He completed fellowship programs in cardiology and critical care medicine at MedStar Washington Hospital Center following residency at the University of Chicago Medical Center. He received his medical degree from New York University School of Medicine.



Phillip H. Lam, MD, is an advanced heart failure and transplantation cardiology physician at MedStar Washington Hospital Center. Dr. Lam treats patients with varying levels of heart failure. His specific research interests include risk prognosticators and medical therapies

in patients with heart failure. Dr. Lam completed fellowship programs at Brigham and Women's Hospital and MedStar Washington Hospital Center following residency at MedStar Georgetown University Hospital. He received his medical degree from the University of Vermont College of Medicine.



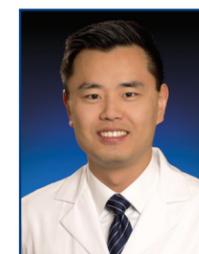
Alexander Papolos, MD, is a cardiac intensivist at MedStar Washington Hospital Center. As a cardiologist, echocardiologist, and critical care doctor, he treats heart failure, various kinds of cardiomyopathies, acute coronary syndrome, pulmonary hypertension, and cardiogenic shock. Dr. Papolos is particularly interested in studying right ventricular failure

and right ventricular pulmonary arterial coupling. He has developed a novel echocardiographic measure of pulmonary arterial capacitance and is currently investigating how it can be used to help treat patients with pulmonary hypertension and right heart dysfunction. Dr. Papolos completed fellowship programs at the University of California San Francisco Medical Center following residency at Mount Sinai Medical Center. He received his medical degree from New York Medical College.



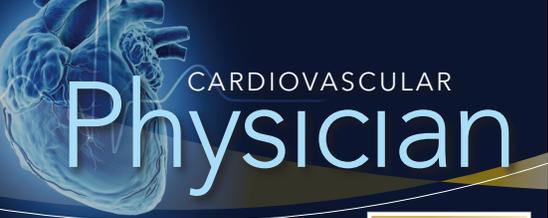
Ronak Patel, MD, is a cardiologist who sees patients at MedStar Union Memorial Hospital and MedStar Good Samaritan Hospital. Dr. Patel is interested in cardiac imaging—including nuclear medicine, echocardiography, and transesophageal echocardiography.

He completed his fellowship and residency programs at Drexel University Hahnemann University Hospital. He received his medical degree from the University of South Carolina School of Medicine.



W. David Xu, MD, is a cardiologist specializing in advanced heart failure and transplantation cardiology. He sees patients at MedStar Union Memorial Hospital and MedStar Good Samaritan Hospital. He holds board certifications in internal medicine, cardiovascular disease, and advanced heart failure and transplant cardiology. Dr. Xu specializes

in the management of patients with heart failure and those requiring mechanical support devices including left ventricular assist devices (LVADs). He is particularly interested in LVAD recovery, and medical therapy for cardio-renal syndrome and diuretic resistance. He completed fellowship programs at the Cleveland Clinic and the University of Utah Medical Center following residency at Washington University/Barnes Jewish Hospital. He received his medical degree from the University of Texas Southwestern Medical School.



CARDIOVASCULAR Physician

Cardiovascular Physician is a publication of MedStar Heart & Vascular Institute. It is a forum to share clinical, research and teaching information in cardiology, cardiac surgery and vascular care.

Please submit editorial comments to Karoline Hutson, at Karoline.M.Hutson@MedStar.net

Visit our website, at MedStarHeartInstitute.org.



MEDSTAR HEART & VASCULAR INSTITUTE

Stuart F. Seides, MD
Physician Executive Director

George D. Bittar, MD
Chief, Ambulatory Practices
Baltimore Region

Robert A. Lager, MD
Chief, Ambulatory Practices
Washington Region

Sriram Padmanabhan, MD
Chief, Cardiology
MedStar Franklin Square Medical Center

George Ruiz, MD
Chief, Cardiology
MedStar Union Memorial Hospital
MedStar Good Samaritan Hospital

Christian C. Shults, MD
Interim Chair, Cardiac Surgery

William O. Suddath, MD
Chairman, Cardiology
MedStar Southern Maryland Hospital Center

Allen J. Taylor, MD
Chairman, Cardiology
MedStar Washington Hospital Center
Chief, Cardiology
MedStar Georgetown University Hospital

Ron Waksman, MD
Director of Cardiovascular Research
and Advanced Education

Edward Y. Woo, MD
Director, MedStar Vascular Program

Catherine Monge
Senior Vice President
Chief Administrative Officer

Nancy Bruce
Vice President

Michele Frymoyer
Vice President

Cheryl Lunnen
Vice President

Brooke Patten
Vice President

MEDSTAR HEALTH LEADERSHIP

Kenneth A. Samet, FACHE
President & CEO

M. Joy Drass, MD
Executive Vice President & Chief Operating Officer

Bradley S. Chambers
President, MedStar Union Memorial Hospital
President, MedStar Good Samaritan Hospital
Senior Vice President, MedStar Health

Gregory J. Argyros, MD
President, MedStar Washington Hospital Center
Senior Vice President, MedStar Health

Design & Art Direction: Tammi Bricker
Feature Photography: Gary Landsman



110 Irving Street, NW
Washington, DC 20010

Non-Profit
Organization
U.S. Postage
PAID
MedStar
Washington
Hospital Center

DEPARTMENT OF CONTINUING PROFESSIONAL EDUCATION

Please visit <http://medstar.cloud-cme.com> for updated conference information, or call **202-780-1655**. CE transcripts are available online. You can download, print or e-mail your CE transcript. Visit cme.medstarhealth.org and click on "View Your CE Transcript" for complete instructions.

UPCOMING CME CONFERENCES

CRT20
February 22-25
Gaylord National Convention Center
National Harbor, Md.

Featuring keynote speakers:
John Kerry, U.S. Secretary of State 2013-17
Michelle Obama,
First Lady of the United States, 2009-17
Michael Mussallem, Chairman and CEO,
Edwards Lifesciences

Course Director: Ron Waksman, MD
Details and registration:
www.crtmeeting.org

FRONTLINE CARDIOLOGY 2020
May 2
College Park Marriott
College Park, Md.

REGULARLY SCHEDULED SERIES—AMA PRA Category 1 Credit(s)TM

CARDIOLOGY/CARDIOVASCULAR

Cardiac Catheterization Conference
Weekly, Wednesdays, 7:30 a.m.
CTEC Conference Theater
1 AMA PRA Category 1 CreditTM
202-877-7808

Cardiac Surgery Grand Rounds
Weekly, Tuesdays, 7:15 a.m.
CTEC Conference Theater
2 AMA PRA Category 1 CreditsTM
202-877-3510

Cardiology Grand Rounds
Weekly, Tuesdays, 12:30 p.m.

CTEC Conference Theater
1 AMA PRA Category 1 CreditTM
202-877-9090

Echocardiography Conference
Weekly, Thursdays, 7:45 a.m.
CTEC Conference Theater
1.25 AMA PRA Category 1 CreditsTM
202-877-6264

Electrophysiology Core Curriculum Conference
Weekly, Tuesdays, 7 a.m.
First, second and third Tuesdays: Room 5B3
Fourth Tuesdays: CTEC Conference Theater
1 AMA PRA Category 1 CreditTM
202-877-3951