MedStar Health

MedStar Heart & Vascular Institute

Cardiovascular Physician

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Strength upon strength.

Partnerships across the human anatomy

Traversing the traditional boundaries of specialty care.

Perspective from Stuart F. Seides, MD, physician executive director, MedStar Heart & Vascular Institute

Specialty focus: It's a familiar concept in the science and practice of medicine. However, with our growing understanding of basic biological processes, we have come to progressively appreciate that the human body and its parts are infinitely complex and deeply interwoven. Even in-depth knowledge of those individual parts may not mean fullest awareness of the whole. Human health and disease are almost never isolated to individual organs or organ systems (despite first impressions). Pathology invariably crosses systems—and so must our approach to diagnosis and treatment.

As our traditional spheres of knowledge broaden and intersect, patients are best served when medical specialists work in close collaboration. Our providers at MedStar Heart & Vascular Institute are delivering optimal care through teams that cross not only traditional disciplines within cardiovascular specialties, but go outside those boundaries, as well. We are reshaping care by bringing together hybrid expertise through a cohort of providers who have chosen to focus specifically in several areas—with oncology, maternal-child health, sports medicine, orthopaedics, transplant medicine, and neurology.

In this issue of *Cardiovascular Physician,* we highlight how our cardiovascular providers are working in partnership with other MedStar Health specialists to deliver exceptional coordinated care. They are collaboratively assessing patients to address the cardiovascular effects of non-cardiac diseases and their treatments. It is the optimal use of the collective intelligence within our large and intellectually rich regional healthcare system. This is the future of medicine, with our experts at MedStar Heart & Vascular Institute leading the charge.

We continue to utilize our cardiovascular network's expertise throughout the MedStar Health system in many other ways. On page 13, you will read about a groundbreaking treatment for two often underdiagnosed and untreated disorders: inappropriate sinus tachycardia (IST) and postural orthostatic tachycardia syndrome (POTS). As one of seven study centers in the United States, we were the first in the region to perform successful thoracoscopic ablation on a patient for whom other options had been exhausted. It's an innovative treatment for these often young and severely symptomatic patients.

I take great pride in the fact that MedStar Washington Hospital Center was once again named by U.S. News & World Report 2020-21 rankings as one of the nation's very best cardiovascular care programs (you can read more about it on page 16).

On page 14, we acknowledge the end of an extraordinary era—Dr. Steve Goldstein's remarkable tenure as the guiding light of our echocardiography laboratory for nearly 40 years.

Finally, it is not too soon to reiterate our collective gratitude to the entire caregiver team who "stepped up" in so many ways during the first wave of the COVID-19 pandemic. Most notably, we safely performed a record-breaking number of lifesaving heart transplants between March and May, filling the void left by hospitals in the Northeast whose doors were shut because of the pandemic.

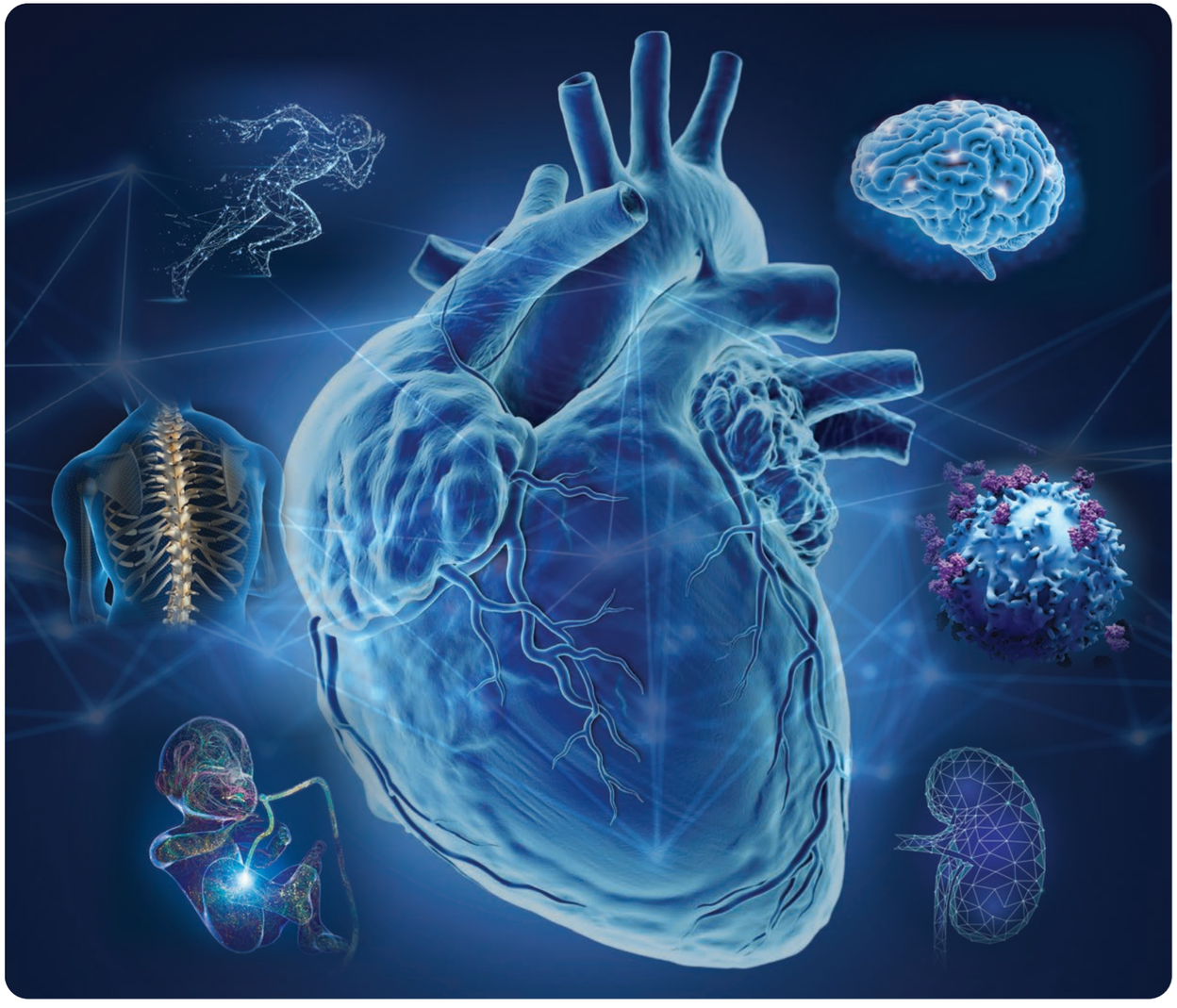
COVID-19 Protocol Update

MedStar Health is fully open for referrals for emergent, urgent, and elective cardiovascular surgeries and procedures. We have adopted enhanced safety protocol and other appropriate precautions to protect patients, visitors, physicians, and staff as we deliberately resume "new normal" operations. We can offer both new and established patients video consultations and telemedicine visits.

If you have any questions, concerns, or an urgent referral, please contact me or any clinical leader at **emhvi@medstar.net.**

Strength upon strength.

Partnerships across the human anatomy



"Strength in the system" has long been a foundational philosophy of MedStar Heart & Vascular Institute. The partnerships between surgery and medicine, outpatient clinics and acute care, and myriad sub-specialties, have enabled innovation and created our capacity to treat the region's most complex cases.

Cardiovascular care does not take place in a silo. Collaboration and specialized expertise flow throughout MedStar Health, offering opportunities for the meeting of clinical minds, and most importantly, the finest patient care.

In the series of articles that follow, we highlight a few of the many ways that our cardiovascular specialists work with other premier institutes, centers of excellence, and clinicians throughout the rest of the MedStar Health system to deliver comprehensive and coordinated disease management.

Sports medicine.

The heart of an athlete.

Ankit Shah, MD, director of MedStar Sports & Performance Cardiology

For the past ten years, Martin, a long-distance cyclist, has biked 150 to 250 miles a week. Like most athletes, he is acutely attuned to his body and its responses. While cycling during Christmas week 2018, he was surprised by an unfamiliar feeling of tightness in his chest. He thought he might have costochondritis and slowed down, causing the sensation to subside. A few days later, however, the tightness returned, along with pain in both elbows. This time he wondered if arthritis was the likely culprit. But when the symptoms returned for the third time and didn't go away, he finally took himself to his nearest emergency room.

Not unsurprisingly, Martin, then 51, was in the midst of a myocardial infarction. The referring hospital immediately transferred him to MedStar Union Memorial Hospital and its 24/7 cath lab, where George Ruiz, MD, was on call.

"Martin's left anterior descending artery was 95 percent blocked; the right coronary artery was completely closed off," says Dr. Ruiz, who is chief of cardiology at MedStar Union Memorial Hospital, MedStar Good Samaritan Hospital, and MedStar Harbor Hospital. "He was stented and sent home after a few days."

Dr. Ruiz also gave Martin something else: a referral to Ankit Shah, MD, director of MedStar Sports & Performance Cardiology.

One of the first and few in the nation

Launched in 2017, MedStar Sports & Performance Cardiology is one of the few formal programs in the nation to focus on heart disease and heart care, in the athlete.

Goals are three-fold, with preventing sudden, unexpected cardiovascular-related deaths among athletes topping the list. Not far behind is the desire to help weekend warriors and professionals alike return to play after myocarditis, myocardial infarction, and other serious heart conditions. Helping top athletes enhance their cardiovascular performance is the third aim.

It's the brainchild of some of our system's most forward-thinking minds, including Stephen Evans, MD, chief medical officer for MedStar Health; Neil Weissman, MD, president of MedStar Health Research Institute; Ron Waksman, MD, director of Cardiovascular Research and Advanced Education; Dr. Ruiz; Cheryl Lunnen, vice president of MedStar Heart & Vascular Institute for the Baltimore region; and Sean Huffman, vice president of Sports Medicine.

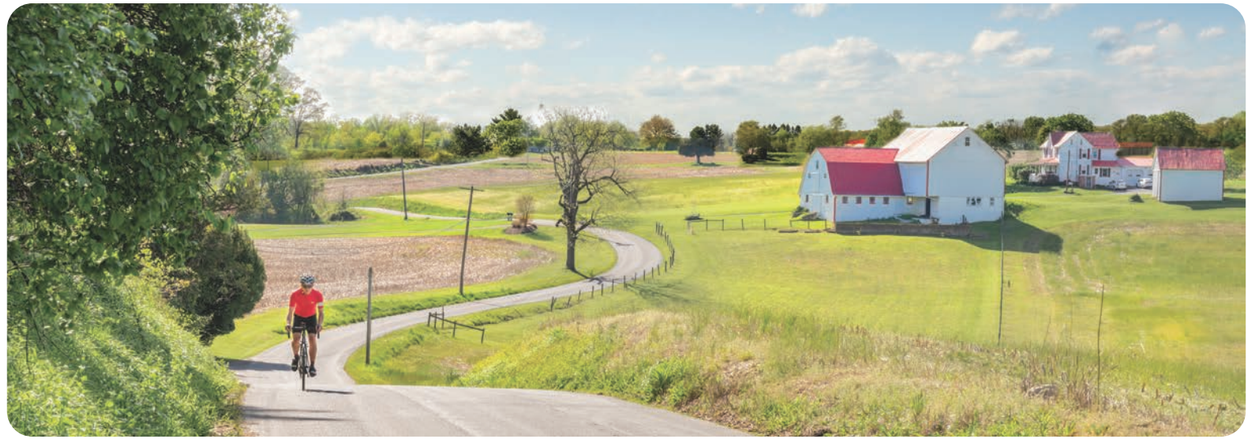
"In thinking about the program, we all knew that cardiovascular problems were right there behind concussions as the major health issues for athletes, active or retired," says Huffman. "Through MedStar Heart & Vascular Institute, we already had the infrastructure and talent in place to become leaders in the emerging field. We just needed someone to help pull it all together."

That someone was Dr. Shah, a graduate of the only sports cardiology fellowship program in the nation. With one foot firmly planted in cardiology and the other in sports medicine, his training ties the two disciplines tightly together.

"We're utilizing MedStar Health's existing strengths but taking doctors out of their traditional departmental silos to provide a multidisciplinary and comprehensive approach toward cardiovascular care for the athlete," says Dr. Shah. "The heart of an elite athlete—pro or amateur—is just not the same as that of a more sedentary person. So, approaching them with the same tests and mindset can result in misleading or even missed diagnoses."

Left ventricular hypertrophy is a prime example. While a cause for alarm when detected among the general population, the condition is common, and often benign, among athletes. Yet the finding can lead to unnecessary downstream testing and disqualification for a healthy individual whose enlarged heart is due not to disease but a physiologic response to exercise.

The opposite is also true. The standard treadmill stress test is typically stopped before a well-conditioned person reaches peak heart rate, often failing to detect arrhythmias or ischemia at maximum effort.



Back in the saddle

For the best outcomes, Dr. Shah evaluates active individuals and athletes through the lens of the cardiovascular demands of exercise, and each patient's goal: to regain or retain activity or advance performance levels. He collaborates with colleagues across MedStar Health, helping to standardize workups and care toward a systemic approach to this unique patient population.

"These are very active people, who look like and believe they're in great shape," he says. "Then they develop CAD or heart problems and are shocked. Through customized treatment plans and exercise prescriptions, our goal is to safely get them back to their sport or activity of choice."

His approach certainly worked for Martin.

Only a few days after discharge, Martin was in Dr. Shah's office discussing his yearning to get back to biking as soon as possible. A week later, he started rehab in our state-of-the-art facility at MedStar Union Memorial, which features the most sophisticated cardio-pulmonary stress testing technology and advanced rehab equipment available.

"Typically, I follow a 12-month program to get athletes back to their previous level of fitness," Dr. Shah explains. "The first three months are devoted to light activity and cardiac rehab, followed by a maximal effort, cardiopulmonary exercise test to look for signs of blocked arteries or abnormal heart rhythms. If all is normal, we then focus on building up endurance. The last step is to increase intensity and duration through vigorous exercise."

Eager to get back to his former lifestyle, Martin diligently followed doctors' orders, with the results to show for it. A mere three months after his MI, Martin went on a 50-mile bike ride. Then early this March, he reached another important milestone—successfully completing a six-day, 500-mile cycling marathon in Arizona.

"Early on, both Drs. Ruiz and Shah were of the opinion that I could get back to cycling, and they did everything in their power to make that happen," Martin says today. "They were as focused as I was on getting me back on a bike. Every step along the way, I was matched up with the right people. I couldn't have asked for better, more comprehensive care."

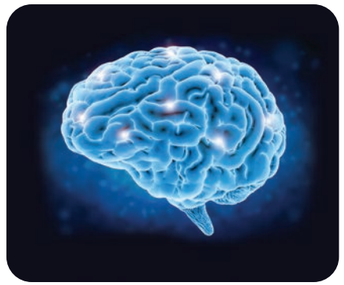
Cardiopulmonary exercise testing for athletic performance

This specialized screening provides each athlete with personalized data, and may provide additional insight into a known condition or a diagnosis of an otherwise unknown pre-existing cardiac condition.

Using the gold standard test to measure fitness and aerobic capacity, screenings can benefit the athlete and weekend warrior, alike.

For a consultation, please call 410-366-5600.

Martin, back on his bike in Maryland.



Neurology.

The heart-brain connection.

Vascular Neurologist Amie Hsia, MD, medical director of the Comprehensive Stroke Center

Investigating cryptogenic ischemic strokes

From seizures due to long QT syndrome, to acute cardiac failure from a subarachnoid brain hemorrhage, the link between the heart and brain is well established. Perhaps nowhere is that connection more critical than in the evaluation of ischemic stroke.

"While about a quarter of ischemic strokes originate from the brain's large or small vessels, 25 to 30 percent are from heart embolisms, most commonly due to atrial fibrillation," says Vascular Neurologist Amie Hsia, MD, medical director of the Comprehensive Stroke Center at MedStar Washington Hospital Center. "But one third of all cases are cryptogenic, without a clear cause despite a thorough evaluation. The remainder fall into the unusual or rare category. Unfortunately, if we can't identify the source of the clot, we don't know how best to prevent recurrence."

To ensure a comprehensive approach to these cryptogenic cases, MedStar Heart & Vascular Institute assembled a dedicated team of cardiovascular and neurological specialists, with impressive results.

"Called the Heart-Brain Team,* the collaboration started by looking at cryptogenic stroke patients with patent foramen Ovale (PFO) to determine if the defect was a contributing factor," says Allen J. Taylor, MD, chairman of Cardiology at MedStar Washington Hospital Center and chief of Cardiology at MedStar Georgetown University Hospital. "Since then, the Heart-Brain Team has performed approximately 100 PFO closures each year on patients at potential risk for a subsequent stroke."

Expanding collaboration to atriopathy

Now, the Heart-Brain collaboration has expanded to evaluate other possible causes of cryptogenic stroke, including left atrial cardiopathy.

The condition is an area of great interest nationwide, warranting a major multicenter clinical trial, called ARCADIA. The double-blind, randomized trial is designed to determine whether apixaban is superior to aspirin in preventing subsequent stroke in select non-atrial fibrillation patients with cryptogenic stroke and specific markers of left atriopathy. (Apixaban's superiority in treating AFib patients is established.) Launched in 2018 through NIH StrokeNet–the national NIH-funded stroke clinical trials network–ARCADIA is currently underway in more than 140 locations, including MedStar Washington Hospital Center and MedStar Georgetown University Hospital.

"The hypothesis is that the left atrium may be predisposed to form clots for reasons other than AFib," explains Dr. Hsia, who is also the principal investigator for ARCADIA at MedStar Washington. "Clinical outcomes, including recurrent stroke and major bleeding, will determine whether apixaban or aspirin is better for this patient population."

*The Heart-Brain Team brings together neurologists and interventional cardiologists, led by Lowell Satler, MD, director of Coronary Interventions at MedStar Washington Hospital Center. **For a consult, call 202-877-5975.**

Candidates sought for ARCADIA trial.

MedStar Washington Hospital Center and MedStar Georgetown University Hospital are seeking candidates for the ARCADIA clinical trial (see article for more details).

Potential participants should be within six months of a stroke of unknown cause, and at least 45 years old. Other criteria apply. For more information, please contact:

- MedStar Washington Hospital Center
  Amie Hsia, MD, Site PI
  Jamal Smith, MBBS, MSc. CCRP, Site Research Coordinator
  jamal.d.smith@medstar.net or **202-877-3476**
- MedStar Georgetown University Hospital
  Andrew Stemer, MD, Site PI
  Sarai Bartlett, BS, Site Research Coordinator
  ssb92@georgetown.edu or **202-630-8445**

Rocco Armonda, MD, director of Neuroendovascular Surgery

Preventing strokes in cardiovascular patients

At MedStar Health, vascular neurologists, neuroendovascular surgeons, and cardiovascular clinicians are closely monitoring complex cardiovascular patients at high risk for stroke after any inpatient procedure, in order to identify and intervene as early as possible.

"We know that surgical patients with congestive heart failure or valve conditions, or those undergoing procedures such as CABG or LVAD, are prone to throw a clot from the heart to the brain," explains Rocco Armonda, MD, director of Neuroendovascular Surgery at MedStar Washington and MedStar Georgetown. "If that results in an intracranial large vessel occlusion, the patient is at risk for severe disability and even death. Yet most of these patients are typically not eligible for tPA or IV-based therapy. As such, it's critical that we intervene using acute endovascular therapy."

In their own dedicated lab, Dr. Armonda and his team use catheter-based surgical intervention, approaching the brain through the femoral artery. Once at the site, the clot is removed through suction, retrieval, or a combination of techniques.

The key to success is the "time-tissue clock," which, in the case of in-patient stroke, often depends upon early identification and intervention by unit staff.

"Every 30 minutes without reperfusion results in 10 percent loss of brain tissue and function," Dr. Armonda explains. "If we can retrieve the clot quickly–sometimes even up to 24 hours after onset–we can completely change the course of disease. It's a real game-changer."

It's a sophisticated service, not commonly available outside of comprehensive stroke and heart centers like MedStar Heart & Vascular Institute.

Dr. Armonda's team works across our nine MedStar Health acute-care hospitals. Up to 50 percent of patients are transferred from other hospitals across the Baltimore-Washington region.

CV surgical patients are prone to embolism-causing intracranial large vessel occlusions. LVOs cause over 30% of acute ischemic strokes.

Up to 30% of ischemic strokes are from heart embolisms, most commonly due to AFib.

"There's an incredibly tight interaction between the heart and the brain, one that you can't separate. MedStar Heart & Vascular Institute has brought different disciplines together to work across specialty lines for the ultimate good of our patients."

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

Orthopaedic surgery.

Two centers of excellence. One patient. Twenty years of cohesive care.

Anita Ross, 67, has been on a remarkable healthcare journey for the last 20 years. Through her resilience, paired with the expertise of our MedStar Heart & Vascular Institute and MedStar Orthopaedic Institute, Ross has overcome myriad challenges to her heart, her spinal cord, and her well-being.

2000: Cardiomyopathy

Beginning in 2000, Anita Ross hit a series of hardships: a diagnosis of cardiomyopathy, a painful fall and back surgery, lost job, lost health insurance, no stable housing, and a critical new reality–end-stage heart failure.

2013: End-stage heart failure

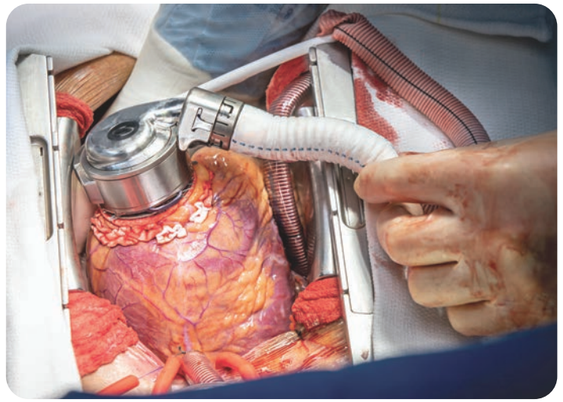
In 2013, after she lost her health insurance, she began to ration her heart medications. Multiple trips to emergency rooms ended one particularly difficult night. At the hospital, the cardiologist told her she needed a heart transplant. She was transferred to the emergency department at MedStar Washington Hospital Center.

When she arrived at the hospital, Ross was immediately placed under the care of MedStar Heart & Vascular Institute's Advanced Heart Failure program–one of the nation's longest running, most sophisticated, and successful.

Cardiologist Mark Hofmeyer, MD

"I became Ms. Ross's cardiologist," says Mark Hofmeyer, MD, medical director, Advanced Heart Failure Intermediate Care Unit. "When I first saw her, she clearly had non-ischemic cardiomyopathy that had progressed to end-stage heart failure. She also had some serious musculoskeletal problems that caused her a lot of pain. We began treatment right away with a regimen of Milrinone for inotropic support."

But it was also important to help Ross in other ways so that a heart transplant would be feasible. The team's financial counselor connected her to health insurance coverage, and social worker Karen Weingart, LICSW, helped her find stable housing. Ross was also referred to the hospital's chronic pain clinic to help alleviate the troubling hand and foot numbness that continued to plague her. With a home, she could take the first step toward a new heart: a left ventricular assist device.



2016: LVAD implantation

In February 2016, Ross underwent successful implantation of an LVAD. "Her timing was perfect," explains Dr. Hofmeyer. "We were then part of the multicenter MOMENTUM 3 clinical trial comparing the newer centrifugal continuous-flow pump to the mechanical-bearing axial continuous flow pump. The study showed the centrifugal pump improved six-month outcomes and reduced the risk of thrombosis by more than 12 percent."

Following the implantation, she continued to receive care in the hospital's pain management clinic but because the LVAD limited non-surgical options for relief, she was referred to Orthopaedic Spine Surgeon Oliver Tannous, MD.

2017: Cervical spinal cord compression and progressive myelopathy

"When I first saw Ms. Ross, she was debilitated and showing signs of neurologic deterioration," Dr. Tannous says. "But spinal surgery on patients with an LVAD is risky. They can't have an MRI, so we must depend on CT scans and our clinical judgement to pinpoint the problem."

His conclusion: cervical spinal cord compression and progressive myelopathy.

Orthopaedic Spine Surgeon Oliver Tannous, MD

Anterior cervical discectomy and fusion

In December 2017, Ross underwent anterior cervical discectomy and fusion. The anterior procedure allows for direct visualization of the cervical discs through a relatively uncomplicated pathway. "We cut through skin only and no muscle, which means patients tend to have less incisional pain and faster recovery," says Dr. Tannous.

"During Ms. Ross's procedure, we removed the disc that was compressing her spinal cord, replacing it with structural bone graft. Most important, the LVAD coordinator and heart failure team's anesthesiologist were in the OR, monitoring both the patient and her pump," says Dr. Tannous.

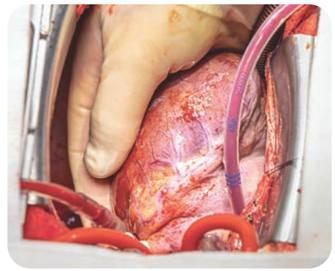
Dr. Tannous's expertise and the hospital's dedicated LVAD team made Ross's surgery possible. "She also had the advantage of having the latest LVAD," explains Dr. Hofmeyer. "We could more safely take her off anticoagulants before the procedure because of the reduced risk of a blood clot. Without surgery, Ms. Ross would likely have become too debilitated to be eligible for transplant."

"This surgery couldn't be performed in a hospital that doesn't have an experienced, interdisciplinary LVAD team," says Samer Najjar, MD, medical director, Advanced Heart Failure program. "We are one of the nation's largest centers, performing on average 80 implantations annually. For Ms. Ross, the team was part of the process before, during, and after surgery."

Following surgery, she was admitted to the heart failure unit and then had physical therapy with its dedicated rehabilitation team.

2018: Heart transplant

On May 22, 2018, a donor heart became available and Anita Ross received a heart transplant at MedStar Washington Hospital Center.



2020: Anita Ross today

Two years later, she continues to enjoy her new heart and new life.

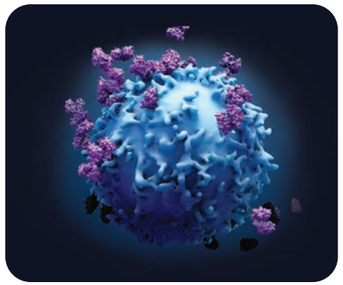
Anita Ross

The Advanced Heart Failure program is accessible throughout the Washington and Baltimore regions.

MedStar Heart & Vascular Institute provides extensive after-care management for LVAD and heart transplant patients, allowing for greater options when treating comorbidities. Patients returning to MedStar Health for treatment of any condition are assured that their cardiovascular health is cared for contemporaneously.

MedStar Washington Hospital Center
Samer S. Najjar, MD (right)
Director, Advanced Heart Failure Program
samer.s.najjar@medstar.net, 202-297-9307

MedStar Union Memorial Hospital
George Ruiz, MD (left)
Chief of Cardiology, MedStar Union Memorial Hospital, MedStar Good Samaritan Hospital, and MedStar Harbor Hospital
george.ruiz@medstar.net, 410-554-6550



Oncology.

Expanding cancer treatments require unique cardiac care.

MedStar Heart & Vascular Institute is among the first leaders in the nation to establish a formal link between cardiology and oncology. Launched in 2012, the Institute's Cardio-Oncology program is dedicated to minimizing the effects of cardiovascular morbidity and mortality in people with cancer—before, during and after their treatment.

Chemotherapy and radiation therapy, along with new cancer treatments, can contribute to a number of serious cardiovascular complications including heart failure, coronary artery disease, heart rhythm disorders, peripheral vascular disease, valvular heart disease, and other CV disorders. The emergence of immune checkpoint inhibitors present new risks to the heart that may not yet be fully appreciated.

"The evolution of cancer therapy has changed the relationship between oncology and cardiovascular care," says Ana Barac, MD, PhD, FACC, founder and director of the Cardio-Oncology program at MedStar Heart & Vascular Institute. "When cardiologists work in tandem with oncologists, we can improve outcomes at each step."

Optimal patient care is at the center of the program, supported by the tremendous synergies among basic, translational, and clinical research, practice guidelines, education and training of cardiology and oncology health teams, and epidemiology and registry research. Patients in the following categories may benefit from collaborative treatment by oncologists and cardiologists:

- **Patients with pre-existing cardiac conditions**
  Any patient with a history of cardiomyopathy, heart failure, coronary artery or valvular disease, or arrhythmia, should be thoroughly evaluated before beginning cancer treatment. Additionally, patients with such risk factors as hypertension, diabetes, high cholesterol, or smoking should undergo cardiovascular risk stratification before beginning a cancer treatment regimen.
- **Patients experiencing side effects from cancer treatment**
  With the exponential growth in new cancer therapies, the potential for cardiovascular impacts also increases. Patients who develop cardiac comorbidities while in treatment may benefit from increased surveillance by a cardiologist. These specialists participate in tumor boards where treatment issues and patient care plans are discussed collaboratively.
- **Patients with cardiac tumors**
  The cardio-oncology team works closely with oncologists to accurately diagnose cardiac tumors using an array of imaging modalities. The team also works with interventional cardiologists and cardiac surgeons to biopsy cardiac masses.
- **Long-term survivors who develop cardiac problems**
  As treatments improve outcomes, there is a rapidly growing population of cancer survivors who develop cardiovascular conditions after treatment is complete—sometimes after many years. Long-term care plans must be established for these patients.

Ana Barac, MD, PhD

Tolu Agunbiade, MD

In an effort to fine-tune treatment protocols, we participate in major clinical trials to determine how specific cancer therapies impact cardiovascular health.

For details on current research, please visit **MedStarHeartInstitute.org/Programs/Cardio-Oncology.**

Collaborative, consultative practice

We are committed to promoting effective methods for treating cancer while minimizing the impact on heart function. Our multi-site consultative practice can help establish comprehensive treatment plans for your patients, before, during, and after their cancer treatment. If you would like further information, please contact us.

Washington: ana.barac@medstar.net, 202-360-6367
Baltimore: tolu.a.agunbiade@medstar.net, 877-452-0725

Christopher M. Gallagher, MD

Medical Director of Cancer Services

Washington Cancer Institute at MedStar Washington Hospital Center

"The partnership between cardiology and oncology becomes more valuable every day. As we make progress in treating cancer, collaboration with cardiology is directly aligned with improved outcomes in our patients. Our patients can receive curative cancer therapies more safely and effectively with our combined efforts. More importantly, as progress is made in treating cancer, management of cardiovascular disease will have a positive lifelong impact in cancer survivors."

Obstetrics.

The stress test of a woman's life.

CASE STUDY:
A woman arrives at the hospital in active labor. Her obstetrician quickly determines that she is hemodynamically unstable with ventricular tachycardia. An on-call cardiologist joins the case and identifies a previously undiagnosed cardiomyopathy. The patient is transferred to the nearby cardiac ICU, where she receives an intra-aortic balloon pump to support her during labor and allows for a safe delivery.

This is just one example of how cardiologists provide a valuable adjunct to obstetric care within the MedStar Health system. A long-standing collaboration between our MedStar Heart & Vascular Institute and high-risk obstetrics program offers a unique intersection of these two highly specialized areas. Regardless of where a woman enters the system, she can access collaborative care from both programs.

Melissa Fries, MD, chair of Obstetrics and Gynecology at MedStar Washington Hospital Center, regularly meets with cardiology fellows to review obstetric cases in which patients may need specialized cardiac care. Conditions include maternal congenital cardiac disease, maternal acquired cardiac disease, and cardiac disease secondary to other medical conditions. "Our principal concern is overall function. Pregnancy is truly a stress test of the rest of a woman's life," Dr. Fries says.

Melissa Fries, MD

In some cases, women are aware of their heart disease before they become pregnant. Ideally, these patients receive pre-pregnancy counseling from both services lines. This allows for extensive review of history, medications, risks, as well as preparation for pregnancy, such as certain cardiovascular screening procedures. Genetic counseling is provided when appropriate. When indicated, a multidisciplinary group involving cardiology, anesthesiology, neonatology, high-risk obstetrics, the patient, and her partner or family, meets to plan for labor and delivery, monitor her during labor, and then provide postpartum care, explains Dr. Fries.

At times, cardiac issues may present or manifest during pregnancy or shortly after. Some of these conditions, while rare, cause serious complications and even heart failure, requiring specialized teams to care for both mother and baby—often at the same time.

"There are two patients in these scenarios," says Maria Rodrigo, MD, medical director for the Heart Transplant program at MedStar Washington. "Every decision we make affects not just the mother, but a growing baby. We work together to ensure the best possible outcomes for both."

Maria Rodrigo, MD

Dr. Rodrigo explains that imaging, diagnostics, and ultimately treatment is a puzzle, due to the implications for the unborn child. For example, since any radiation is contraindicated for pregnant women, some procedures are limited and other imaging options must be explored. Medications commonly used to improve heart function often must be stopped because they are harmful to the baby. Teams evaluate each action from a variety of perspectives and seek opportunities to adapt medical therapy or use temporizing measures, when possible. After delivery, women may receive follow-up from a cardiologist or, when necessary, continue long-term care through the Advanced Heart Failure program.

Special Moms/Special Babies

With proper planning by maternal-fetal medicine specialists and cardiologists, more women are realizing their dreams of successful pregnancies and healthy babies.

Special Moms/Special Babies is a unique obstetrical service at MedStar Washington Hospital Center that provides coordinated, focused pregnancy care for mothers who themselves have a congenital health problem, or who are carrying babies with congenital problems.

For the Ob/Gyn clinic at MedStar Washington Hospital Center, please call 202-877-7101.

To reach the 24-hour advanced heart failure physician line, please call 202-297-9307.

Transplant.

Two institutes. One integrated approach.

(left to right) Drs. Satoskar and Valdiviezo at MedStar Georgetown Transplant Institute

With the addition of a dedicated MedStar Heart & Vascular Institute cardiologist to the interdisciplinary team of the MedStar Georgetown Transplant Institute, our two preeminent, nationally respected specialty centers continue to work collaboratively to provide an integrated approach to transplant care. Cardiologist Carolina Valdiviezo, MD, is now a permanent team member of the transplant program, one of the busiest in the country.

"We bring a very specialized body of cardiovascular knowledge to the transplant program. It is strength upon strength—two institutes providing a cohesive effort for optimal outcomes," explains Allen J. Taylor, MD, chief, Department of Cardiology.

Both institutes provide easy access to services for patients with advanced kidney and liver disease in locations throughout the Washington, D.C., and Baltimore, Maryland, region—sometimes co-located in a single facility.

Dr. Taylor, who served as the cardiology consultant to the transplant team for several years, explains the critical importance of a dedicated clinical cardiologist to the Transplant Institute's interdisciplinary team approach to care. "There are unique stresses and risks to patients undergoing liver, kidney, pancreas, and small bowel transplant," he says. "They require cardiology assessment, monitoring, and treatment all along the continuum of care."

"We have thousands of patients in various stages of care—waiting for organs, immediately prior to transplant, and post-transplant," Dr. Valdiviezo says. "Many have cardiovascular issues unrelated to their organ failure. For others, cardiovascular disease (CVD) is linked to their organ failure. Kidney disease is linked to CVD of all forms. These patients have very high risk of suffering from some form of CVD, which is also the main cause of mortality among this population." "Patients with liver disease experience specific cardiovascular responses that can be detrimental and may make them more vulnerable to the hemodynamic stress of transplant surgery," she adds.

These issues necessitate having a practiced eye evaluate patients, review all tests and medical records, and identify common and uncommon abnormalities. "When patients have community cardiologists, I work closely with them to coordinate care prior to transplant and following the procedure," she notes. Ideally, the patient should receive care long before transplantation and for years after surgery.

"Surgery itself puts enormous strain on the cardiovascular system. Often, we need to take a more aggressive treatment approach for these patients to make transplant an option and as safe as possible," Dr. Valdiviezo says.

"This partnership is so important to our patients who often have extensive co-morbidities," says Rohit Satoskar, MD, director of Medical Services at MedStar Georgetown Transplant Institute and medical director of liver transplantation. "Our goal is to break down barriers and treat those complex cardiovascular issues that could otherwise prohibit transplant. When unexpected issues arise, we have a cardiologist on the team who knows our patients and their histories, as well."

With the rise in the number of living donors, the demand for cardiology services will increase.

"The population of patients is large and growing," says Dr. Valdiviezo. "The whole subspecialty of transplant cardiology is evolving and growing, too, as experience and expertise in transplant cardiology and its body of literature expands."

"By leveraging the power of the MedStar Health system and our two nationally recognized institutes," adds MedStar Georgetown Transplant Institute assistant vice president David Zwerski, "we have established the capacity to provide care for this population in a way that many other centers can't replicate."

"Cardiovascular and transplant care are two great strengths among MedStar Health's many clinical programs. It was fitting that the two institutes were established at the same time in 2010. Since then, ongoing collaboration has continued to grow, allowing unique patient-centered treatments for patients with cardiac, liver, and kidney diseases."

Thomas Fishbein, MD
Executive Director
MedStar Georgetown Transplant Institute

(left to right) Electrophysiologist Athanasios Thomaides, MD, and Cardiac Surgeon Christian Shults, MD

Treating IST and POTS with the novel application of hybrid thoracoscopic ablation.

Our MedStar Heart & Vascular Institute physicians at MedStar Washington Hospital Center are first in the region and among seven in the nation to offer thoracoscopic ablation for the treatment of inappropriate sinus tachycardia (IST) and postural orthostatic tachycardia syndrome (POTS).

Pioneered and performed extensively by Mark La Meir, MD, of Brussels, Belgium, this treatment has shown excellent results for patients who are historically very difficult to treat with medications. Previously, there were limited options available and few that were effective long term.

Candidates for this procedure:

- Have IST or POTS
- Are often drug resistant
- Have generally been unsuccessfully treated with endocardial ablations
- Are typically young and may present with deconditioning and high anxiety.

This procedure is contraindicated in patients who have had right chest or heart surgery, and patients with severe lung disease.

Partnering to provide this promising new option to the region, Cardiac Surgeon Christian Shults, MD, and Electrophysiologist Athanasios Thomaides, MD, employ similar techniques used in their other collaborations, such as a convergent procedure to treat persistent atrial fibrillation.

The procedure, completed in the electrophysiology lab at MedStar Washington, begins with 3-D mapping by the electrophysiologist to identify the sinus node along with the source of tachycardia. Taking a minimally invasive approach through three small ports on the patient's right side, the cardiac surgeon performs the ablation and cuts off the unwanted, exogenous input while sparing the sinus node and without interrupting normal conduction. Patients are typically hospitalized for two to three days post-procedure.

The approach allows for delivery of a great deal more energy, plus protection and isolation of more tissue, and better visualization of the phrenic nerve.

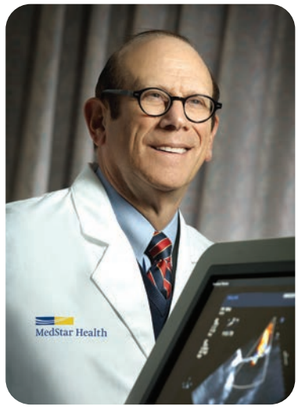
"We believe this new epicardial ablation technique is a promising minimally invasive surgical option for patients with IST or POTS who are either intolerant of medications or for whom medical therapy has been ineffective," says Dr. Thomaides.

"For the patient who has exhausted existing treatment options, this approach can be life-changing. We are so pleased to provide this new alternative," adds Dr. Shults.

For more information or a patient consult, please contact:

Christian Shults, MD
christian.shults@medstar.net, 202-877-7464

Athanasios Thomaides, MD
athanasios.x.thomaides@medstar.net, 202-444-8843



Steven Goldstein, MD, completes active career with the same passion with which he began.

Echocardiography, or cardiovascular ultrasound, was in its infancy when Steven A. Goldstein, MD, FACC, FASE, joined our expanding cardiology department at MedStar Washington Hospital Center in the late 1970s. He was introduced to the nascent technology during a pre-fellowship year spent working with pioneering cardiologist Aubrey Leatham and physicist Graham Leech at St. George's, University of London. Dr. Goldstein brought a unique blend of knowledge and enthusiasm for what has evolved into a multifaceted cardiovascular diagnostic tool, enabling physicians to fully assess heart function in 3-D and pinpoint even minute abnormalities.

"We were already among the nation's leading cardiovascular centers at the time I arrived, and we soon built tremendous competency in a lot of sub-areas of cardiology," recalls the Louisville, Kentucky native, who retired from MedStar Heart & Vascular Institute earlier this year. Another attribute setting MedStar Washington apart, he adds, was a department-wide eagerness to explore groundbreaking approaches that enhanced patient care and advanced the practice of cardiology.

"It was fun to be involved on the cutting edge of so many things," he says.

Serving as the hospital's director of Noninvasive Cardiology, he established and built the echocardiography lab into one of the premier organizations of its type in the nation. He also earned international recognition as a leading expert in the field, sharing insights with colleagues via the American Society of Echocardiography (ASE) and the National Board of Echocardiography. ASE honored Dr. Goldstein's leadership and service in 2015 with its Physician Lifetime Achievement Award.

The son of a teacher, Dr. Goldstein has been a committed educator through countless conference presentations, writing, and, more recently, revising the ASE textbook and mentoring dozens of medical students and fellows. He sought to set an example for dedication and hard work. Even on vacations with his wife, Simoy, Dr. Goldstein typically brought along case files and articles to review.

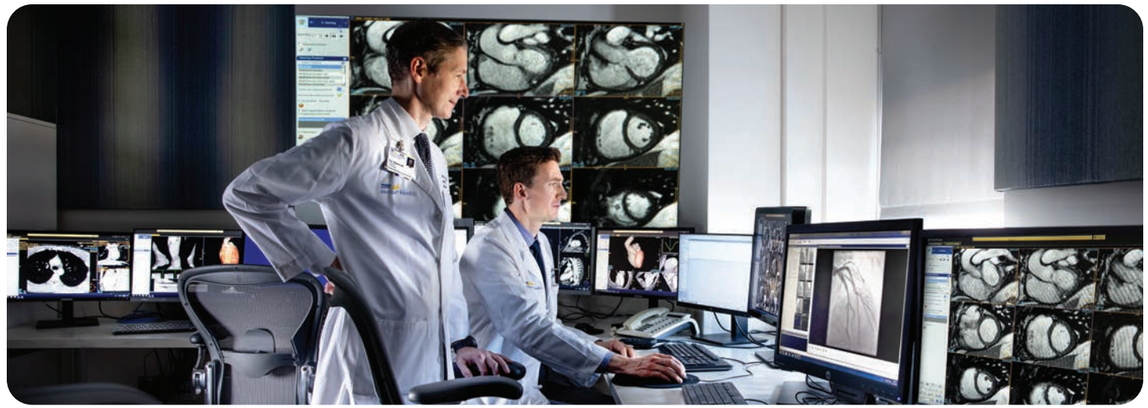
"The only unplanned day of work I missed in 42 years was during the blizzard of 1996, when I couldn't get out of my neighborhood," he says with a laugh.

Although retirement has altered his daily routine, allowing him more opportunities to swim and play golf and spend time with his family, Dr. Goldstein will likely remain a regular participant in our weekly cardiac ultrasound teleconferences, as well as those hosted by other hospitals around the country.

"It's not 'work' when you love what you do," he says.

"Steve is a true pioneer who opened the very first echo lab at MedStar Washington Hospital Center and grew it into an innovative, nationally recognized center of clinical excellence and education. I am personally grateful to have known him as a trusted colleague, a gifted teacher, and a good friend. His boundless energy will serve him well as he and his wife Simoy embark on future interests, while we continue to benefit from his exceptional, longstanding presence and participation in our educational endeavors."

Stuart F. Seides, MD, physician executive director, MedStar Heart & Vascular Institute



New center and new technology expand cardiovascular imaging abilities.

Expanding upon previous imaging abilities, the new Thome Advanced Cardiovascular Imaging Center has opened at MedStar Heart & Vascular Institute at MedStar Washington Hospital Center. The center unites MRI and CT in one space dedicated to cardiovascular studies. The proximity allows specialized physicians and technicians to work together more effectively and offers patients a seamless experience.

The latest, robust MRI and CT technology brings better images, cutting-edge sequences, and functionality, which affords the ability to look at the heart from views not previously available. New technology includes the Siemens MAGNETOM® Sola 1.5T MRI, Siemens Dual Source CT scanner SOMATOM® Force, and the HeartFlow® FFR_{CT} Analysis.

These sophisticated imaging options have paved the way for an upcoming, long-term collaboration with researchers and clinicians from the National Institutes of Health. This collaboration, along with pioneering technologies, allows us to continue providing state-of-the-art cardiac imaging in the nation's capital.

Siemens Dual Source CT scanner SOMATOM® Force

This state-of-the-art scanner provides:
- Higher temporal resolution allowing for scans at faster heart rates,
- Significantly lower radiation dosing,
- Reduced contrast dosing,
- Intelligent automation,
- More accurate scans, especially in technically challenging scans.

Siemens MAGNETOM® Sola 1.5T MRI

This new, recently approved scanner platform allows for de novo applications and elevates MRI capability, plus:
- Larger magnet bore for increased patient comfort,
- Faster sequences to support improved imaging in technically challenging situations (e.g., arrhythmia),
- Advanced tissue characterization,
- Expanded non-contrast and contrast techniques for MR angiography,
- Stronger collaboration with the NIH/NHLBI for advanced cardiac MRI.

HeartFlow® FFR_{CT} Analysis

New software offers visualization and physiologic evaluation of coronary stenoses, provided noninvasively. It allows for:
- More accurate evaluation of coronary anatomy and indeterminate stenoses,
- A reduction in unnecessary catheterizations,
- Greater operator perspective and planning prior to intervention.

New space for patients

Patients can easily access the imaging center and park directly across from the hospital's front entrance. The newly renovated and modern waiting room is safely spaced and offers charging stations and other functional comforts for patients.

To order a study, please call the radiology scheduling line: 202-877-XRAY (9729).

Siemens Dual Source CT scanner SOMATOM® Force

Siemens MAGNETOM® Sola 1.5T MRI

The modern, safe, and open space provides easy access for patients.

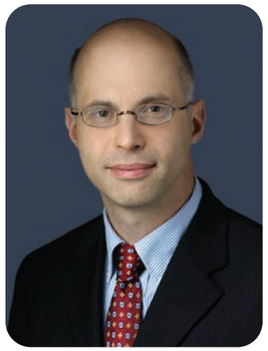
News and notes.

MedStar Washington Hospital Center again ranks among top U.S. hospitals for cardiovascular care.

MedStar Washington Hospital Center was again recognized as one of the top 50 cardiovascular centers in the country in the 2020-21 U.S. News & World Report "Best Hospitals" rankings. MedStar Washington is the only nationally ranked heart program in the Washington region. It also received the highest possible rating in aortic valve surgery, congestive heart failure, heart bypass surgery, and transcatheter aortic valve replacement.

Stuart F. Seides, MD, physician executive director of MedStar Heart & Vascular Institute says, "This achievement reflects our dedication to excellence, innovation, and cutting-edge research, all focused on serving those patients for whom we are privileged to care."

Gaby Weissman, MD, leads the reform of training programs during pandemic.



Gaby Weissman, MD

In late summer, Gaby Weissman, MD, published, "The Impact of COVID-19 on Cardiovascular Training Programs: Challenges, Responsibilities, and Opportunities," in the *Journal of the American College of Cardiology.*

Dr. Weissman is the director of the MedStar Georgetown University Hospital/MedStar Washington Hospital Center Cardiovascular Disease Fellowship program, one of the largest such programs in the country. Throughout the response to the COVID-19 pandemic, our cardiology fellows and residents continued to learn and work.

Drawing from lessons learned during this time, and with an eye to necessary future innovation, Dr. Weissman and his co-authors offer recommendations for modifying training programs, incorporating virtual education, maintaining a focus on research, and enhancing wellness of the fellow.

The article can be found in the JACC's volume 76, issue 7, published on Aug. 18, 2020. **doi.org/10.1016/j.jacc.2020.06.026.**

Meeting the challenges of COVID-19, virtual valve clinic continues to expedite treatment and protect patients.

At MedStar Heart & Vascular Institute at MedStar Union Memorial Hospital, patients have benefited from an innovative and streamlined approach to TAVR since 2012. The virtual valve clinic approach revolves around patient convenience. This includes expedited workups, fewer trips to the hospital, and dramatically reduced wait times. The national average wait, from time of initial referral to the procedure, is about seven weeks. The virtual valve clinic at MedStar Union Memorial averages 10 days.

John Wang, MD, Chief of the Cardiac Catheterization Laboratory and Director of the Structural Heart Program, explains. "We complete the entire workup for TAVR in under 24 hours. Patients then return to the hospital for their procedure the following week. We do the entire workup on the date of the catheterization procedure, with the TAVR CT the following morning."

Amid the pandemic, this approach is receiving renewed attention. More than ever, patients are seeking the critical benefits it provides. During a recent interview, Dr. Wang shares details on the process in *Cath Lab Digest,* June 2020 issue, Vol. 28, No.6.

For more information on the virtual valve clinic, please contact Dr. Wang at **john.wang@medstar.net.** To refer a patient please call the Heartline: **410-554-2332.**

John Wang, MD

Welcome new medical staff.

Medical director of Quality and Safety.

Mouin Abdallah, MD, is the new Medical Director of Quality and Safety at MedStar Heart & Vascular Institute, based at MedStar Washington Hospital Center. In this role, Dr. Abdallah will collaborate with surgery and cardiology specialty sections to enhance the culture of quality and safety toward assuring the most favorable outcome for every patient every time.

Dr. Abdallah also has a cardiology practice at MedStar Washington Hospital Center, where he has special interest in managing complex cardiovascular patients. Dr. Abdallah has master's degrees in Health Care Management from Harvard University School of Public Health, and in Clinical Research/Health Services Outcomes from the University of Kansas. He has additional certifications in cardiovascular disease, nuclear cardiology, echocardiography, and clinical informatics.

Education and training:

- **Fellowship:** Combined Cardiology and Outcomes Research, Saint Luke's Mid America Heart Institute, Kansas City, Missouri
- **Residency:** Internal Medicine, University of Iowa Roy. J. and Lucille A. Carver College of Medicine, Iowa City, Iowa
- **Medical School:** American University of Beirut, Beirut, Lebanon

Firehiwot Achamyeleh, MD, is a cardiologist at MedStar Union Memorial Hospital and MedStar Good Samaritan Hospital. Dr. Achamyeleh has a specialized clinical interest in cardiology care for women, and cardiology care during high-risk pregnancy.

Education and training:

- **Fellowship:** Cardiovascular Disease, The George Washington University Hospital
- **Fellowship:** Cardiovascular Disease, Drexel University College of Medicine, Pennsylvania
- **Residency:** Internal Medicine, SUNY Downstate Medical Center
- **Medical School:** Penn State College of Medicine

Rahul Anand, MD, is a cardiologist at MedStar Franklin Square Medical Center. He has additional certifications in echocardiography and nuclear cardiology. Dr. Anand treats patients with the full range of cardiovascular issues.

Education and training:

- **Fellowship:** Cardiovascular Disease, Mount Sinai St Luke's Hospital, New York
- **Residency:** Internal Medicine, Bronx-Lebanon Hospital Center
- **Medical School:** University College of Medicine Sciences, Delhi University, New Delhi, India

Hitesh Chawla, MD, is a cardiologist at MedStar Union Memorial Hospital and MedStar Good Samaritan Hospital. He has additional certifications in echocardiography and nuclear cardiology, and internal medicine. Dr. Chawla has a particular interest in the preventive aspect of cardiology.

Education and training:

- **Fellowship:** Cardiovascular Disease, John H. Stroger, Jr. Hospital of Cook County, Illinois
- **Residency:** John H. Stroger, Jr. Hospital of Cook County, Illinois
- **Medical School:** University College of Medicine Sciences, Delhi University, New Delhi, India

Jason Crowner, MD, is a vascular surgeon at MedStar Union Memorial Hospital and MedStar Good Samaritan Hospital. Dr. Crowner provides treatment for the full spectrum of vascular pathology, with a special focus on severe peripheral artery disease.

Education and training:

- **Residency:** Integrated Vascular Surgery Residency, University of North Carolina, Chapel Hill
- **Medical School:** Southern Illinois University School of Medicine

Ijeoma Ezeife, MD, is a cardiologist at MedStar Union Memorial Hospital and MedStar Good Samaritan Hospital. Dr. Ezeife's clinical interests, in addition to general cardiology, include women's cardiovascular disease.

Education and training:

- **Fellowship:** Cardiovascular Disease, Gagnon Cardiovascular Institute, Morristown Medical Center; New Jersey
- **Residency:** Internal Medicine, John H. Stroger, Jr. Hospital of Cook County, Illinois
- **Medical School:** University of Nigeria

Mehdi Gheshlaghi, MD, is a cardiologist at MedStar Union Memorial Hospital and MedStar Harbor Hospital. He has additional certifications in cardiovascular disease, cardiac imaging, adult echocardiography, and nuclear cardiology.

Education and training:

- **Fellowship:** Cardiovascular Disease, Maine Medical Center
- **Residency:** Internal Medicine, MedStar Georgetown University Hospital/MedStar Washington Hospital Center
- **Medical School:** Tehran University of Medical Sciences, Tehran, Iran

Ayesha Hatch, MD, is a vascular surgeon at MedStar Washington Hospital Center and MedStar Southern Maryland Hospital Center. She specializes in providing vascular access for patients who have chronic kidney disease and are in need of dialysis. She has a particular interest in treating patients with end-stage renal disease.

Education and training:

- **Fellowship:** Vascular Surgery, Montefiore Medical Center-Einstein School of Medicine, Bronx, New York
- **Residency:** General Surgery, Stony Brook University Hospital; Stony Brook, New York
- **Medical School:** Warren Alpert Medical School at Brown University; Providence, Rhode Island

Mrinalini Krishnan, MD, is an advanced heart failure specialist at MedStar Union Memorial Hospital. Her clinical interests include cardiomyopathy and pulmonary hypertension, in particular.

Education and training:

- **Fellowship:** Advanced Heart Failure and Transplant Cardiology, MedStar Georgetown University Hospital/ MedStar Washington Hospital Center
- **Fellowship:** Cardiovascular Disease, Guthrie Robert Packer Hospital; Pennsylvania
- **Fellowship:** Advanced Heart Failure and Transplant Cardiology, University of Alabama at Birmingham
- **Residency:** Internal Medicine, UPMC PinnacleHealth Hospital; Pennsylvania
- **Medical School:** Medical University of the Americas; Nevis, West Indies

Kryssy Maloni, MD, is a vascular surgeon at MedStar Health Vein Centers at Lafayette Centre and MedStar Washington Hospital Center. Dr. Maloni provides treatment for the full spectrum of venous and arterial disease, with a special focus on venous insufficiency.

Education and training:

- **Fellowship:** Vascular Surgery, Hospital of the University of Pennsylvania
- **Residency:** General Surgery, Brown University
- **Medical School:** University of South Carolina School of Medicine

Sriram Rao, MD, is an advanced heart failure specialist at MedStar Washington Hospital Center. He provides long-term support for patients with heart failure, those on mechanical support, and heart transplant recipients, with a special focus on long-term outcome and complication reduction for LVAD patients.

Education and training:

- **Fellowship:** Advanced Heart Failure, Hospital of the University of Pennsylvania
- **Training:** General Cardiology, St Vincent's Hospital, Sydney, Australia; Internal Medicine, Royal Prince Alfred Hospital, Sydney, Australia
- **Medical School:** Monash University, Melbourne, Australia

Kyle Reynolds, MD, is a vascular surgeon at MedStar Georgetown University Hospital and MedStar Montgomery Medical Center. He specializes in the treatment of aortic disease, including aneurysms and dissections, carotid artery disease, and venous occlusive disease.

Education and training:

- **Residency:** Integrated Vascular Surgery, MedStar Georgetown University Hospital/MedStar Washington Hospital Center
- **Medical School:** New York Medical College

Sunjeet Sidhu, MD, is a cardiac electrophysiologist at MedStar Union Memorial Hospital, MedStar Franklin Square Medical Center, and MedStar Harbor Hospital. Dr. Sidhu specializes in heart rhythm disorders, ablation, left atrial appendage occlusion with WATCHMAN™.

Education and training:

- **Fellowship:** Clinical Cardiac Electrophysiology, The Johns Hopkins Hospital
- **Fellowship:** Cardiovascular Disease, The Johns Hopkins Hospital
- **Residency:** University of Maryland Medical Center
- **Medical School:** The George Washington University School of Medicine and Health Sciences

Anjili Srivastava, DO, is a cardiologist at MedStar Union Memorial Hospital. She has additional certifications in echocardiography and nuclear cardiology. Dr. Srivastava sees patients with a wide spectrum of cardiovascular disease. She is particularly interested in primary cardiovascular prevention, lipidology, and women's cardiovascular health.

Education and training:

- **Fellowship:** Cardiovascular Disease, NYU Winthrop Hospital
- **Residency:** Internal Medicine, NYU Winthrop Hospital
- **Medical School:** NYIT College of Osteopathic Medicine; Old Westbury, New York

Bethel Woldu, MD, is a cardiac hospitalist at MedStar Good Samaritan Hospital, where she is initiating the cardiac hospitalist service. She has a special interest in global health.

Education and training:

- **Fellowship:** Advanced Echocardiography, The Johns Hopkins Hospital
- **Fellowship:** Cardiovascular Disease, The Johns Hopkins Hospital
- **Residency:** Internal Medicine, New York Presbyterian-Weill Cornell Medical Center
- **Medical School:** University of Colorado School of Medicine

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

Please submit any comments to Managing Editor Karoline Hutson, at **karoline.m.hutson@medstar.net.**

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Some of the photos in this publication were taken prior to the COVID-19 pandemic. All patients and providers are expected to follow the current MedStar Health guidelines for safety including proper masking and physical distancing where appropriate. Learn more at **MedStarHealth.org/Safe.**