

Cardiovascular **Physician**

A clinical practice and research publication.

VOLUME 22 | NO 1 | SPRING 2026

Integrating AI into Cardiovascular Medicine:

Novel Tools, Empowered Providers, and Informed Patients.

Also Inside:

**Modern LVAD Therapy:
Improved Survival, Fewer
Complications, Broader
Patient Eligibility.**

**Robotic Cardiac Surgery:
Decreased Risk and
Better Outcomes for
More Patients.**

**Advanced Interventional
Cardiology Services Now
Offered in Southern Maryland.**

Table of contents.



4

Integrating AI into cardiovascular medicine: Novel tools, empowered providers, and informed patients.



8

Modern LVAD therapy: Improved survival, fewer complications, broader patient eligibility.



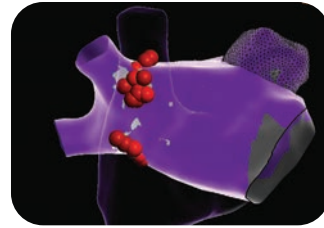
12

Robotic cardiac surgery: Decreased risk and improved outcomes for more patients.



15

Advanced interventional cardiology services are now available in Southern Maryland.



16

Case Study: Cardioneuroablation as a potential alternative to pacing for refractory vasovagal syncope.



18

Pulmonary Hypertension Program now an accredited Center of Comprehensive Care.



18

Welcome to our new physicians.

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

Using machine-based AI tools to deliver person-centered care.

Artificial intelligence is earning a growing role as a valuable tool in cardiovascular medicine. At a rapid clip, the use of AI in our field has improved the efficiency of information access relevant to our clinical practice. As you'll read in our feature story on page 4, providers at MedStar Heart & Vascular Institute are harnessing AI technology in powerful and practical ways. This exciting rise in machine-based capabilities also presents a timely opportunity for us to stay focused on the other end of the spectrum: human compassion, empathy, and understanding. I remain proud of how our clinicians engage with patients and their families, seeking to understand each person's unique goals of care and how treatment fits into their lives. AI is most powerful when its output is filtered and balanced through our own knowledge, experience, and understanding of our patients. That allows us to shape diagnoses and therapeutic decisions in ways that are both well-informed and deeply personal.

Throughout this issue of *Cardiovascular Physician*, we explore other examples of how we are enhancing the delivery of meaningful therapies for our patients. On page 8, we share an update on our use of durable left ventricular assist devices (LVADs), including newly indicated patient populations and our Advanced Heart Failure infrastructure now available in Baltimore, bringing more convenient and accessible expert care to patients across our region. We also highlight our robotic cardiac surgery program (page 12), which continues to deliver excellent clinical outcomes with more rapid patient recovery.

Additional articles examine how our physicians are expanding access to high-end interventional technology at MedStar Southern Maryland Hospital Center (page 15), and applying their extensive experience with ablative therapies to a potential new cardioneural use case (page 16).



Taken together, I believe that these pieces reflect our commitment to delivering strong outcomes and continuously elevating patient care. Just as AI enhances our work, so too does our focus on innovation, access, and most importantly, the human connection. By thoughtfully integrating advanced technology with person-centered care, we practice medicine in ways that are not only progressively more sophisticated, but also truly enhance the experience for the patients and families whom we serve.

Integrating AI into cardiovascular medicine: Novel tools, empowered providers, and informed patients.

At MedStar Health, our clinicians are harnessing the many opportunities now available through artificial intelligence (AI) in careful, thoughtful ways. AI is helping us make faster, more accurate diagnoses, select better-informed treatment plans, be more present and prepared during clinic visits, enhance our research, and improve the patient experience. Importantly, our system has a strict vetting process with an organized governance structure. We investigate ideas, properly source them, and bring them into practice if, and only if, it offers a real benefit. This ensures that our researchers, clinicians, and ultimately, our patients, can have confidence in the tools we're using. Here are some of the ways we are using AI in cardiovascular medicine.



Quantifying disease stage with cardiac CT.

If standard CT angiography does not show any critical coronary blockages, cardiologists may still be able to visualize plaque and diseased arteries. Traditionally, this allowed us to identify atherosclerosis and share the associated risks with patients, but not offer anything quantitative. We contributed to the SCCT guidelines for CTA quantification and we are now using a new AI option that rapidly quantifies and characterizes the plaque. This algorithm is then used to determine disease stage, allowing cardiologists to select very specific drug regimens, based on severity, within proposed guidelines. This AI may replace historical tools like risk calculators and offers a more sophisticated and personalized approach to treatment and monitoring.

Image above: Gaby Weissman, MD, director, Cardiovascular MRI and CT Core Laboratory, MedStar Washington Hospital Center (standing) with Sumbal Janjua, MD (seated)



Noninvasive fractional flow reserve (FFR) testing.

Our investigators contributed to the evaluation of X1™-FFR and AutocathFFR™, AI-based, noninvasive, fractional flow reserve (FFR) platforms, as potential alternatives to invasive FFR testing. During a standard coronary angiogram, the software derives FFR values without the use of pressure wires and hyperemic drugs. In both studies, X1-FFR and AutocathFFR demonstrated nearly 90% diagnostic accuracy compared with invasive FFR. Moreover, both produced rapid results, reduced patient discomfort, mitigated procedural risks, and reduced cost. Further, these tools can analyze and compare previous studies, enhancing the comprehensive assessment of the patient. Study results have been submitted to the U.S. Food and Drug Administration for AutocathFFR, and regulatory review is ongoing. X1-FFR has full FDA approval and is now available in cath labs across the country.

Image above: Hector M. Garcia-Garcia, MD, PhD, director, Angiography and Invasive Coronary Imaging, MedStar Cardiovascular Research Network



Advanced detection and management of pulmonary embolism and aortic aneurysm.

Using new machine-based image analysis to review CT scans in real time, we are more capable of catching incidental but potentially high-risk abnormalities, such as pulmonary embolism and aortic aneurysm. This AI provides consistent detection of anomalies, flags studies for further review, and automatically triages cases that require urgent intervention. Our vascular surgeons, in coordination with our cardiac surgeons, are testing a new platform which further assists in expediting care. Using this tool, we can prioritize findings, automate risk stratification using relevant EHR data, communicate rapidly across multiple disciplines to determine the appropriate intervention, and provide real-time updates to the specialists involved. For aortic aneurysms not yet appropriate for treatment, the platform facilitates patient follow up, ensuring better touchpoints and timely care down the road.

Image above: Raghuvver Vallabhaneni, MD, director, Vascular Surgery, Baltimore region



Ongoing research of AI-powered echocardiography.

Novel research from MedStar Health has demonstrated that using AI for obtaining and interpreting transthoracic echocardiograms is comparable to manual methods, and incorporating AI in clinical practice may improve physician performance in several aspects. Our clinical researchers began studying these possibilities more than five years ago and continue to refine and evaluate use cases as AI capabilities evolve. Our studies have demonstrated that:

- AI-automated methods can accurately assess left ventricular ejection fraction and global longitudinal strain on echo with comparable accuracy to manual methods. Most importantly, AI models can assist in diagnosing diseases, such as cardiac amyloidosis, hypertrophic cardiomyopathy, heart failure with preserved ejection fraction, or valvular heart disease.
- machine-learning models can increase efficiency of interpreting echo images while reducing the variability of measurements.
- carefully trained deep-learning algorithms can successfully provide real-time guidance in acquiring images and performing common measurements to complete diagnostic studies to clinicians who have no prior experience conducting echo.

While still early in development, findings reveal faster acquisition, more accurate measurements and calculations, and near-perfect reproducibility. Looking ahead, we are learning the potential of echo AI to predict the presence of various cardiac diseases and their prognoses based on AI interpretation of ultrasound images. Major questions are still being considered: can we identify more conditions, deliver earlier treatment, or make it easier for patients to obtain imaging? We continue to collect data and pursue these potential advantages for our patients.

Image above: Federico Asch, MD, director, Echocardiography Core Lab, MedStar Health Research Institute



Additional layer of interpretation for complex electrocardiograms.

We have begun experimenting with the capabilities of assistive AI in reading the electrocardiogram. The interpretation of some atypical presentations for acute MI, for example, can be quite complex, so AI offers another layer of investigation. This may help ensure more consistency across a sometimes-subjective reading. In the future, cardiologists may be able to use this tool to look for other high-risk diagnoses, such as hypertrophic cardiomyopathy, helping screen for potentially deadly conditions in a broader population at earlier stages of disease.



Preventing serious, negative outcomes in hospitalized patients.

For several years, we have used algorithms to search the records of hospitalized patients with heart failure to ensure that they are on an optimal regimen of the latest guideline-directed medical therapy. Now, MedStar Health is expanding predictive data analytics to find any hospitalized patients at risk for safety events or potentially adverse hospital outcomes. This real-time surveillance of our patients may look at metrics, such as days hospitalized or fever, and alert the care team. These automated predictions offer actionable data to help clinicians intervene and prevent potential negative outcomes promptly.

Image above: Allen Taylor, MD, chair, Cardiology, Washington, D.C. region



Increasing patient and provider satisfaction during clinic visits.

MedStar Health engaged in an early partnership with Suki AI to pilot and explore various functions of the now popular platform. Suki ambiently listens to patient encounters, receives voice commands from the physician, creates detailed notes and summaries of visits, generates relevant billing codes, and interacts with electronic health records. Both patients and providers alike have reported greater satisfaction after using the platform. When providers can avoid taking notes in real time, there is more engagement, conversation, and collaboration with their patients. Always being very intentional in how we use AI, we selected this tool because it offers a significant benefit to the patient, as well as reducing the burden of some administrative tasks.

Image above: Charles German, MD, director, Preventive Cardiology



Improving access and patient experience.

We're rolling out AI-powered tools to help improve patient interactions before and after clinic visits. Our chatbots, voice assistants, and other tools can quickly schedule and reschedule appointments, fill cancellations, tailor recommendations for services or specialists, and automate follow-up reminders.



Benefits of primary research capabilities.

Investigators in MedStar Cardiovascular Research Network often collaborate with industry and government partners to advance new technology. We can collect large amounts of primary data in our animal and cadaver labs that aid in developing detailed algorithms for further testing.



Pioneering the use of AI in clinical trials.

Our patients benefit from the availability of many clinical trials, and our researchers are committed to offering the best options. Investigators at MedStar Health Research Institute are exploring the use of AI in clinical trials. It can be used to design better studies, review huge amounts of data, reduce unconscious bias, improve access for candidates, and enhance patient education and ongoing engagement. The potential for more efficient, accurate, and inclusive trials can lead to better information and hopefully, better outcomes.

Image above: Ron Waksman, MD, director, Cardiovascular Research, Washington, D.C. region

Modern LVAD therapy



Improved survival, fewer complications, broader patient eligibility.

>1,000

Durable LVAD
implantations
to date

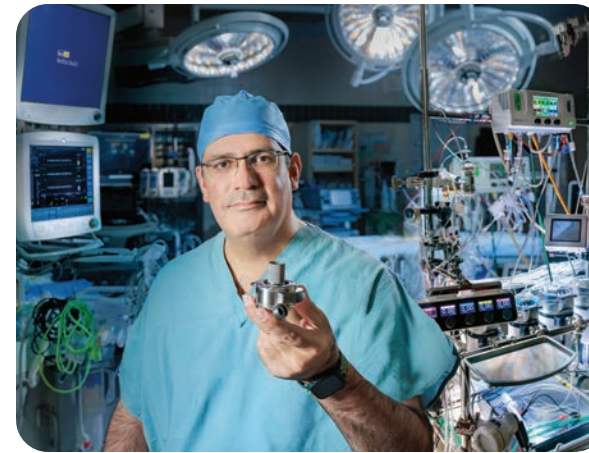
Approval of the first durable left ventricular assist devices (LVAD) in 1994 marked a turning point in the treatment of patients with end-stage heart failure. Initially used as a temporizing measure to support the failing heart until a transplant became available, LVAD technology has advanced to the point where recipients are now living more than 10 years with the devices, encountering fewer complications, and enjoying better quality of life along the way.

"The number of implants grows annually," notes Keki Balsara, MD, surgical director of Transplantation and Mechanical Circulatory Support. "Last year was the highest on record, and it looks like 2026 is already on pace to surpass that."

Dr. Balsara adds that recent advancements in the field have helped make LVAD therapy a viable option for a wider range of candidates.

"We have expanded our criteria for offering LVAD therapy to patients who, in the past, would not have been deemed to derive benefit due to age, comorbidities, and other factors," he says. "While these more complex patients may have a longer hospital course, their outcomes are generally quite good."

Those trends are evidenced by the most recent annual report from the Society of Thoracic Surgeons (STS) Interagency Registry for Mechanically Assisted Circulatory Support (Intermacs). In tracking more than 28,000 continuous-flow LVADs implanted from 2015 to 2024, the seven-year survival rate has reached nearly 52%. The report also identified that patients are experiencing lower incidences of LVAD-related adverse events, such as gastrointestinal bleeding, device malfunction, and stroke.



(Top) Keki Balsara, MD, surgical director of Transplantation and Mechanical Circulatory Support

(Center) Dr. Balsara performing an LVAD implant

(Bottom) Farooq Sheikh, MD, medical director of Advanced Heart Failure in the Washington, D.C. region

"The data suggest that the survival rate is going to quickly reach about 10 years, perhaps eventually equaling the average 13-15-year survival rate of a heart transplant," Dr. Balsara says. And given the fact that diagnoses of advanced heart failure will likely increase as more people live longer, he adds, "I expect we'll be able to treat more patients with LVADs than the small numbers of just a few years ago."

A more durable option for younger patients.

For younger patients with advanced heart failure, the increasing effectiveness of LVAD therapy raises the potential of delaying a subsequent heart transplant to double the survival time, a concept called "net prolongation of life."

"For individuals under the age of 50, for example, the goal of achieving a normal life span becomes increasingly challenging given the paucity of available donor hearts and higher risks associated with a second transplant down the road," explains Farooq Sheikh, MD, medical director of Advanced Heart Failure in our Washington, D.C., region. "An LVAD, however, may allow patients to delay undergoing the initial transplant long enough to significantly improve survival time—a potentially more attractive approach."

While he cautions that the topic remains controversial, particularly with the uncertainties and risks of second surgeries, Dr. Sheikh adds, "the fact that LVAD outcomes have improved so significantly has changed how we view this therapy." A recent published study has provided the first evidence that an "LVAD-first" approach may offer patients a new avenue to net prolongation of life.

Ongoing research and device refinement.

MedStar Washington Hospital Center has played a leading role in the evolution of LVAD therapy, from being among the first four hospitals in the world to implant a prototype device in 1988 to now being among the nation's largest implantation programs for the HeartMate 3™, the only FDA-approved LVAD.

"When it comes to clinical research for LVADs, our Center is oftentimes top of mind for enrollment," Dr. Balsara says.

We are currently part of the TEAM HF trial, which is evaluating whether earlier treatment of advanced heart failure patients with the HeartMate 3™ will improve life expectancy and quality of life. In addition, the trial will help determine whether pulmonary artery pressure monitoring with the CardioMEMS™ HF System can identify those at risk for worsening heart failure.

"What's exciting is that we are working to identify patients earlier in the disease state to see if these technologies can garner a bigger benefit," Dr. Sheikh says.

Social support and wraparound care.

As the criteria for LVAD therapy has expanded, we have championed extending the treatment to patients who might otherwise have been denied by other institutions due to adverse social determinants such as lack of family support. The experience of our program and staff allows us to offer an infrastructure of support, beyond the clinical needs.

"We've demonstrated the ability to help patients in those situations gain great outcomes," Dr. Sheikh says. "If patients have barriers that may prevent transplant, such as obesity or diabetes, we can utilize the LVAD to help patients so that they can eventually become candidates for these therapies."

—Continued on next page



Specialized patient management now available in our Baltimore region.

“There’s a growing recognition that individuals with LVADs are not as rare or esoteric as once thought,” Dr. Balsara explains. “It’s a fortunate paradigm shift because it allows us to monitor care for these patients in their local community hospitals and clinics, rather than requiring them to travel to the tertiary center that implanted the device.”

While MedStar Washington Hospital Center remains MedStar Health’s center for LVAD implantation, advanced heart failure patients in the Baltimore area now have access to a growing range of post-implant care closer to home. Building on its existing LVAD outpatient clinic, MedStar Union Memorial Hospital can provide robust inpatient medical care and services that are common to the care of LVAD patients, such as cath lab and interventional radiology procedures, transesophageal echocardiograms, and dialysis.

Sandeep Jani, MD, medical director of Advanced Heart Failure in the Baltimore region, explains that while Washington, D.C., is only about an hour away, commuting between the two areas can place a significant burden on LVAD patients and their families.

“Our goal is to do as much as we can for Baltimore-area LVAD patients here, and minimize their need to go to D.C.,” says Dr. Jani. “Unless you need surgery or an interventional stroke procedure, most things can be handled in Baltimore. Eliminating the burden of travel with more convenient services goes a long way toward sustaining patients’ recovery and improving their overall quality of life.”

Over the past year, MedStar Union Memorial Hospital’s LVAD Coordinator Katie Loeffler, RN, and Nurse Navigator Andrea Thomas, RN, have been training staff members in managing patients who have LVADs. “Their work has spurred others in the hospital to learn how to care for these patients,” Dr. Jani says. “The effort has been a huge success.”

Dr. Jani expects MedStar Union Memorial’s capabilities for LVAD patients to increase further, potentially including gastroenterology procedures and additional Cath Lab services.

“Whatever services our hospital can provide for the general population, we should be able to offer most of them to LVAD patients,” adding that while the Baltimore and Washington Advanced Heart Failure teams may be in different cities, they share the same commitment to bringing robust care as close to patients as possible.



Sandeep Jani, MD, medical director, Advanced Heart Failure, Baltimore region

“We’re very proud that our system is integrated so thoroughly,” he says, “and that we can provide the care patients need wherever they live.”

The outlook for LVAD therapy.

With LVAD technology continuing to advance at a rapid pace, Dr. Balsara foresees two “Holy Grails” of LVAD therapy will come to fruition in next five years. One is a wholly implantable, modern version of a biventricular pump that may help lower the risk for right ventricle failure—the primary cause of death among LVAD patients. Dr. Balsara notes that while artificial heart technology hasn’t advanced much since the 1980s when initially designed, some newer pumps in development provide meaningful biventricular support. “The ability to implant those at the outset will significantly improve survival,” he adds.

Another research focus is the incorporation of a rechargeable battery into the LVAD to the external drive line that provides power to the device. “Drive line infection is a big complication, and having something along the lines of a pacemaker would eliminate that problem,” Dr. Balsara adds.

Perhaps the biggest future advancement of LVAD therapy for advanced heart failure patients, is hope for a longer, more fulfilling life.

“The promise of LVAD therapy,” says Dr. Sheikh, “has never been brighter.”

Our teams of physicians, social workers, transplant and VAD coordinators, Advanced Practice Providers, nurses, and other specialists continuously support, monitor, and educate patients in an effort to improve outcomes and enhance their overall wellbeing.



Nurse Practitioner Christi Labarca



LVAD Nurse Navigator Megan Stafford



LVAD Coordinator Melanie Esteban



Advanced Heart Failure Specialists, Baltimore region: (l to r) Sandeep M. Jani, MD; Samer S. Najjar, MD; Erika D. Feller, MD; W. David Xu, MD



Advanced Heart Failure Specialists, Washington, D.C. region: (l to r, standing) Ajay Kadakkal, MD; Tania A. Vora, MD; Jonathan R. Gower, MD; Maria E. Rodrigo, MD; Nana Afari-Armah, MD; Miguel A. Pinilla Vera, MD; (l to r, seated) Phillip H. Lam, MD; Keki Balsara, MD; Farooq H. Sheikh, MD; Mark R. Hofmeyer, MD; Richa Gupta, MD

When you refer a patient to our Advanced Heart Failure Program, they receive a unique treatment plan that supports their best chance of survival and quality of life. Our multidisciplinary specialists with high-volume experience in complex cases offer advanced imaging, palliative care, guideline-directed medical therapy, catheter-based intervention, LVAD therapy, and heart transplantation.

To refer, please call 202-877-4698.

Robotic cardiac surgery:

Decreased risk and improved outcomes for more patients.

Now in its fifth year, the robotic cardiac surgery program at MedStar Washington Hospital Center has expanded its application to a broad spectrum of patients who need cardiac surgery.

"The attention toward robotics has grown tremendously in the last decade," says Yuji Kawano, MD, director of robotic cardiac surgery. "Technology is advancing constantly, and the robotic platform for cardiac surgery is the most innovative application of technology in our surgical field."

For select patients, the robotic approach can deliver significantly better clinical outcomes, shorter hospital stays, and a quicker recovery than conventional open surgery. Using the da Vinci® surgical system, the heart is accessed through five small holes, avoiding large incisions or sternum separation. Patients are usually able to ambulate the day after surgery, as a part of an accelerated postoperative recovery process. Patients can be discharged in about two-to-four days and advance their recovery over the course of a few weeks.

"The most important element of a successful operation is selecting the optimal approach for each individual patient," emphasizes Dr. Kawano. "Our heart team consists of cardiac

surgeons, interventional cardiologists, and advanced imaging experts with deep experience in every option, and we are committed to providing thoughtful counsel to patients and their families. Robotic cardiac surgery is the most advanced form of what we can offer to help patients get back to their lives."

Candidates for robotic approach may include patients who need:

- mitral valve repair/replacement (MVRR).
- aortic valve replacement.
- tricuspid valve repair/replacement.
- cardiac tumor removal.
- coronary artery bypass grafting.
- surgical ablation for atrial fibrillation.

Mitral valve repair and replacement (MVRR) is particularly well-suited to the robotic approach and has resulted in excellent clinical outcomes for the patients. This year, MedStar Washington Hospital Center achieved the Society of Thoracic Surgeons 3-star rating in mitral valve surgery, the highest achievable level.

The following data highlight some advantages of robotic approach over conventional open-heart surgery for MVRR.

	Mitral Valve Replacement		Mitral Valve Repair	
	MedStar Health Robotic Approach Since 2022 n(95)	STS Benchmarks All surgical approaches as of Sept. 2025	MedStar Health Robotic Approach Since 2022 n(187)	STS Benchmarks All surgical approaches as of Sept. 2025
Operative mortality	1%	4.99%	0.5%	0.87%
Postop stroke	0%	2.15%	0.5%	0.97%
Extubation in the OR	81.1%	4.85%	92.5%	16.55%
Prolonged vent	3.2%	13.82%	0.5%	3.68%
Postop renal failure	1.1%	5.16%	0.5%	1.2%
Total blood products used	9.5%	70.64%	2.7%	36.59%
Intra op blood products used	23.2%	52.6%	7%	24.6%
Postop blood products used	20%	50.22%	6.4%	21.87%
Total ICU hours mean	49.79	126.31	33.92	68.63
Post-procedure length-of-stay mean	6.38	10.59	4.17	6.37
Post-procedure length-of-stay median	6	8	4	5
Cardiac related reop	1.1%	5.99%	1.1%	3.17%



Yuji Kawano, MD, director of robotic cardiac surgery at MedStar Washington Hospital Center, leads one of the few programs of its kind in the mid-Atlantic region. Dr. Kawano performed 115 robotic cases last year, ranking among the highest-volume robotic cardiac surgeons.



Combining the accuracy of robotic instrumentation with a high-definition/magnification digital 3D camera, Dr. Kawano and his dedicated surgical team perform complex cardiac operations with superior clinical outcomes compared to open-heart approach. A robotic approach requires only small holes on the chest, preserving patients skeletal integrity. Patients are able to ambulate the day after surgery to enhance recovery and are discharged in about three-to-four days postoperatively.

When you refer a patient to Dr. Kawano, they will be fully evaluated for all available options. We will carefully recommend the treatment option best suited to the needs and goals of each individual patient. To refer, please call 202-877-7464.



These recognitions have been awarded to the Cardiac Surgery Program at MedStar Washington Hospital Center. The Program offers the full range of interventions depending on patients' unique clinical profile and preferences.

Advanced interventional cardiology services are now available in Southern Maryland.

Patients at MedStar Southern Maryland Hospital Center in Clinton, Md., have long enjoyed access to the expertise of MedStar Health's nationally recognized heart and vascular specialists. Now, they also have the on-site convenience of advanced cardiovascular diagnostic and treatment technologies as well, including several previously available only at urban hospitals.

Brian Case, MD, director of the Cardiac Catheterization Laboratory at MedStar Southern Maryland, says these added capabilities offer tremendous benefits to a large, diverse service area that extends from the Capitol Beltway suburbs to counties bordering the Chesapeake Bay.

"It's a largely underserved patient population, with a high prevalence of heart disease and untreated comorbidities," Dr. Case explains. "By providing this high level of care at a community hospital, we can treat more patients close to their home, rather than referring them to a tertiary care center."

For example, interventional cardiologists at MedStar Southern Maryland now perform a variety of percutaneous coronary interventions (PCIs) guided by advanced imaging tools, such as high-definition intravascular ultrasound and optical coherence tomography, which help visualize coronary arteries, assess plaque, and optimize stent placement.

To treat heavily calcified artery blockages, the interventional cardiologists can shave the area using Rotational Atherectomy (RA), or fracture it with sonic pressure waves using Shockwave Intravascular Lithotripsy (IVL). Drug-coated balloons are also an option available to treat in-stent restenosis. In this procedure, a balloon is used to open the blockage and then issue a controlled and sustained release of a targeted anti-restenosis drug without the need for a permanent implant.

MedStar Southern Maryland's Cardiac Catheterization Laboratory is also equipped to evaluate patients for coronary microvascular dysfunction and coronary vasospasm. One tool for measuring the performance of the heart's tiniest blood vessels—a feat beyond the capabilities of standard CT and coronary angiogram—is the software-based Coroventis CoroFlow™ Cardiovascular System. Another diagnostic tool, CathWorks, combines advanced imaging and computational analysis to obtain physiologic information from routine angiograms, without the need for invasive pressure wires.

This year will also see an expansion of MedStar Southern Maryland's hypertension program, with the addition of



MedStar Southern Maryland Hospital Center Cath Lab Director Brian Case, MD, (pictured above and at top right) and Interventional Cardiologist Rimmy Farrakhan, MD

minimally invasive renal denervation therapy. "It's a great tool for patients for whom medications aren't always enough to control high blood pressure," Dr. Case says. "If they qualify for this procedure, we can offer it and, better control their blood pressure or even get them off of some of their blood pressure medications."

Another benefit for local patients is access to a wider range of clinical trials and other research efforts.

"A robust research program through a community hospital enables us to offer patients exciting emerging technologies," Dr. Case says. "What's more, our patient demographics mean we can involve minorities and other under-represented groups in these studies, improving the trials' overall diversity and conclusions."

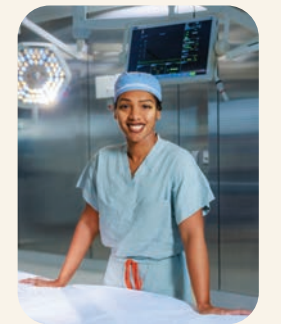
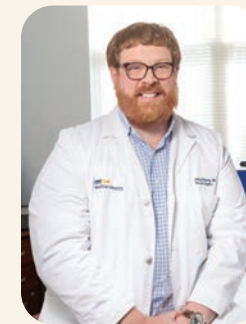
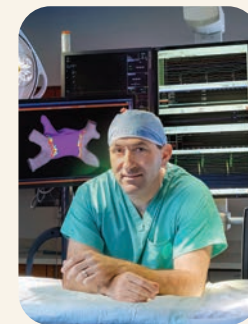
To help provide patients ready access to these services, the Interventional Cardiology team is expanding. Rimmy Farrakhan, MD, a specialist in catheter-based procedures, recently joined, as well as two physicians from MedStar Shah Medical Group: Roy Leiboff MD, and Sonia Samtani, MD.



Additional subspecialty care at MedStar Southern Maryland Hospital Center.

Optimal management of certain cardiovascular conditions is often lifelong and may involve multiple specialists, advanced imaging, and consistent follow-up care. To better serve patients in Southern Maryland, our advanced heart failure specialists, cardiac electrophysiologists, and vascular surgeons provide clinic visits and select procedures locally. Patients benefit from access to clinical trials and care from highly experienced, high-volume physicians—close to home.

For those requiring more complex interventions, care is coordinated through MedStar Washington Hospital Center in Washington, D.C. Pre- and post-procedural visits are typically conducted at MedStar Southern Maryland, where patients have access to state-of-the-art imaging and ongoing support.

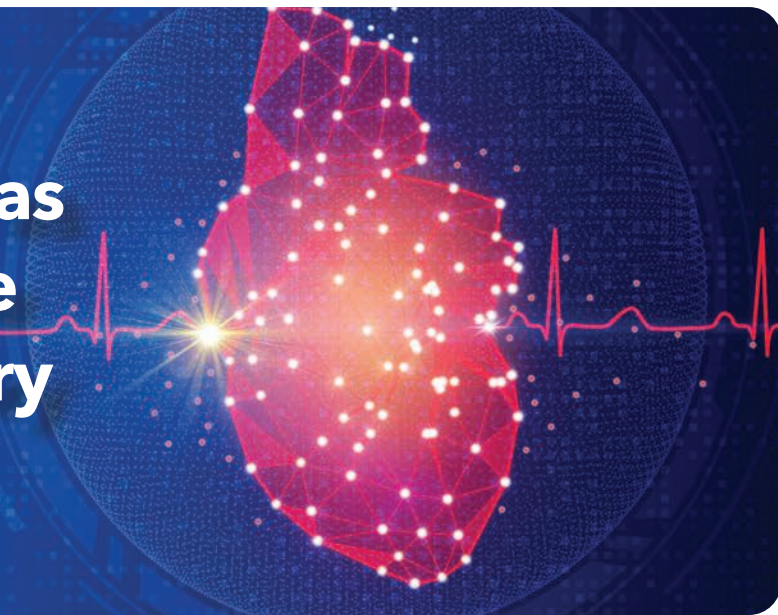


(Top, l to r) Advanced Heart Failure Specialists Rania Kaoukis, MD, and Mark Hofmeyer, MD; Cardiac Electrophysiologists Athanasios Thomaides, MD, and Sung Lee, MD; (bottom, l to r) Vascular Surgeons Joshua Dearing, MD, Ayesha Hatch, MD, and Jesse Garcia, MD, and D'Andre Williams, MD

To make an appointment with a cardiovascular specialist at MedStar Southern Maryland Hospital Center, please call 301-877-5677.

Case Study:

Cardioneuroablation as a potential alternative to pacing for refractory vasovagal syncope.



Apostolos Tsimploulis, MD, is the first in the region to apply cardioneural ablation to select cases of vagally mediated conduction abnormalities and vasovagal syncope. This has particular potential for younger patients, as it may help avoid or delay pacemaker implantation.

Intervention:

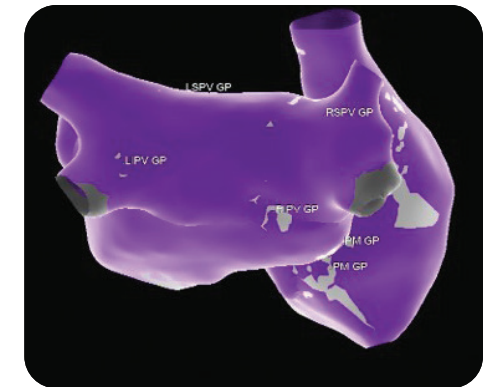
Dr. Sidhu consulted with Dr. Tsimploulis, associate director of complex arrhythmias and innovations. Dr. Tsimploulis is trained in cardioneural ablation (CNA) and is the first cardiac electrophysiologist to perform the procedure in the Washington, D.C., and Baltimore regions. While this innovative procedure for vagally mediated conduction abnormalities and vasovagal syncope is promising, it is not yet the standard of care. Dr. Tsimploulis has begun applying CNA to select cases, particularly in younger patients, to avoid or delay pacemaker implantation.

The patient elected to undergo CNA in July 2025 at MedStar Washington Hospital Center with Dr. Tsimploulis. Using electroanatomic mapping, the exact location of the ganglionic plexi was identified in both atria. Radiofrequency ablation was delivered, targeting the ganglia. The procedure was performed under general anesthesia and completed in approximately two hours. The patient remained supine for a few hours and stayed overnight for observation. Post-procedure monitoring showed improved conduction and resolution of syncopal episodes. A loop recorder was implanted for ongoing rhythm surveillance. The patient resumed normal activities within three weeks and remains asymptomatic more than six months post-op. Complete absence of episodes is confirmed with ongoing rhythm surveillance via loop recorder.

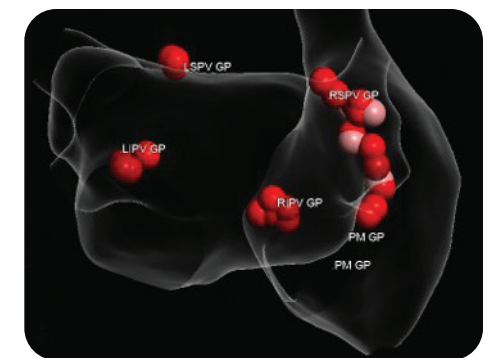
Discussion:

An ongoing review of data may further define the potential expansion of CNA as a first-line intervention in vagally mediated conduction abnormalities and vasovagal syncope with conduction abnormalities, particularly in young, otherwise healthy patients. Avoiding early pacemaker implantation may reduce long-term complications, such as lead failure, infection, and myocardial scarring. Initial data about efficacy are promising, though longer-term studies are necessary to establish this procedure as the standard of care.

For more information or to refer a patient, please call 202-877-7685.



Electroanatomic mapping localizing the ganglionic plexi in the atria (white annotations)



Radiofrequency ablation lesions in the atria

Abstract

A 24-year-old woman presented with episodic dizziness and presyncope, later diagnosed with multiple vagally mediated paroxysmal atrioventricular block and prolonged pauses. Traditionally, such findings would warrant pacemaker implantation. However, under the care of cardiac electrophysiologist Apostolos Tsimploulis, MD, cardioneural ablation (CNA) was utilized as an alternative intervention.

The patient underwent CNA at MedStar Washington Hospital Center, resulting in restored conduction and resolution of symptoms. Post-procedure recovery was uneventful, and the patient remains asymptomatic more than 6 months later, with complete resolution of the episodes confirmed by close monitoring with an implantable loop recorder. This case highlights CNA's potential to avoid or delay pacemaker implantation in younger patients, reducing long-term, device-related complications. As clinical experience grows, CNA may become a viable first-line option in select cases of vagally mediated conduction abnormalities and vasovagal syncope.

Published in *JACC: Clinical Electrophysiology*, findings from the largest multicenter United States registry on CNA demonstrated a 78% syncope-free rate and 97% pacemaker-free survival at follow-up, reinforcing CNA's feasibility and safety in appropriately selected patients.*

Patient Presentation:

A 24-year-old woman presented to her primary care physician with episodic dizziness and presyncope. No prior cardiac history. Patient was referred to a cardiologist for further testing, which did not show any structural heart disease.

Assessment:

A Zio® ECG patch was used to monitor cardiac rhythm over two weeks. Results revealed paroxysmal atrioventricular block and multiple symptomatic prolonged pauses, some of them lasting more than five seconds. The patient was advised to seek immediate care and informed that pacemaker implantation might be recommended. She was admitted to MedStar Union Memorial Hospital and evaluated by cardiac electrophysiologist Sunjeet Sidhu, MD.

Diagnosis:

In-hospital telemetry confirmed recurrent episodes of symptomatic, high-grade atrioventricular block and pauses which were vagally mediated. Further testing with cardiac MRI confirmed the absence of structural heart disease. Standard treatment on these occasions typically involves pacemaker implantation.

*Yarlagadda, R. K., Reddy, M., Dendy, J. M., Sheldon, R. S., Olshansky, B., & Shivkumar, K. (2025). Cardioneural ablation for functional bradycardia and vasovagal syncope: Outcomes from the U.S. multicenter CNA registry. *JACC: Clinical Electrophysiology*, 11(8), 1157-1169. <https://doi.org/10.1016/j.jacep.2025.04.012>



Apostolos Tsimploulis, MD, associate director of complex arrhythmias and innovations at MedStar Washington Hospital Center and MedStar Georgetown University Hospital



Sunjeet Sidhu, MD, cardiac electrophysiologist at MedStar Union Memorial Hospital and MedStar Franklin Square Medical Center

News and notes.

Pulmonary Hypertension Program now a PHA-accredited Center of Comprehensive Care.

The Pulmonary Hypertension (PH) Program at MedStar Washington Hospital Center is now a Pulmonary Hypertension Association-accredited Center of Comprehensive Care. This designation recognizes our commitment to early diagnosis, comprehensive treatment, and ongoing management of PH through expert, coordinated care. There are only approximately 100 PHA-accredited centers in the United States.

Our multidisciplinary team includes specialists in advanced heart failure, pulmonology, interventional cardiology, rheumatology, hematology, infectious disease, palliative care, rehabilitation, nursing, pharmacy, respiratory therapy, and clinical research. We work closely with referring physicians to evaluate patients suspected of PH and manage care throughout the disease course.

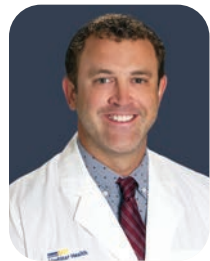
Streamlined diagnostic pathways, access to advanced testing, and opportunities to participate in clinical trials are offered routinely. Patient and caregiver education and support are also provided through the Pulmonary Hypertension Association.

Although pulmonary arterial hypertension remains a serious condition, available therapies can reduce heart strain, slow disease progression, and improve quality of life. With expert management and close monitoring, many patients live for years on current treatments and can often delay the need for lung transplantation.

To request a consult or screening for your patient, call 202-877-2339 (Washington, D.C.) or 410-554-6550 (Baltimore).



Welcome new medical staff.



Jeffrey Chilcote, MD, is a board-certified cardiologist at MedStar Health at Annapolis and Bowie.

Dr. Chilcote treats the entire spectrum of cardiovascular conditions, including lipid disorders, coronary artery disease, valvular heart disease, and arrhythmias. His approach combines medical

therapy, preventive strategies, and advanced imaging, including echocardiography and nuclear cardiology, to deliver evidence-based, personalized treatment plans. He emphasizes educating patients in healthy lifestyle choices to reduce and prevent long-term cardiovascular risk and disease.

Dr. Chilcote has a particular clinical and research interest in heart failure medicine and advanced treatment strategies that improve patients' quality of life and outcomes.

Education and training:

- **Fellowship:** Cardiovascular Medicine, St. Elizabeth's Medical Center-Boston University School of Medicine, Boston, Massachusetts
- **Residency:** Prisma Health-Upstate, University of South Carolina School of Medicine, Greenville, South Carolina
- **Medical School:** University of South Carolina School of Medicine-Greenville, Greenville, South Carolina



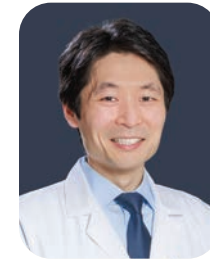
Marius Chukwurah, MD, is a sports cardiologist at MedStar Health at Lafayette Centre and McLean. He is board certified in clinical lipidology, echocardiography, nuclear cardiology, cardiovascular disease, and internal medicine.

Dr. Chukwurah specializes in preventive cardiology and cardiovascular imaging, helping athletes and highly active individuals safely manage or prevent cardiovascular disease. He employs advanced cardiopulmonary exercise testing, echocardiography, and tailored stress protocols to distinguish physiologic adaptations from cardiac pathology.

He also provides individualized evaluation and treatment for high LDL cholesterol, high triglycerides, and inherited or complex disorders of dyslipidemia, including familial hypercholesterolemia, sitosterolemia, familial combined hyperlipidemia, and chylomicronemia. He integrates advanced lipid diagnostics, evidence-based lifestyle interventions, and targeted therapies to help patients achieve optimal cardiometabolic health.

Education and training:

- **Fellowships:**
 - Sports and Exercise Cardiology, Massachusetts General Hospital/Harvard Medical School, Boston, Massachusetts
 - Cardiovascular Disease, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania
- **Residency:** Duke University Hospital, Durham, North Carolina
- **Medical School:** Howard University College of Medicine, Washington, D.C.



William Yoon, MD, PhD, is a vascular surgeon at MedStar Washington Hospital Center, MedStar Georgetown University Hospital, and MedStar Union Memorial Hospital, and serves as Co-Director of the Complex Aortic Center.

He treats the full spectrum of vascular disease and specializes in cutting-edge minimally invasive techniques, particularly for patients deemed too high risk for traditional open surgery. He is a pioneer in complex endovascular aortic repair, including Fenestrated and Branched Endovascular Aneurysm Repair (FEVAR/BEVAR), double inner-branched endovascular aortic arch repair, four-vessel fenestrated endovascular aortic repair, and the Iliac Branch Endoprosthesis (IBE). He also has extensive experience using innovative devices, such as the Thoracoabdominal Branch Endoprosthesis (TAMBE).

Dr. Yoon's research focuses on advancing endovascular management of aortic disease through patient- and anatomy-specific solutions and addressing limitations of thoracic endovascular aortic repair (TEVAR).

Education and training:

- **Fellowships:**
 - Advanced Aortic Endovascular Surgery, Paracelsus Medical University Klinikum Nürnberg Süd, Nuremberg, Germany
 - Advanced Aortic Surgery, Uppsala University Hospital, Uppsala, Sweden
 - Vascular Surgery, Loyola University Medical Center, Maywood, Illinois
- **Residency:** General Surgery, Henry Ford St. John Hospital, Detroit, Michigan
- **Medical School:** Virginia Commonwealth University School of Medicine, Richmond, Virginia



Cardiovascular Physician is a publication of MedStar Health. 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.

MedStar Heart & Vascular Institute

Thomas E. MacGillivray, MD

Physician Executive Director,
MedStar Health Cardiac Surgery
Chairman, Cardiac Surgery,
MedStar Washington Hospital Center

Stuart F. Seides, MD

Physician Executive Director Emeritus

Steven D. Abramowitz, MD

Chair, MedStar Health Vascular Program

Brian T. Bethea, MD

Chief, Cardiac Surgery
MedStar Union Memorial Hospital

Zayd A. Eldadah, MD

Director, MedStar Health Cardiac
Electrophysiology

Sandeep M. Jani, MD

Medical Director, Advanced Heart Failure
Baltimore Region

Robert A. Lager, MD

Chief, Ambulatory Practices, Washington Region

Glenn R. Meininger, MD

Director, Cardiac Electrophysiology
Baltimore Region

Samer S. Najjar, MD

Regional Chief, Cardiology, Baltimore Region

Sriram Padmanabhan, MD

Chief, Cardiology
MedStar Franklin Square Medical Center

Lowell F. Satler, MD

Director, Interventional Cardiology
Washington Region

Farooq H. Sheikh, MD

Medical Director, Advanced Heart Failure
Washington Region

Allen J. Taylor, MD

Regional Chair, Cardiology, Washington Region

Raghuveer Vallabhaneni, MD

Director, Vascular Surgery, Baltimore Region

Ron Waksman, MD

Director, Cardiovascular Research
and Advanced Education

John C. Wang, MD

Director, Interventional Cardiology
MedStar Union Memorial Hospital
MedStar Franklin Square Medical Center

Tammi Bricker

Designer & Art Director

Gary Landsman

Feature photographer

Department of Continuing Professional Education

Please visit 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.

CRT TV

Saturdays, 9 a.m., Virtual

Stay ahead in the field of cardiovascular medicine and connect with others who share your passion. Join us for two-to-three-hour sessions, featuring live case studies, presentations, and panel discussions.

View the schedule and register at CRTTV.org/crt-tv.

DMV Cath Lab Case Club

Second Thursdays, 7:15 p.m., Virtual

Join other cardiovascular clinicians for thought-provoking conversations and unique case reviews of complex coronary interventions.

To register, please visit CRTTV.org/DMV-Cath-Lab-Case-Club.

MedStar Washington Hospital Center Cath Conference

Wednesdays, 7:30 a.m., Virtual

Each dynamic and educational session features in-depth discussions of landmark and current journal articles in the field, presentation of complex and compelling cases from the MedStar Washington Hospital Center Cath Lab, and interactive dialogue among attendees.

To register, please visit CRTTV.org/MWHC-Cath-Conference.

Regularly scheduled series—AMA PRA Category 1 Credit(s)[™]

Cardiac Catheterization Conference

Weekly, Wednesdays, 7:30 a.m.
1 AMA PRA Category 1 Credit[™]
202-877-7808

Cardiac Surgery Grand Rounds

Weekly, Tuesdays, 7:15 a.m.
2 AMA PRA Category 1 Credits[™]
202-877-3510

Cardiology Grand Rounds

Weekly, Tuesdays, 12:30 p.m.
1 AMA PRA Category 1 Credit[™]
202-877-9090

Cardiac Ultrasound and Advanced Imaging Conference

Weekly, Thursdays, 7:30 a.m.
1.25 AMA PRA Category 1 Credits[™]
202-877-6264

Electrophysiology Core Curriculum Conference

Weekly, Tuesdays, 7 a.m.
1 AMA PRA Category 1 Credit[™]
202-877-3951

Visit us at MedStarHealth.org/MHVI.