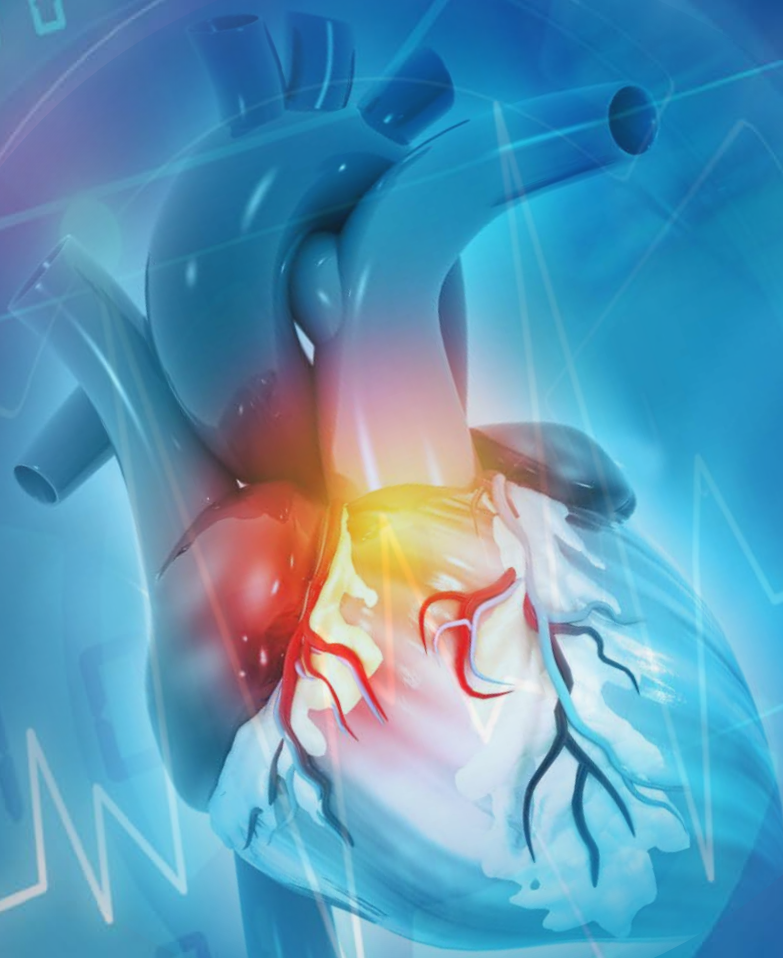


INOVA HEART AND VASCULAR INSTITUTE

# OUTCOMES

2021



**INOVA**<sup>®</sup>

Heart and Vascular Institute

## OUR MISSION



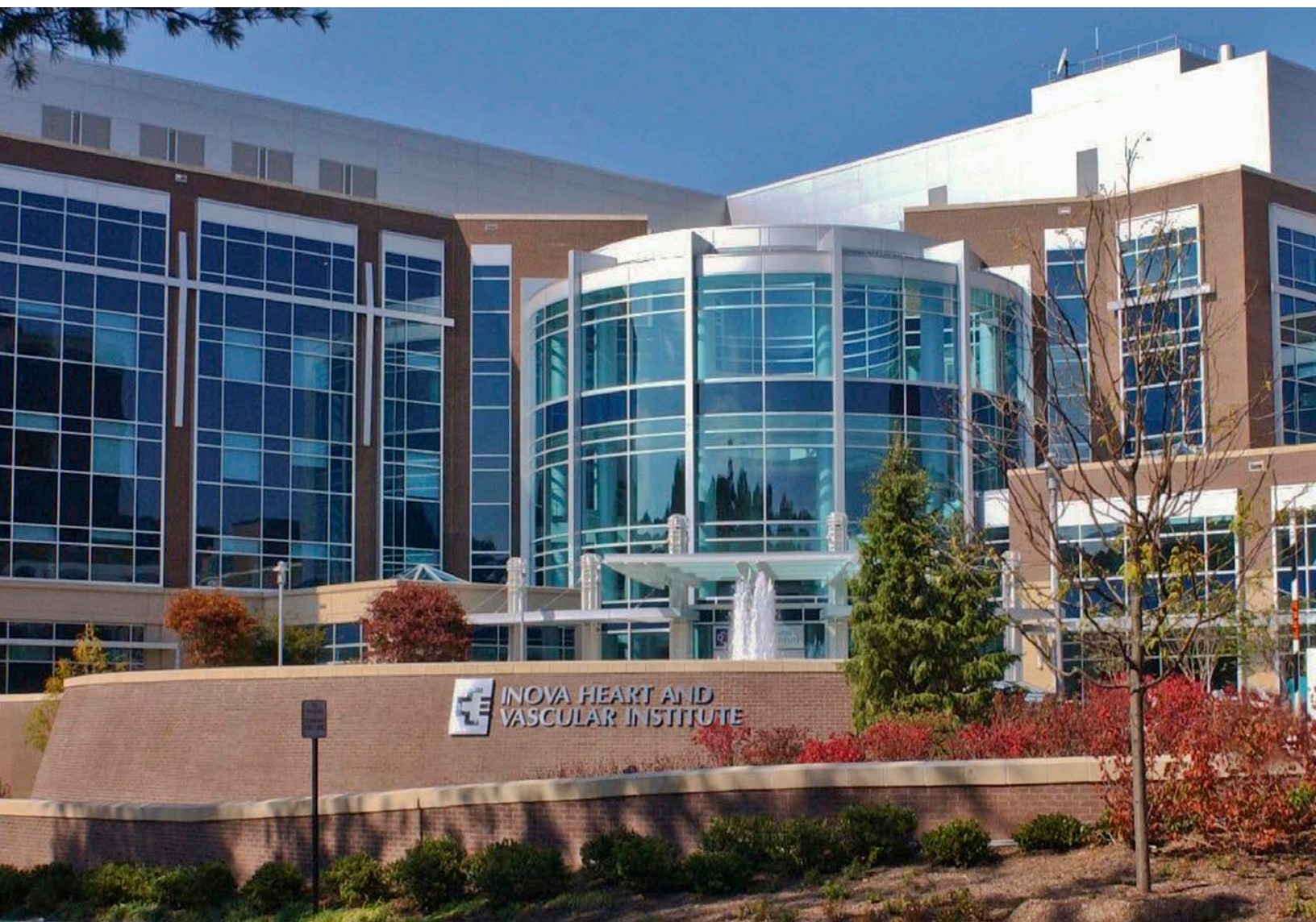
Inova Heart and Vascular Institute (IHVI) embodies Inova's mission to provide world-class healthcare — every time, every touch. The multidisciplinary team-based approach to evidence-based cardiovascular care drives the team to produce superb results for patients.

This is particularly evident in the face of the exceptional challenges posed by the ongoing pandemic. IHVI has continued to excel by contributing to the national body of knowledge on how to treat the cardiovascular and pulmonary consequences of COVID-19 while remaining at the forefront of advances in cardiovascular care.

This passion to create an exceptional patient experience across every dimension of care benefits a broad range of patients with complex cardiac, vascular and advanced pulmonary diseases across our region and beyond.

**J. Stephen Jones, MD, MBA, FACS**

President and CEO, Inova



# IHVI'S CARE DELIVERY: A Multidisciplinary Approach to Optimize Results



**Christopher M. O'Connor, MD, MACC, FESC, FHFA, FHFA**  
President  
Inova Heart and Vascular Institute



**Andrew Gill**  
Vice President and Administrator  
Inova Heart and Vascular Institute



**Francine Barr, DNP, RN**  
Vice President of Nursing  
Inova Heart and Vascular Institute

2021 has been a year of rebounding and rebuilding following the assault of the pandemic, and we are proud to report that IHVI has faced the challenges and emerged with an even firmer resolve and commitment to excellence. We continue to offer our patients the most innovative and complex diagnostic and treatment options, and our team-based approach brings outstanding outcomes.

**W**e have been on the forefront of using multidisciplinary teams as the cornerstone of care, and we are setting a standard of excellence using this approach. Close collaboration across clinical areas facilitates evaluation of the specific needs of each individual patient and enables the development of a treatment course that addresses possible multiorgan system involvement, comorbidities and conditions related to frailty, among others. In addition, the specific patient's needs, priorities, values and support system are recognized and respected and are important components in guiding treatment.

Our structural heart weekly team meetings are an excellent example of our methodology, bringing specialists from all relevant areas together to determine the best treatment for each individual patient. Interventional cardiologists, cardiac surgeons, imaging experts and advanced practice providers (APPs) conduct detailed assessments. Geriatric and mental health assessments provide additional information, and a course of action is charted based on the risks and benefits for each patient.

Nephrologists, pulmonologists, neurologists and other specialists are brought into the care team as needed. And, importantly, the patient and family are actively involved in the decision-making process through secure video conferencing when in-person meetings are impractical.

Similarly, our team-based approach to cardiogenic shock management has gained national and international recognition and serves as a model for improving outcomes. We are

proud to say that our newly launched Inova AFib Center also incorporates a multidisciplinary approach.

We have reinvigorated our clinical research using creative solutions to keep vulnerable patients safe. Our patients have access to the most innovative treatment options including a minimally invasive and promising procedure for severe tricuspid regurgitation, a blood test offering a less invasive approach for early detection of rejection in heart transplant patients, and many other novel therapies made possible through our commitment to clinical research.

Our excellence has been recognized through multiple "High Performing" rankings in U.S. News and World Report and through awards and recognition from the American College of Cardiology's National Cardiovascular Data Registry, the American Heart Association, the Mitral Foundation and the Society of Thoracic Surgeons, among others.

Our team-based approach extends to physicians in our community, and we are grateful for the opportunity to work together to bring the highest level of patient care. We have entered into an even closer affiliation with Virginia Heart, and this enhanced integration and alignment has provided a seamless and more positive patient experience. Our medical, nursing and professional staff are second to none, and we marvel at their resilience, determination and dedication to excellence. We are honored and grateful for the opportunity to serve our patients, and we resolve to continue to make outstanding and compassionate care our highest priority.



This symbol is used throughout the report to highlight programs utilizing multidisciplinary care teams.

## ABOUT IHVI – 2021



**219,477**

Patient Visits

**7**

Cardiovascular and Hybrid ORs

**23**

Catheterization EP/IR Labs

**H**

**5**

Hospitals



**209**

Dedicated Cardiac Beds



**41**

Inova Cardiology, Arrhythmia, Vascular and Cardiac Surgery outpatient practice locations providing more than 125,194 appointments



**26**

Noninvasive Cardiac and Vascular Imaging and Diagnostic Service Sites



Patients treated from **48** states and **5** territories, countries or armed forces locations worldwide



For a complete list of IHVI's awards and recognition, visit [inova.org/heartawards](https://www.inova.org/heartawards).

IHVI's clinical capabilities cover the full spectrum of complex cardiovascular and pulmonary care, from medical evaluation and diagnostic testing through the most innovative minimally invasive surgical techniques and complex open surgeries, including heart and lung transplantation.



Inova Heart and Vascular Institute –  
Inova Fairfax Medical Campus  
3300 Gallows Rd.  
Falls Church, VA 22042

Located just outside of Washington, DC, in Falls Church, VA, Inova Fairfax Medical Campus is home to IHVI's dedicated heart hospital, which serves as the hub of the system's cardiac, vascular and advanced lung disease services.

Centers for Medicare and Medicaid Services  
4-Star Rated Hospital

### U.S. News and World Report 2020 – 2021

#1 in both the Washington, DC Metro Area and Virginia  
High Performing in Abdominal Aortic Aneurysm Repair  
High Performing in Aortic Valve Surgery  
High Performing in Heart Attack Care  
High Performing in Heart Bypass Surgery  
High Performing in Heart Failure  
High Performing in Transcatheter Aortic Valve Replacement (TAVR)



### The Leapfrog Group

"A" Hospital Safety Grade –  
7 consecutive reporting periods



American Nurses Credentialing Center  
Magnet Recognition® for Nursing Excellence



### Healthgrades

America's 50 Best Cardiac Surgery Award™ (2021, 2020)  
America's 100 Best for Cardiac Care Award™ (2022, 2021, 2020)  
America's 100 Best Hospitals Award™ (2021, 2020)  
Outstanding Patient Experience Award™ (2021, 2020, 2019)  
Pulmonary Care Excellence Award™ (2022, 2021, 2020)

# IHVI HOSPITAL SERVICE SITES



**Inova Heart and Vascular Institute –  
Inova Alexandria Hospital**  
4320 Seminary Rd.  
Alexandria, VA 22304

**Centers for Medicare and Medicaid Services**  
4-Star Rated Hospital

**U.S. News & World Report 2021 – 2022**  
#7 in Washington, DC Metro Area  
#13 in Virginia  
High Performing in Heart Failure



**The Leapfrog Group**  
“A” Hospital Safety Grade –  
7 consecutive reporting periods



**Healthgrades**  
America’s 100 Best Hospitals for Critical Care Award™ (2022, 2021, 2020)  
America’s 250 Best Hospitals Award™ (2021, 2020)  
Patient Safety Excellence Award™ (2021, 2020)  
Pulmonary Care Excellence Award™ (2022, 2021, 2020)



**Inova Heart and Vascular Institute –  
Inova Fair Oaks Hospital**  
3600 Joseph Siewick Dr.  
Fairfax, VA 22033

**Centers for Medicare and Medicaid Services**  
5-Star Rated Hospital



**U.S. News & World Report 2021 – 2022**  
#4 in Washington, DC Metro Area  
#10 in Virginia  
High Performing in Heart Failure



**The Leapfrog Group**  
“A” Hospital Safety Grade –  
19 consecutive reporting periods  
Top Hospital



**American Nurses Credentialing Center**  
Magnet Recognition® for Nursing Excellence



**Healthgrades**  
Outstanding Patient Experience Award™ (2021, 2020, 2019)  
Patient Safety Excellence Award™ (2021, 2020, 2019)  
Pulmonary Care Excellence Award™ (2022, 2021, 2020)  
Vascular Surgery Excellence Award™ (2021)

## Patient Transfers

One Call 24/7 | Adult: 703.776.5905 | Pediatric: 877.900.9543 | Direct Admission • Transfer • Specialized Transport



**Inova Heart and Vascular Institute –  
Inova Loudoun Hospital**  
Schaufeld Family Heart Center  
44045 Riverside Pkwy.  
Leesburg, VA 20176

**Centers for Medicare and Medicaid Services**  
5-Star Rated Hospital



**U.S. News & World Report 2021 – 2022**  
#7 in Washington, DC Metro Area  
#13 in Virginia  
High Performing in Heart Failure



**The Leapfrog Group**  
“A” Hospital Safety Grade –  
19 consecutive reporting periods  
Top Hospital



**American Nurses Credentialing Center**  
Magnet Recognition® for Nursing Excellence



**Healthgrades**  
America’s 250 Best Hospitals Award™ (2021, 2020, 2019)  
Critical Care Excellence Award™ (2022, 2020)  
Patient Safety Excellence Award™ (2021, 2020, 2019)  
Pulmonary Care Excellence Award™ (2021, 2020)



**Inova Heart and Vascular Institute –  
Inova Mount Vernon Hospital**  
2501 Parkers Ln.  
Alexandria, VA 22306

**Centers for Medicare and Medicaid Services**  
5-Star Rated Hospital



**The Leapfrog Group**  
“A” Hospital Safety Grade –  
15 consecutive reporting periods



**Healthgrades**  
Outstanding Patient Experience Award™ (2021, 2020, 2019)

# PATIENT EXPERIENCE



An important component of being able to achieve consistently high patient experience ratings is the feedback we receive from patients and family members. We make a conscious effort to integrate their perspectives to ensure we deliver patient-centered care every time, every touch.

We host monthly Patient and Family Advisory Council meetings where a group of former patients and family members provide feedback to our administrative, nursing, patient safety and patient experience leadership.

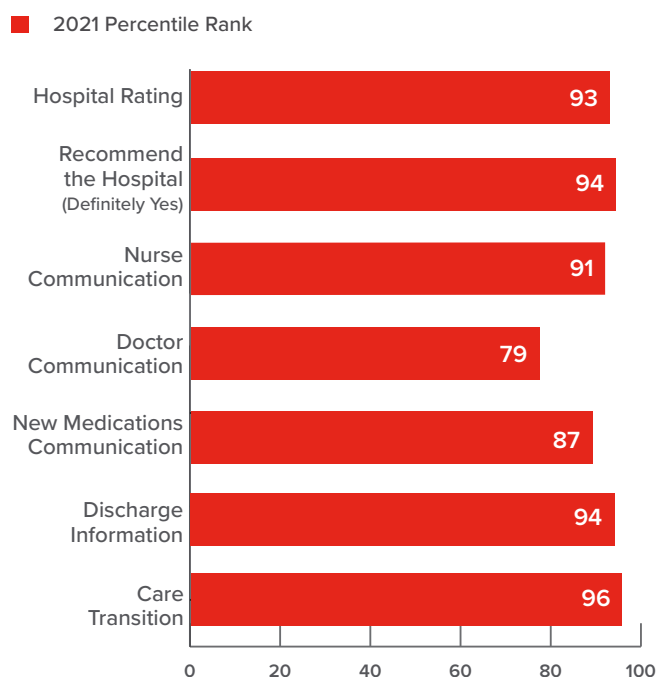
There is also a data-driven continuous monitoring process for quality indicators and patient safety metrics. We examine our internal data and use national registries to provide benchmark comparisons.

As part of our monitoring process:

- Every patient care unit has specific performance metrics.
- Progress and performance are displayed to keep team members focused on results.
- Multispecialty teams of nurses, physicians, IT specialists, financial and data analysts work to monitor performance and redesign processes to improve patient care.

We make a conscious effort to integrate patients' and family members' perspectives to ensure we deliver patient-centered care every time, every touch.

### HCAHPS Hospital-Based Care



### Inova Cardiology Outpatient Physician Offices

 **96.36%** Likelihood to Recommend

Sites Included: All Inova-associated IHVI physician offices

IHVI Survey Period: Returned surveys between January and December 2021

Benchmarking Period: 9/1/21 – 12/31/21

Results from Press Ganey

Percentile ranking is determined by the Press Ganey Survey Vendor from the All Press Ganey Database of Care Sites in the United States. Database contains ~28,000 care sites nationwide.

About the survey: The Centers for Medicare and Medicaid Services require all United States hospitals that treat Medicare patients to participate in the national Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a standardized tool that measures patients' perspectives of hospital care.

Hospitals/Units Included: All surveys from IHVI units associated with Inova Fairfax Medical Campus (cardiac and vascular critical care, cardiac step-down, cardiac telemetry, pulmonary critical care, advanced pulmonary, IHVI general nursing units).

IHVI Survey Period: Returned surveys between January 2021 and December 2021

Benchmarking Period: 10/1/21 – 12/31/21

Results from Press Ganey

Percentile ranking is determined from the All Press Ganey Database of Hospitals in the United States. Database contains ~2,400 hospitals nationwide.

## Inova's COVID-19 Vaccination Outreach Targeting Vaccine Hesitancy



Cleveland Francis Jr., MD



**I**n 2021, COVID-19 vaccines brought hope and the promise of a return to normal life for communities across our region, the nation and the world. Yet vaccine hesitancy functioned as a barrier that prevented some individuals from getting immunized. Lower levels of vaccination have corresponded to increased morbidity and mortality from COVID-19, exacerbating health disparities, particularly among communities of color.

IHVI endeavored to understand and address vaccine hesitancy among our patients, in a multipronged initiative led by IHVI cardiologist Cleveland Francis Jr., MD, Chairman of the IHVI Committee on Equity, Healthcare Disparities, Education and Outreach.

The first step was to analyze vaccination rates by zip code to identify neighborhoods with lower rates and pinpoint barriers to immunization. The analysis revealed that a percentage of the whole Inova community – not concentrated among any certain group – was reluctant to get immunized.

“We decided to address hesitancy generally, rather than targeting a specific group directly,” Dr. Francis said. “Our community is diverse – for example, although 85 percent of our population speaks English as their primary language, 15 percent of our patients speak a wide range of languages. We needed to devise a way to reach people in a personalized way – and we found that our doctors were the right messengers for this effort.”

According to a 2021 Kaiser survey, 85 percent of people trusted their doctors to give them reliable information about the COVID-19 vaccines, more than any other information source. Dr. Francis partnered with executives and physicians across all five Inova hospitals to get physicians to record brief audio clips – in a dozen languages – encouraging people to get vaccinated. These clips were paired with a photo of the doctor, creating brief video files that were distributed on the web and through social media, meeting people where they are: their smartphones.

The second aspect of this effort was to incorporate COVID-19 vaccination screening questions into Epic, so that every encounter at an ambulatory site became an opportunity for providers to discuss vaccines. Data gathered from the pop-up screening tool also provided key information on where Inova should concentrate its continuing efforts to address vaccine hesitancy.

These efforts are consistent with Inova's goal to create and maintain a foundation of trust and a commitment to one-on-one engagement with each patient to reduce the health disparities and inequities that contribute to vaccine hesitancy in our community.

Learn more: [inova.org/getthevaccine](https://www.inova.org/getthevaccine)



Inova is grateful to the following key people who assisted Dr. Francis in this effort and without whom these initiatives would not have been possible.

- Anne Talley, Inova Media Center Manager
- Shana Rieger, Digital and Social Media Marketing Manager
- Steve Motew, MD, Chief, Clinical Enterprise
- Toni Ardabell, Chief, Clinical Enterprise Operations
- Karen Berube, Vice President of Population Health
- Maruf Haider, MD, Chief, Health Informatics Officer
- Andrew Miner, MD, Associate Chief, Health Informatics Officer
- Kenneth Geoly, MD, Informatics Epic Lead Physician
- Christopher O'Connor, MD, President, IHVI
- Linda Odorisio, Inova Physician Communications
- Christopher deFilippi, MD, Vice Chairman, Academic Affairs, IHVI
- Eugenie Charles, MD, Pediatric Emergency Medicine, Inova Loudoun Hospital
- Alejandro Muzio, Director of Language and Disability
- George Maxwell, MD, President, Women's Services

“We needed to devise a way to reach people in a personalized way – and we found that our doctors were the right messengers for this effort.”

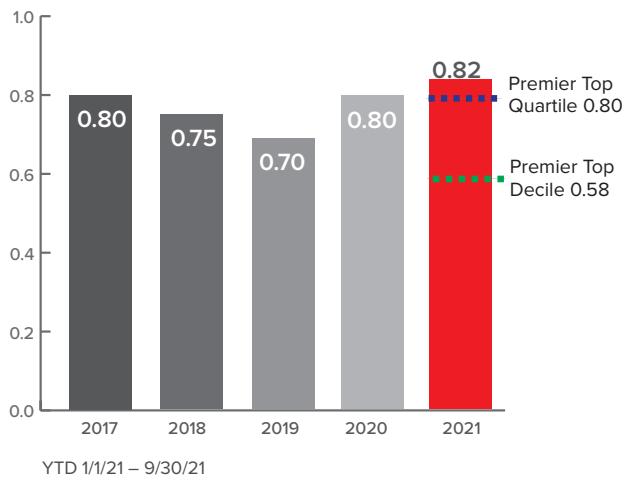
– Cleveland Francis Jr., MD  
Chairman, IHVI Committee on Equity, Healthcare Disparities, Education and Outreach



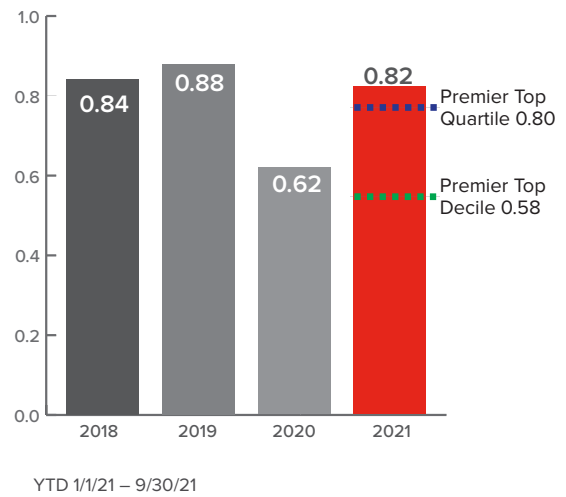
# ACUTE MYOCARDIAL INFARCTION (AMI)



## AMI 30-Day All-Cause Risk Adjusted Readmissions (Medicare 65+)



## AMI Mortality Performance



Vizient Healthcare Database is one of the most comprehensive healthcare databases and is routinely utilized by the pharmaceutical and device industries, academia, healthcare insurers, and healthcare policymakers for clinical, financial and outcomes analyses. Expected readmissions and mortality performance are based on Vizient's Standard Practice Risk Methodology.



### Patient Transfers

One Call 24/7 | Adult: 703.776.5905 | Pediatric: 877.900.9543 | Direct Admission • Transfer • Specialized Transport

# INTERVENTIONAL CARDIOLOGY

## Cardiac Catheterization and Percutaneous Coronary Intervention (PCI) Volumes

Facility	2021
IFMC	4,028
IAH	900
ILH	753
<b>IHVI</b>	<b>5,681</b>

Legend:

IFMC – Inova Fairfax Medical Campus

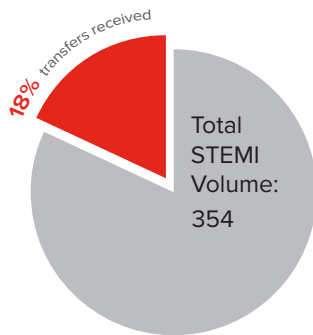
IAH – Inova Alexandria Hospital

ILH – Inova Loudoun Hospital, Schaufeld Family Heart Center

IHVI – Inova Heart and Vascular Institute

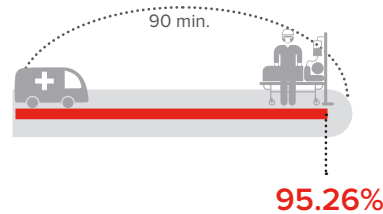
YTD 1/1/21 – 9/30/21

### STEMI Volume and Transfers Received



2021 rolling 4Q ending Q2 2021

### Primary PCI Door-to-Balloon Within 90 Minutes



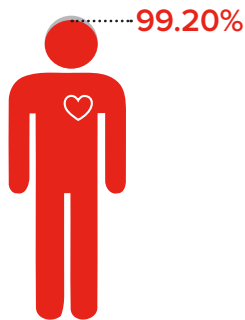
### Median Door-to-Balloon Time (in minutes)



2021 rolling 4Q ending Q2 2021

**IHVI PCI Volume: 1,875**

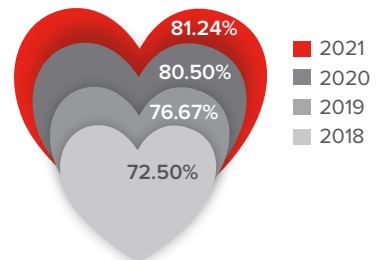
### PCI Success Rate



2021 rolling 4Q ending Q2 2021



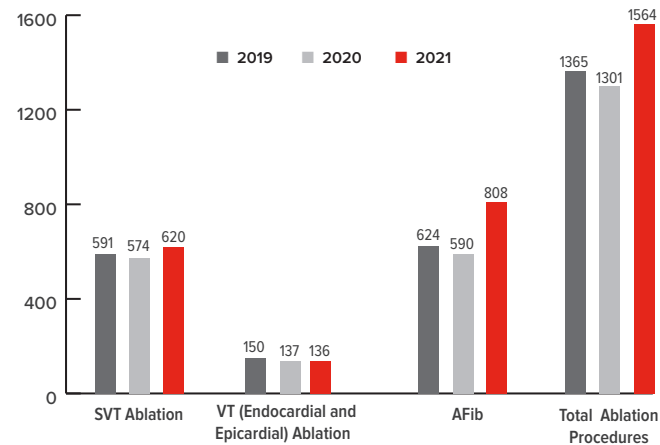
### Utilization of Radial Artery Access for Catheterization



2021 rolling 4Q ending Q2 2021

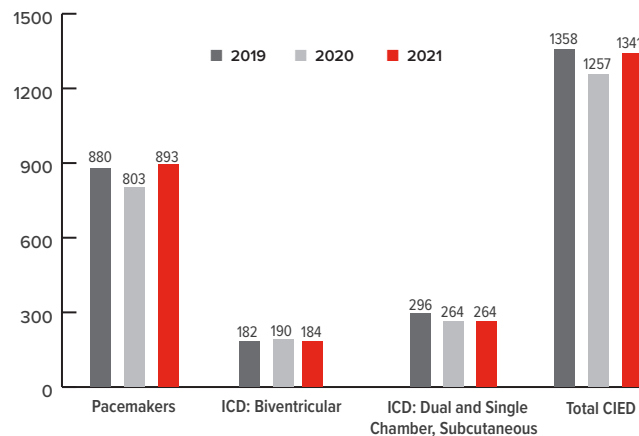
# ELECTROPHYSIOLOGY

## Adult and Pediatric Ablation Volumes



2021 Annualized YTD 1/1/21 – 9/30/21

## Adult and Pediatric Device Implant Volumes



2021 Annualized YTD 1/1/21 – 9/30/21

**2021 Lead Extraction Procedures for cardiovascular implantable electronic devices (CIED): 55**

**2021 WATCHMAN™ Left Atrial Appendage Closure Implant Procedures: 111**



Accredited for

- Testing and ablation
- Device implantation
- Chronic lead extraction

## Atrial Fibrillation (AFib) Ablation Consultations and Procedures Now Available at Inova Loudoun Hospital

**B**eginning July 2021, a team of electrophysiologists began performing atrial fibrillation (AFib) ablation procedures at IHVI – Schauffeld Family Heart Center on Inova Loudoun Hospital’s Lansdowne Campus.

AFib ablation has become a first-line approach for treatment of certain patients who are relatively young and without significant structural heart disease. The procedure successfully reduces AFib-related symptoms, prevents hospitalizations and improves quality of life in 70 to 94 percent of treated patients.

While Inova Loudoun Hospital already had an electrophysiology (EP) lab where relatively low-risk catheter ablations for supraventricular tachycardia were done, more complex procedures requiring left atrial mapping and ablation and ventricular tachycardia ablation were not being performed on the Lansdowne campus, as onsite cardiac surgical backup was not available.

Utilizing a system-based approach to patient care, a multi-disciplinary team created a highly efficient method to transfer a patient by helicopter or ground transport from

Inova Loudoun Hospital’s EP lab to a cardiovascular operating room (CVOR) at IHVI’s Inova Fairfax Medical Campus location in less than 30 minutes should serious complications arise. In this scenario, the EP physician could accompany and manage the patient en route until the patient arrives at the CVOR.



(L to R): Brett Atwater, MD; Zack Hollis, MD; Vineet Kumar, MD; Chirag Sandesara, MD; (not pictured: Jeff Lee, MD)



**Refer a Patient**

Inova Arrhythmia | 571.472.3270 | [arrhythmia@inova.org](mailto:arrhythmia@inova.org) | Website: [inova.org/arrhythmia](http://inova.org/arrhythmia)

## Inova's Innovative Multidisciplinary Approach to AFib Care

**M**anaging AFib and the underlying conditions that cause it is complex, with the best outcomes being achieved for patients by combining the expertise of specialists from several different medical disciplines.

To further improve care for patients, Inova's AFib Center was created and follows the multidisciplinary "center of excellence" model recently published by the Heart Rhythm Society.

This model brings together numerous disciplines, including cardiology, electrophysiology, weight loss, pharmacy, behavioral health and sleep medicine specialists, to create an integrated, coordinated and patient-centered experience. Long-term management of AFib is most efficiently accomplished with coordination across all clinicians involved in the patient's care.

Inova's AFib Center offers a comprehensive assessment, scheduled as a single visit in one location, where patients meet with a custom-tailored group of specialists, based on their individual needs. This multidisciplinary approach offers not only convenience for the patient but also efficiency for the care team, fostering better collaboration and faster access to essential treatments. Early studies show that this approach can reduce the combination of all-cause mortality and cardiovascular disease-related hospitalization. It has also been proven to increase patient satisfaction, reduce the likelihood of hospitalization, reduce overall care costs and improve management of AFib risk factors.

The Inova AFib Center partners with referring cardiologists as well as primary care physicians to fully address patients' needs at various stages of treatment, using protocols for standardized practice to assure delivery of high-quality, evidence-based, state-of-the-art care.

Whether AFib is a new diagnosis or one your patient has had for some time, the Inova AFib Center offers a comprehensive approach focused on four specific treatment goals:

- Risk factor management
- Stroke prevention
- Rate control
- Rhythm control

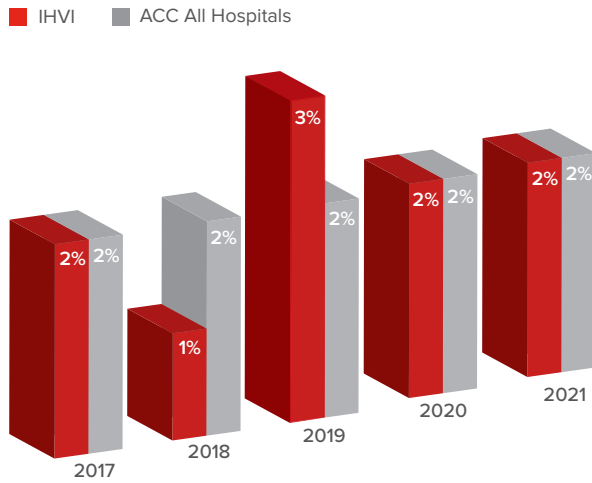


**Refer a Patient**

Inova AFib Center | 571.472.2342 | [afib@inova.org](mailto:afib@inova.org) | Website: [inova.org/afib](http://inova.org/afib)

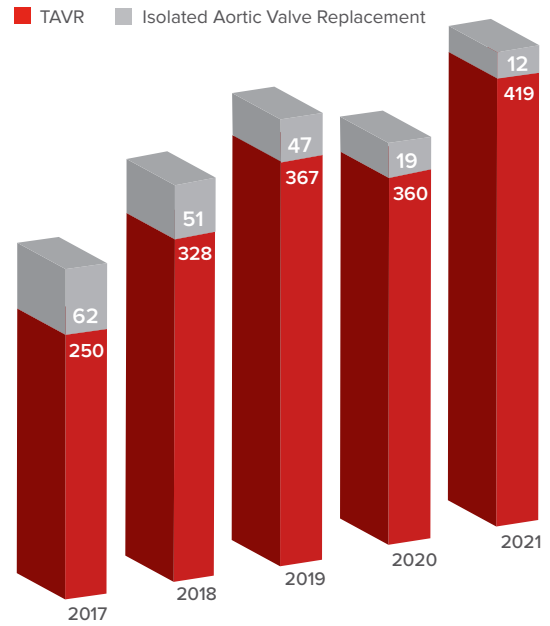
# STRUCTURAL HEART

## TAVR 30-Day Mortality

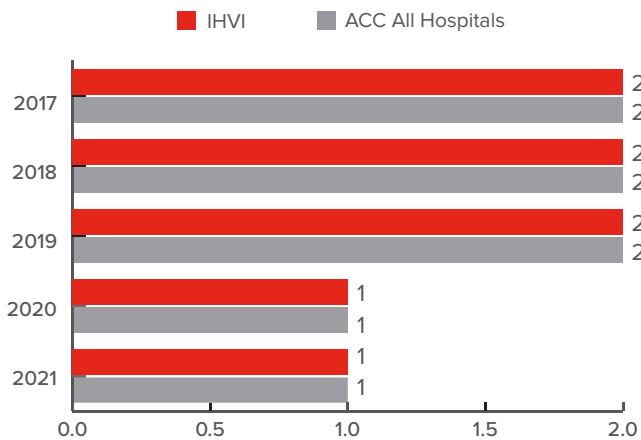


YTD 1/1/21 – 9/30/21

## Combined Aortic Valve Cases

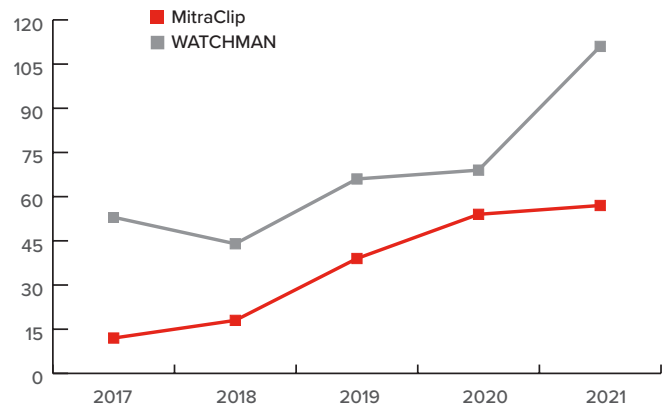


## TAVR Median Postprocedure Length of Stay



YTD 1/1/21 – 9/30/21

## MitraClip® and WATCHMAN Procedures



1/1/21 - 12/31/21

Minimally Invasive PFO Closures in 2021: 104

## Structural Heart Disease Program



Eric Sarin, MD

Our highly experienced team is dedicated to improving survival and quality of life for people suffering from structural heart disease. Using the combined expertise of cardiac surgeons, interventional cardiologists, radiologists specializing in cardiac imaging and nurse practitioners, we focus on providing a comprehensive assessment to identify the best course of treatment for patients with valvular heart disease or AFib patients undergoing a procedure for stroke risk reduction. We utilize a minimally invasive approach whenever possible for the following procedures:

- Transcatheter repair of intracardiac structures
- Repair or replacement of mitral, aortic, pulmonic and tricuspid valves
- Left atrial appendage closure (LAAC) for stroke risk reduction in patients with AFib

IHVI has a state-of-the-art hybrid operating room where cardiac surgeons, cardiologists and electrophysiologists operate together, resulting in fewer complications and shorter recovery periods for patients.

“When we talk about structural heart and valve disease, we’re referring to disfunctions related to the valves or walls separating the chambers of the heart. Historically, these were managed with open heart surgery. With the explosion in technology over the last decade, we can now treat these patients just as effectively using a minimally invasive approach.”

– Eric Sarin, MD, Co-Director, IHVI Structural Heart Program; Section Chief, Adult Cardiac Surgery; Co-Director, Cardiovascular Research



**Refer a Patient**

703.776.3135 | [valve@inova.org](mailto:valve@inova.org) | Website: [inova.org/structuralheart](http://inova.org/structuralheart)

## CLINICAL TRIAL: Repairing Tricuspid Valves Without Open Surgery



Wayne Batchelor, MD

**V**eronica Singh, 73, wanted to spend her days working in her garden and taking walks. But tricuspid valve regurgitation (TR) made those goals impossible, leaving her short of breath and unable to sleep comfortably for more than a few minutes at a time. She could barely walk around her condo without holding onto the walls for support.

Traditionally, though, open heart surgery was the only option for treating TR. That option was risky for patients like Veronica, who are older and often have comorbidities. But Veronica's physicians at IHVI were able to give her another option: a minimally invasive treatment to repair her leaky valve, offered as part of a national clinical trial.

The procedure made a world of difference. "I woke up from the procedure and realized I had slept," she said. "For months, I hadn't slept more than five minutes at a time. Right then, I knew the procedure had worked. It was an amazing feeling of peace."

### **TRILUMINATE Pivotal Trial for Tricuspid Valve Regurgitation**

Millions of Americans have TR, but the condition hasn't received the attention that other valve diseases have. Transcatheter options are commercially available to replace damaged aortic valves and repair leaky mitral valves, but no such minimally invasive option existed for TR.

"The tricuspid valve has been considered the forgotten valve," said IHVI interventional cardiologist Wayne Batchelor, MD,

MHS, FACC, FSCAI, Director of IHVI's Interventional Heart Program. He serves as principal investigator for the trial. "Now by having access to the TriClip™ tricuspid valve repair procedure through the TRILUMINATE Pivotal Trial, there's a lot of promise for treating TR successfully without open heart surgery."

Unlike the mitral valve's two leaflets, the tricuspid valve contains three and sometimes four leaflets, making it harder to close with minimally invasive techniques. What's more, the tricuspid valve has traditionally been more difficult to image with transesophageal echocardiography, limiting accessibility. Thanks to improvements in technology and imaging, the minimally invasive TriClip (Abbott Medical) procedure now offers an alternative.

IHVI has been participating in the TRILUMINATE Pivotal Trial since 2019. In the trial, the procedure is being tested by a select team of interventional cardiologists who specialize in structural heart disease. Using a catheter inserted into a vein in the groin, the physician carefully places special clips onto the valve to repair the leak.

Patients treated in the trial have so far shown promising responses, Dr. Batchelor said. "In some cases, patients whose regurgitation was classified as severe or torrential experienced reductions in regurgitation down to the level of trivial to mild," he said. "And they have experienced symptomatic improvement to go along with that, such as less leg swelling and shortness of breath."



Across all trial sites, success rates so far appear to be high, he added. “The clinical signal appears to be going in the right direction, and importantly, the procedure appears to be very safe. No complications have been reported so far. However, we will need to wait for the completion of the trial before fully understanding whether the procedure works better than medicine alone.”

### Experts in Structural Heart Disease

IHVI is one of only three hospitals in Virginia, and the only site in Northern Virginia, to provide access to this new technology. Inova was chosen to participate because of the breadth and depth of its experience treating heart valve disease and other structural heart problems, Dr. Batchelor said. “We offer the entire gamut of structural heart procedures, from minimally invasive to open surgical options, and we perform a very high volume of transcatheter valve procedures,” he said. “The IHVI heart team is extremely talented and very experienced.”

One important key to the team’s success, Dr. Batchelor added, is IHVI’s commitment to multidisciplinary care. Every heart patient is presented at a weekly conference, where a multidisciplinary team of healthcare professionals evaluates the case and comes to a joint decision about the best treatment options for that patient. That team includes cardiac surgeons, interventional cardiologists, an interventional cardiac imaging radiologist, nurses, APPs, and research coordinators. “In multidisciplinary care, you’re only as strong as your weakest link, and our team has outstanding providers at every level of care,” Dr. Batchelor said.

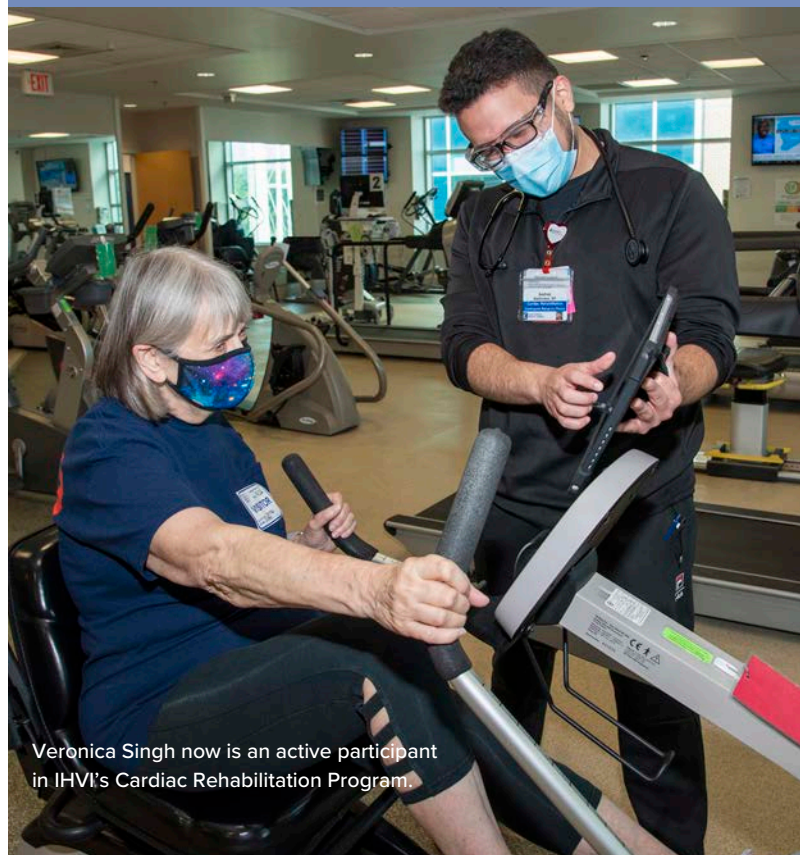
As a high-volume structural heart disease program, IHVI aims to work closely with referring physicians to help patients get the care they need to extend and improve their quality of life. “Physicians can refer their patients to us trusting that they will receive safe, effective procedures, and then return back to them with the appropriate communication to ensure continuity of care,” Dr. Batchelor said.

IHVI plans to continue enrolling patients in the trial into 2022. Even after the trial is complete, the team will likely have the opportunity to continue to provide the therapy while the U.S. Food and Drug Administration (FDA) reviews the trial data through a highly anticipated Continued Access Study program.

“Tricuspid regurgitation has a significant impact on a patient’s prognosis and quality of life, but there has been a huge treatment gap out there for this particular valve problem,” Dr. Batchelor said. “The good news is that the inclusion criteria for this trial are fairly broad. If you have a patient who might benefit, we encourage you to reach out.”

“The tricuspid valve has been considered the forgotten valve. By having access to the TriClip tricuspid valve repair procedure through the TRILUMINATE Pivotal Trial, there’s a lot of promise for treating TR successfully without open heart surgery.”

– Wayne Batchelor, MD, MHS, FACC, FSCAI,  
Associate Director for IHVI, System Director for IHVI’s  
Interventional Heart Program and Interventional Heart  
Disease Research, Education and Innovation



Veronica Singh now is an active participant in IHVI’s Cardiac Rehabilitation Program.

To refer a patient for the TRILUMINATE Pivotal Trial, call 703.776.3135 or email [valve@inova.org](mailto:valve@inova.org).

## CLINICAL TRIAL: Inova Heart and Vascular Institute Explores Implant's Potential to Replace Anticoagulants in AFib Stroke Prevention



Matthew Sherwood, MD

**M**illions of Americans have AFib, putting them at increased risk for ischemic stroke. Individuals with AFib are five times more likely to have a stroke than those without the condition. Daily oral anticoagulants are often prescribed to AFib patients to decrease stroke risk; however, blood thinners carry the risk of side effects like increased bleeding and bruising, in addition to the expense and inconvenience of daily prescription medication.

Physicians at IHVI are investigating alternative solutions for AFib-related stroke prevention that reduce side effects and treatment-related costs, led by IHVI interventional cardiologist Matthew W. Sherwood, MD, MHS, Director of the IHVI LAAC/WATCHMAN Program. Dr. Sherwood also serves as Co-Director of both the Structural Heart Program and the Cardiac Catheterization Laboratories at IFMC. IHVI is participating in the CHAMPION-AF trial to compare a leading-edge heart implant device with traditional anticoagulant therapy. The results of this global clinical study could mean that patients

with AFib might be able to discontinue daily blood thinner use, decreasing pill burden and increasing patient outcomes and satisfaction.

### Reducing Stroke Risk Without Anticoagulants

IHVI's doctors were among the first in the region to offer the WATCHMAN device as an alternative to anticoagulant therapy for AFib patients. WATCHMAN is an FDA-approved implantable device that seals off the left atrial appendage – a primary source of embolization – and ultimately prevents blood clots and stroke. Because more than 90 percent of AFib strokes form in the LAA, this groundbreaking device could potentially replace anticoagulation therapy as the standard of care for patients with AFib.

Since 2016, Inova doctors have successfully performed hundreds of WATCHMAN procedures, and more than 100,000 people worldwide have received a WATCHMAN device to date. Once the device has been implanted and its

“At IHVI, our doctors were among the first in the region to offer the WATCHMAN FLX™ device as an alternative to anticoagulant therapy for AFib patients.”

– Matthew W. Sherwood, MD, MHS, Director, LACC/WATCHMAN Program; Co-Director, IHVI Structural Heart Program; Co-Director, Cardiac Catheterization Laboratories, Inova Fairfax Medical Campus

effectiveness confirmed, doctors can advise their patients on how to stop anticoagulant therapy.

With more size options, the next-generation WATCHMAN FLX™ is designed to work for even more patients with AFib. This newer device, which is FDA approved, also has a frame that makes it easier for doctors to maneuver and implant. Doctors implant the WATCHMAN FLX in the LAA during one minimally invasive procedure, allowing many patients to go home the next day.

#### **AFib Patients Needed for WATCHMAN FLX Trial**

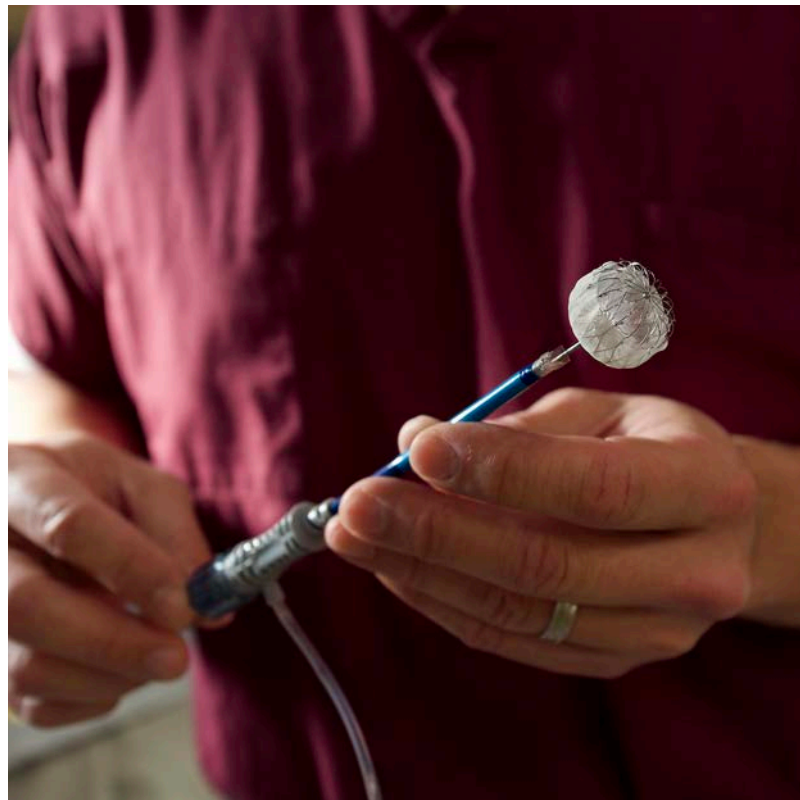
Currently, the WATCHMAN FLX is only FDA approved as a stroke prevention device for patients unable to take anti-coagulants long term, such as those with high bleeding risk.

Inova and its collaborators in the CHAMPION-AF clinical trial are investigating the efficacy of WATCHMAN FLX to increase access to this treatment for more AFib patients, including those who would otherwise adhere to lifetime anticoagulation therapy.

IHVI doctors are currently recruiting patients for the CHAMPION-AF clinical trial. CHAMPION-AF is a randomized, head-to-head study comparing the WATCHMAN FLX device to traditional anticoagulant therapies, and it includes 3,000 study participants at 150 sites across the world.

Our doctors will closely follow patients throughout the five-year study and continue to provide exceptional care for AFib and stroke prevention. A positive outcome from the CHAMPION-AF trial could establish WATCHMAN FLX as the first-line prevention option for patients with AFib.

This trial is another example of Inova’s commitment to providing the latest cardiovascular care. The institution was among the first in the Washington, DC, region to implant the WATCHMAN FLX. As a CHAMPION-AF site, IHVI is among the first in the world to offer this innovative treatment to a broader range of patients.



#### **Refer a patient to the CHAMPION-AF Trial**

IHVI is seeking individuals 18 years or older with a nonvalvular AFib diagnosis to participate in the CHAMPION-AF trial. If you have a patient who fits these criteria and is interested in being considered for the trial, email [ihviresearch@inova.org](mailto:ihviresearch@inova.org) or call 703.776.3567.

# CARDIAC SURGERY

Society of Thoracic Surgery

Highest rating for quality of:



Coronary Artery Bypass Surgery: 2016, 2017, 2018, 2019, 2020, 2021

Aortic Valve Replacement + Coronary Artery Bypass Grafting (CABG): 2017, 2018, 2019, 2020, 2021

Aortic Valve Replacement: 2021

Mitral Valve Repair or Replacement (MVRR) + CABG: 2017-2019

The Society of Thoracic Surgery (STS) is a national leader in health care transparency and accountability. The STS has developed a comprehensive rating system for the quality of cardiac surgery care among hospitals across the country based on overall performance, survival, complications and other measures. Approximately 12 – 15 percent of hospitals receive a “3-Star” rating, which denotes the highest category for quality.

Further details can be found at [publicreporting.sts.org](http://publicreporting.sts.org).

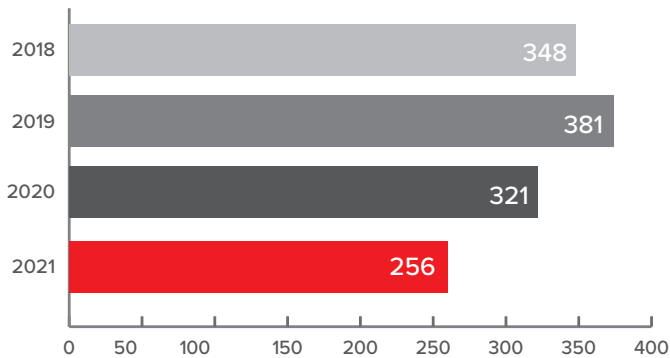


The Mitral Valve Repair Reference Center Award recognizes superior clinical outcomes resulting from evidence-based, guideline directed care.



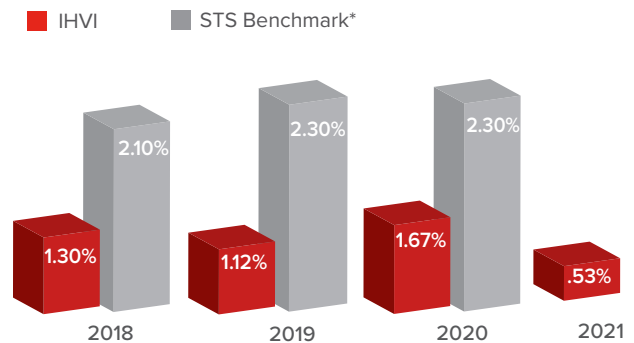
(L to R): Eric Sarin, MD and Alan Speir, MD

### Total Surgical Valve Volume – Isolated and Combined Procedures



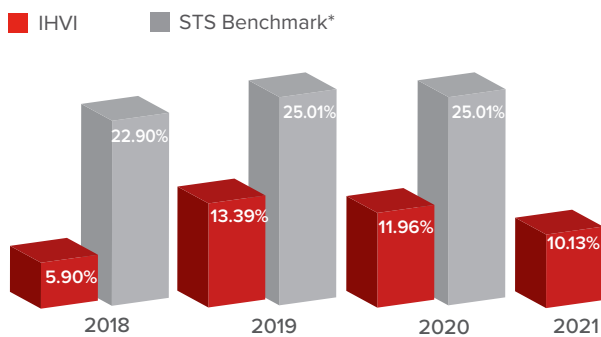
YTD 1/1/21 – 9/30/21

### Isolated CABG Mortality



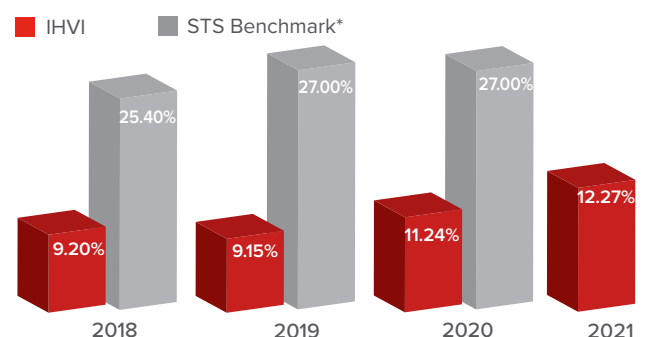
YTD 1/1/21 – 9/30/21

### Isolated CABG Intra-Op Blood Products Used



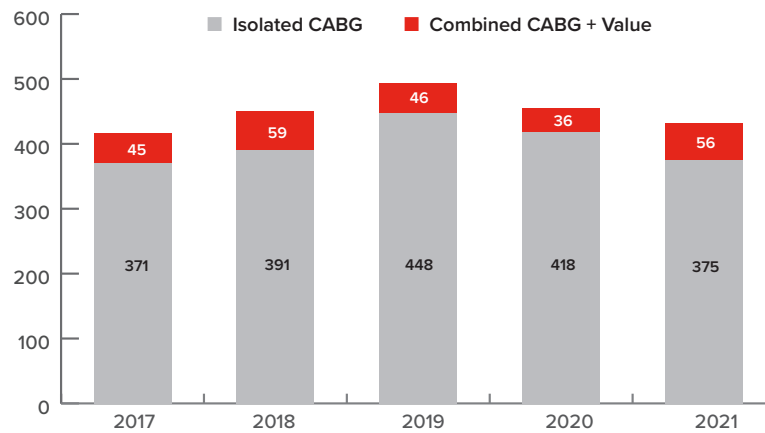
YTD 1/1/21 – 9/30/21

### Isolated CABG Post-Op Blood Products Used



YTD 1/1/21 – 9/30/21

### CABG Combined Volume



\*STS benchmark data for 2021 were not yet available at time of publication.

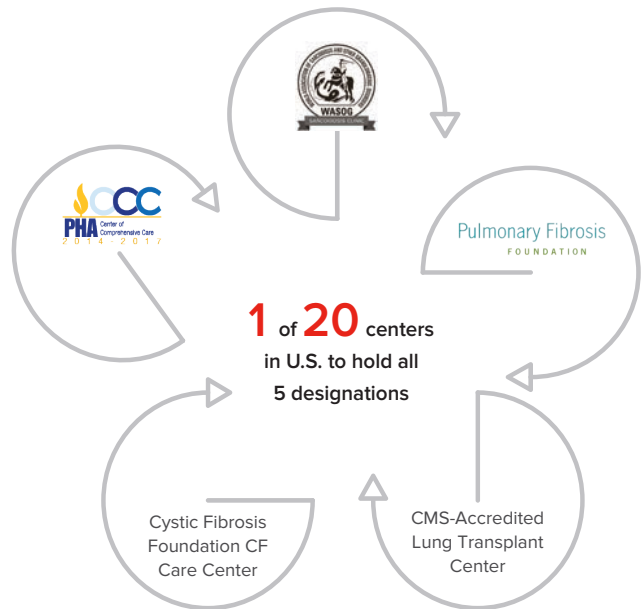
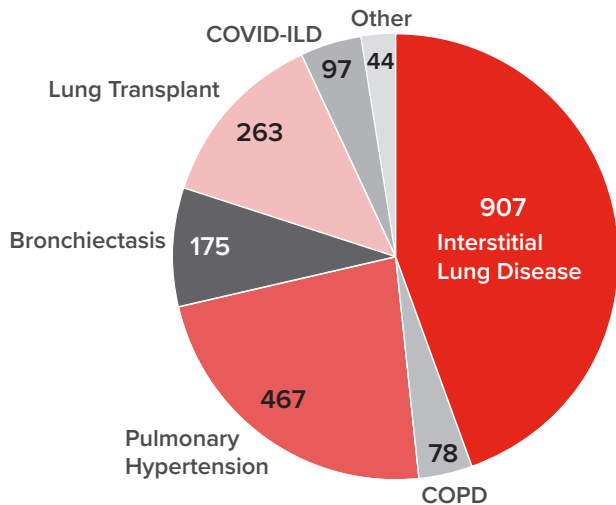


**Refer a Patient**

703.472.4600 | Website: [inova.org/cvsurg](http://inova.org/cvsurg)

# INOVA LUNG SERVICES

Unique Patients Followed: 1,964



Additional special designation:



“Our unique combination of expertise and experience constituted by highly talented individuals across multiple disciplines within our advanced lung disease team allows us to offer a breadth of subspecialized services for complex lung diseases that is difficult to match. Our approach is one of comprehensive, seamless, integrated and individualized care throughout the patient journey.”

– Steven Nathan, MD, FCCP, Medical Director, Inova Advanced Lung Disease and Lung Transplant Program

**2021 Lung Transplant Volume: 28**  
**2021 Heart-Lung Transplant Volume: 1**

## Lung Transplant Survival – Adult

	Observed	US Average
Adult Patient Survival (1 year)	95.24%	88.76%

Scientific Registry of Transplant Recipients survival data as of release date 1/6/2022



**Refer a Patient**

703.776.7939 | [ltxferrals@inova.org](mailto:ltxferrals@inova.org) | Website: [inova.org/lung](http://inova.org/lung)

## After a Heart-Lung Transplant, a Mother Gets a Second Chance



**O**n weekday mornings, Tandy Lee Thompson walks her youngest child to the bus stop. It's a small thing, but to Tandy, it's everything. She owes those walks – and her life – to a single-donor heart and double lung transplant performed at IHVI – Inova Fairfax Medical Campus.

Tandy was still in her 30s when she started experiencing shortness of breath. She was a runner, but suddenly she couldn't run more than two minutes without having to stop. Eventually, she was diagnosed with pulmonary arterial hypertension (PAH). Despite medical management, her condition deteriorated rapidly. "I had stations set up in the hallway so I could sit and rest on my way to the bathroom," she said. And trips to the bus stop were a thing of the past.

Three years after diagnosis, Tandy's health was declining, and she was admitted to a hospital in Richmond, VA. Her pulmonologist told her it was time to consider a lung transplant. Tandy was transported by helicopter to IHVI. By the time she arrived, she was in cardiogenic shock.

The team at IHVI placed her on extracorporeal membrane oxygenation (ECMO) almost immediately. It happened so quickly that Tandy didn't even have time to say goodbye to her husband and four children before she lost consciousness. By the time she woke up more than three weeks later, everything had changed.

## Lung Transplant for PAH

Lung transplant is the primary treatment for end-stage PAH, in cases where medical therapy has failed. And after a swift evaluation, it became clear that Tandy was a good candidate, said Shambhu Aryal, MD, a pulmonary and critical care medicine specialist and Medical Director of Inova's Lung Transplant Program. She was young, otherwise healthy and had good family support. She was also gravely ill.

It quickly became evident that her heart was also impaired. "All patients with PAH have some degree of right-side heart dysfunction because of the elevated pressure in the lungs," explained Daniel G. Tang, MD, a cardiothoracic surgeon and Director of the Heart Transplant Program at Inova. Often, following a lung transplant for PAH, the heart recovers on its own, he said. But Tandy was also experiencing left-side heart

"All of our providers are able to get to know every transplant patient, and referring physicians can be confident that every patient will receive world-class care."

– Shambhu Aryal, MD, Medical Director of Inova's Lung Transplant Program

dysfunction. "It became clear she didn't have adequate heart function, and we listed her for both heart and lung transplant," Dr. Tang recalled. Three weeks later, on May 8, 2020, she was matched with a donor and received a set of new organs.

Combined heart and lung transplants are relatively rare, and not all transplant centers are equipped to handle them. Inova's transplant program is one of the most active programs in the Washington, DC, region and the only one to offer heart-lung transplants. "The ability to do this procedure requires close interaction and collaboration between teams on the heart transplant side and the lung transplant side," Dr. Tang said. "Inova has a unique concentration of expertise to deal with these complex procedures."

## Recovering from a Heart-Lung Transplant

On May 9, Tandy woke up and somehow managed to sit up by herself. In the process, she set off the bed alarm. "I saw all these nurses and doctors running toward my room. When they saw me sitting up, they all stopped and started waving at me," she said. "Even through their masks, I could tell they were smiling."



(L to R): Shambhu Aryal, MD and Daniel G. Tang, MD

It was the height of the COVID-19 pandemic, and Tandy's husband and children weren't able to visit her in the intensive care unit (ICU). "It's so hard to recover from something like that without your support system," she said. But her Inova care team worked hard to fill that void. "My nurses were always there, cheering me on," she said. On her fortieth birthday, they brought her balloons and gifts. Some would stop by to visit even after their shifts had ended. When Tandy was transferred out of the ICU, one of the ICU nurses made a special trip to her new floor to make sure the staff knew exactly how to care for her as she continued to recover.

After she was discharged, Tandy continued to regain her strength at the Inova Rehabilitation Center at Inova Mount Vernon Hospital, relearning how to walk and eat. Nearly three months after she was first hospitalized, she finally returned home to her husband and children, who range in age from 8 to 18. She was thrilled to be home, where she could walk her kids to the bus and cheer from the sidelines at their sporting events. "We're a family of sports fanatics, and the very first weekend I was home, I was at my son's baseball tournament," she said. "At that point, I still needed a wheelchair or walker. A year later, I can walk from the parking lot to the playing field without help."

Like many transplant recipients, however, her recovery journey was not without some bumps in the road. She developed a cytomegalovirus infection, which lingered for months and sent her back to the hospital for about three weeks. The post-transplant team had to adjust her immunosuppressant medications as she fought the virus, which led to some rejection in her lungs. But with careful monitoring and treatment by her physicians, she was able to clear the virus and reverse the rejection.



“We’re not just a transplant center but an advanced lung disease and advanced heart failure center as well. There’s no downside to referring patients to us. Even if they aren’t eligible or are too early for transplant, we are able to manage their illness in our clinics.”

– Margaret M. Fregoso, MSN, CANP, CCTC, Post-Lung Transplant Coordinator, IHVI

### Comprehensive Care at Inova

For Tandy, Inova’s transplant program was truly the right place at the right time. Inova offers venoarterial V-A ECMO, which supports both heart and lung function, in addition to venovenous V-V ECMO, which primarily supports the lungs. “ECMO is an advanced technology, and venoarterial ECMO is much more complex than venovenous ECMO,” said Dr. Aryal. “Few centers have the capability of venoarterial ECMO as a bridge to transplant because it also requires patients to be able to participate in physical therapy while on ECMO.” Fortunately for Tandy, Inova is one of those places.

“We’re also special because we’re not just a transplant center, but an advanced lung disease and advanced heart failure center as well,” said Margaret M. Fregoso, MSN, CANP, CCTC, a nurse practitioner and post-lung transplant coordinator at IHVI. The lung team treats all types of advanced lung disease, including pulmonary hypertension, cystic fibrosis, pulmonary fibrosis and sarcoidosis. “There’s no downside to referring patients to us. Even if they aren’t eligible or are too early for transplant, we are able to manage their illness in our clinics,” Fregoso said.

Dr. Tang and Dr. Aryal stress that referring physicians are a big part of the success of Inova’s transplant program. “Our goal is to collaborate with them, and there are major benefits to starting that collaboration early on,” Dr. Tang added. “If we can see patients early, we may be able to avoid the need for more extreme therapy, like transplants for patients on ECMO.”

### Inova Transplant Center: Hitting the Sweet Spot

Collaboration and teamwork are woven throughout Inova’s mission. To successfully perform a heart-lung transplant, the cardiac and pulmonary teams must work together closely.

Those partnerships are evident at Inova, said Fregoso, where surgeons and other specialists work hand in hand with one another and with the nurse practitioners who see patients for post-transplant visits. “We’re lucky to have such a collaborative clinic,” she said. “Our pulmonary offices are right next to the offices of our heart counterparts, and we are able to work closely together to monitor and manage patients like Tandy.”

While some transplant centers might perform a higher volume of procedures each year, Inova manages to hit an elusive sweet spot, Dr. Aryal added. “We have expertise treating a good volume of patients, but we’re not stretched too thin,” he explained. “All of our providers are able to get to know every transplant patient, and referring physicians can be confident that every patient will receive world-class care.”

That care continues long after patients heal from surgery. Tandy is still in touch with her nurses, sending them photos of her kids and updating them on the life events, big and small, that she cherishes – walking her youngest son to the bus stop, helping her oldest daughter get ready for her first year of college, and cheering all four kids from the sidelines as they steal bases and hit home runs. Her physicians, too, remain accessible for any questions or concerns that come up. “I’m never afraid to reach out and ask my doctors questions,” she said. “Even if it’s a silly question, they always take it seriously and come up with an answer for me.”

It’s all in a day’s work for Inova’s experienced transplant team, and they wouldn’t have it any other way, Dr. Aryal said. “It’s remarkable seeing that transition from a critically ill patient struggling to live to going back to normal life,” he said. “We have a very close relationship with our patients, and seeing them go back to living their lives is the most gratifying thing.”

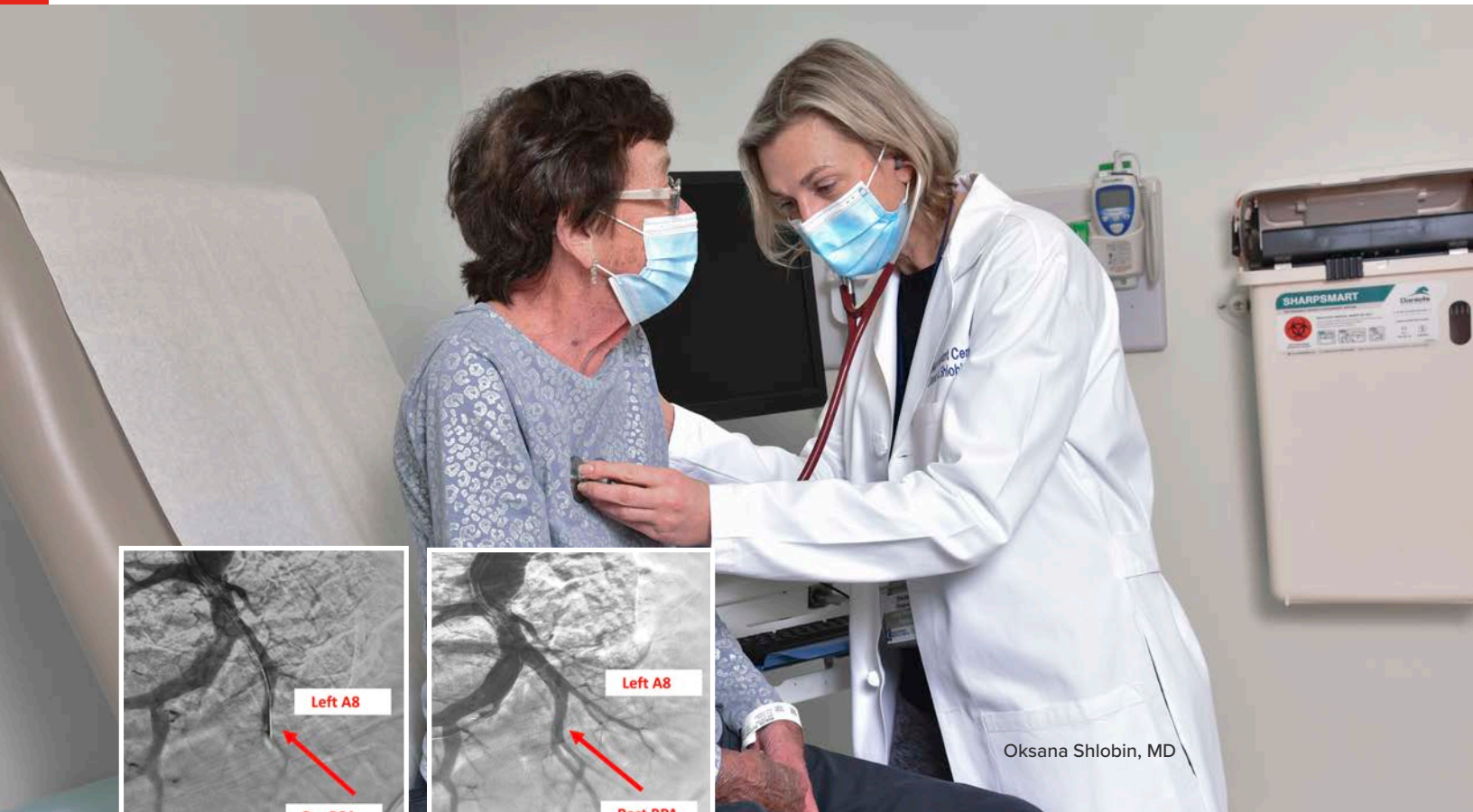


#### Refer a Patient

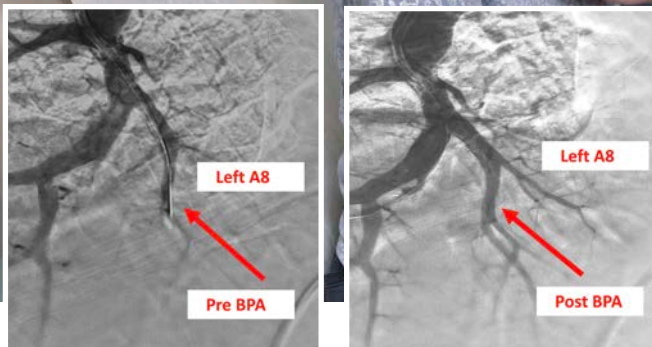
Heart Transplant Program | 703.776.6453 | [heartfailure@inova.org](mailto:heartfailure@inova.org)

Lung Transplant Program | 703.776.7939 | [txreferrals@inova.org](mailto:txreferrals@inova.org)

# Inova's Multidisciplinary Approach to Treating Chronic Thromboembolic Pulmonary Hypertension (CTEPH)



Oksana Shlobin, MD



Radiographic images show a 75-year-old man with lifestyle limiting CTEPH who underwent balloon pulmonary angioplasty (BPA). Left A8 segment is shown pre- and post-BPA procedure.

**C**hronic thromboembolic pulmonary hypertension (CTEPH) is a rare condition of high blood pressure in the lungs' arteries caused by blood clots that narrow and limit the blood flow to the lungs. It causes shortness of breath and may be a consequence of acute pulmonary emboli, but it can also present without prior diagnosis of pulmonary emboli (visit [inova.org/cteph](https://www.inova.org/cteph) for a complete list of risk factors and symptoms).

Inova's Pulmonary Hypertension Program offers these patients a comprehensive evaluation through its new multidisciplinary CTEPH service, which incorporates the expertise of pulmonary and critical care medicine, interventional pulmonology, cardiac surgery, invasive and noninvasive cardiology, thoracic and interventional radiology. This team provides state-of-the-art care through an array of surgical, interventional and medical therapies. The program has drawn patients not only from the greater Washington, DC, region, but also throughout Virginia, Maryland and West Virginia.

In addition to the traditional treatment for proximal CTEPH – surgical pulmonary thromboendarterectomy (PTE) – IHVI at Inova Fairfax Medical Campus now offers balloon pulmonary angioplasty (BPA), a less invasive interventional approach for patients with affected vessels that are more distal and not amenable to surgical intervention. Inova is currently one of very few institutions in the country offering BPA as a treatment option for CTEPH patients. Our experienced team also provides medical therapies to complement and complete our portfolio of treatment options for patients who are not candidates for either PTE or BPA.

Since the inception of the program at the end of 2020, we have performed 10 PTEs (0-percent mortality, average length of stay of 9 days) and 21 BPA procedures. All the PTE and BPA patients demonstrated normalization of their hemodynamics with significant improvement in their symptoms and quality of life.



**To Discuss a CTEPH Case or Refer a Patient**

703.776.6168 | [phreferrals@inova.org](mailto:phreferrals@inova.org) | Website: [inova.org/ph](https://www.inova.org/ph)

# CARDIAC AND RESPIRATORY FAILURE



## ECMO

	2017	2018	2019	2020	2021
Days of Support	740	848	1,047	1,485	1,727
Hours of Support	16,901	19,269	23,797	33,949	39,661
Pediatric ECMO Runs	12	8	20	18	16
Adult ECMO Runs	68	83	93	124	141
<b>Total ECMO Runs</b>	<b>80</b>	<b>91</b>	<b>113</b>	<b>142</b>	<b>157</b>

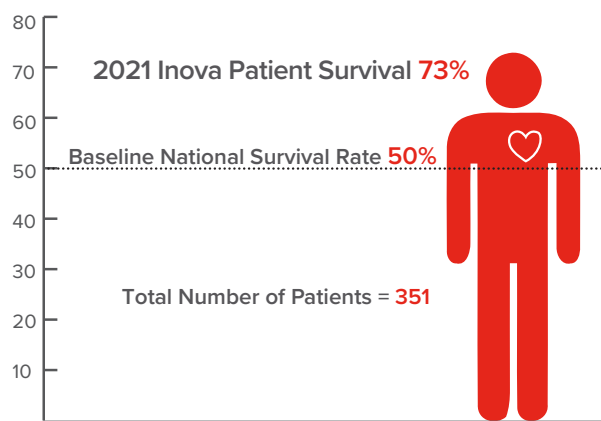
1/1/21 – 12/31/21

## Impella® Volumes and Cardiogenic Shock Activations

	2018	2019	2020	2021
Impella Volume	110	100	90	72
Shock Team Activations	158	222	216	351

1/1/21 – 12/31/21

## Cardiogenic Shock Patient Survival



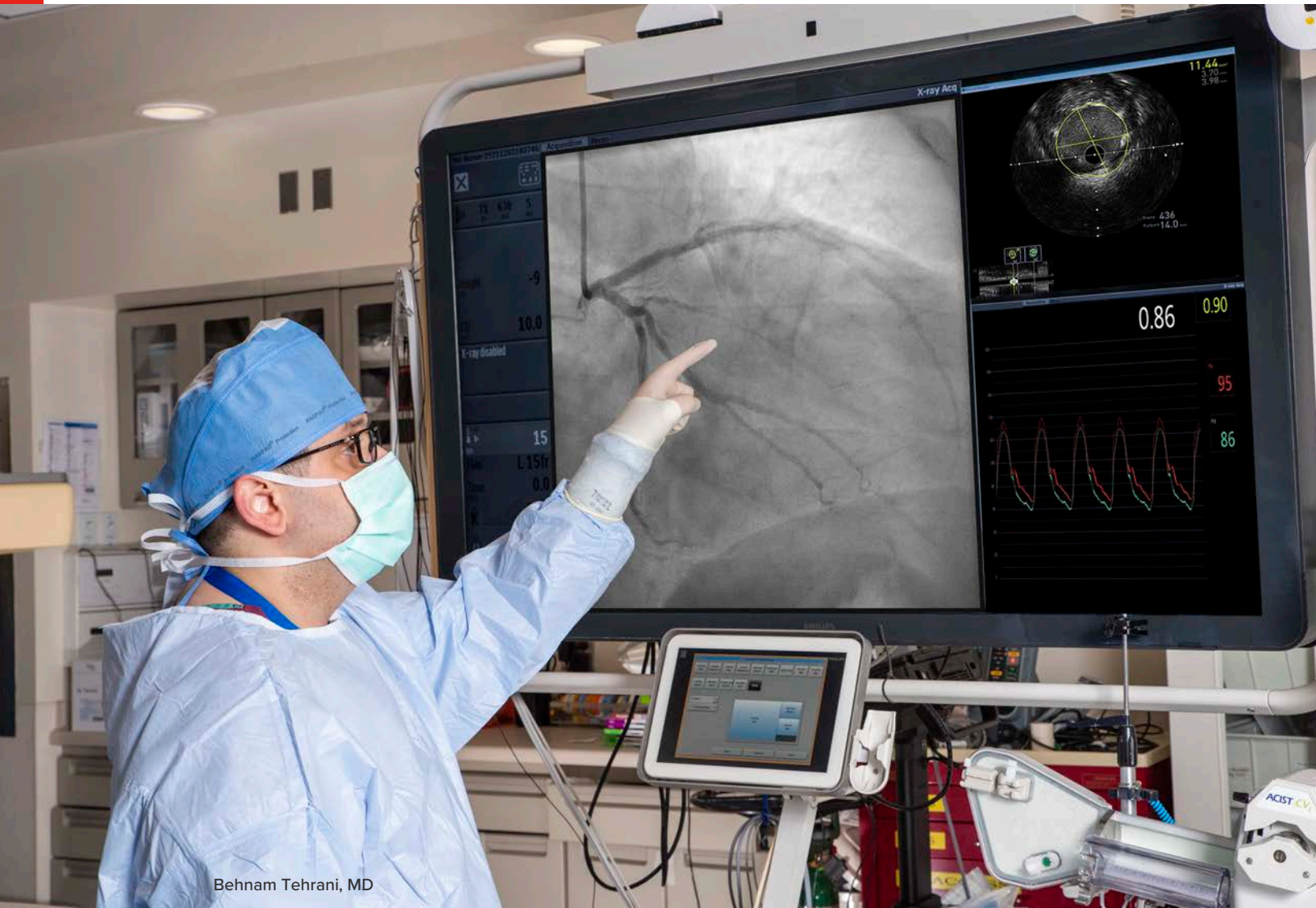
1/1/21 – 12/31/21



## Patient Transfers

One Call 24/7 | Adult: 703.776.5905 | Pediatric: 877.900.9543 | Direct Admission • Transfer • Specialized Transport

## Cardiogenic Shock Program Continues to Achieve Outstanding Results



Behnam Tehrani, MD

**C**ardiogenic shock has long been associated with high rates of morbidity and mortality. It was not until the landmark SHOCK trial in 1999 that survival increased from 20 percent to 50 percent through early revascularization. Since then, however, no further improvements in short-term outcomes have been realized.

In July 2016, physician leaders at IHVI reviewed the health system's cardiogenic shock outcomes and noted similar findings, which were in line with national benchmarks. In January 2017, we launched IHVI's multidisciplinary cardiogenic shock program, which uses a standardized and team-based approach for management of these complex patients. Since the advent of the program, outcomes have improved significantly, with survival to discharge rates that have increased

from 47 percent to 73 percent, which is among the best rates nationwide.

IHVI is fortunate to have a wide range of subspecialty expertise relevant to cardiogenic shock, including interventional cardiology, advanced heart failure and transplant cardiology, cardiac critical care, and cardiac surgery. The institute established a one-call shock line and standardized algorithm that convenes the team members for real-time decision making that is evidence based and patient centered.

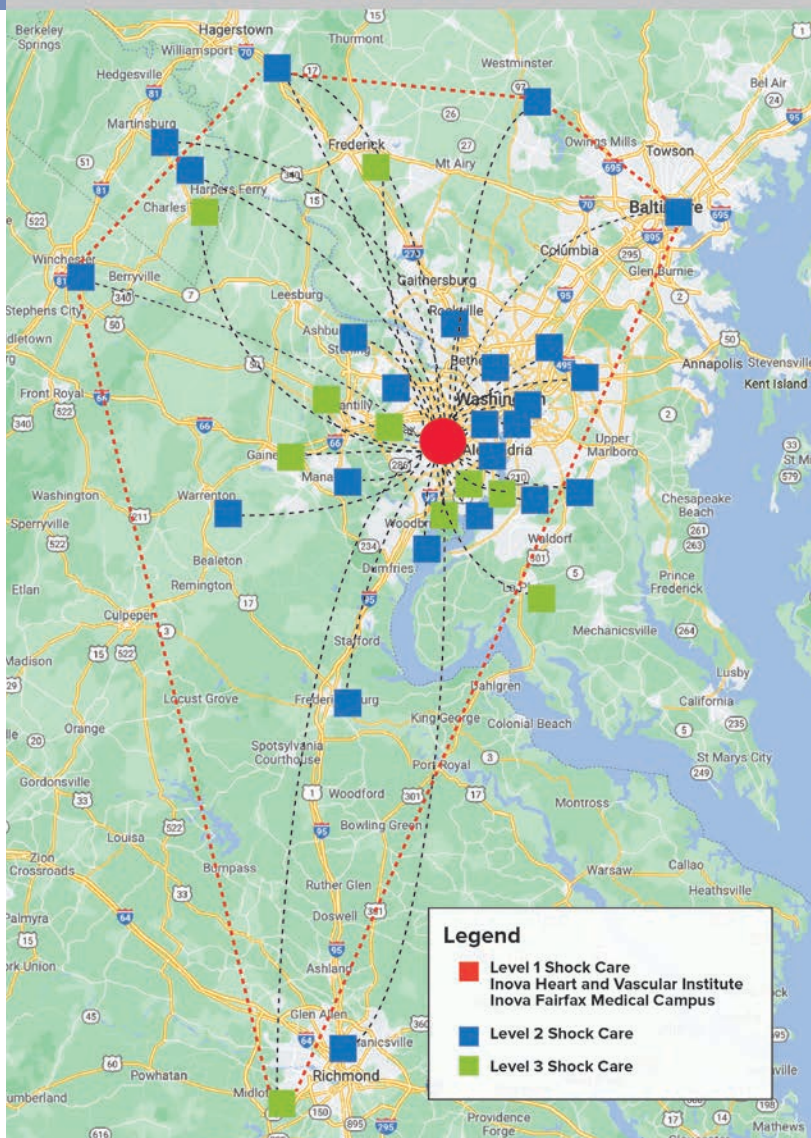
"Not only have we achieved excellent outcomes, but we've done it in a sustained fashion," said interventional cardiologist Behnam Tehrani, MD, Co-Director of IHVI's Cardiogenic Shock Program and of the Cardiac Catheterization Laboratories at Inova Fairfax Medical Campus

“Our program is viewed nationally and internationally as a model shock program of excellence, because of the commitment and clinical excellence of all of our team members.”

– Behnam Tehrani, MD, Co-Director, Cardiogenic Shock Program, IHVI; Co-Director, Cardiac Catheterization Laboratories, Inova Fairfax Medical Campus



### Transferring Facilities to Inova Fairfax Hospital Cardiogenic Shock Care



IHVI has now disseminated this cardiogenic shock protocol to all hospitals across Northern Virginia, the District of Columbia and Maryland, giving dozens of local facilities access to IHVI’s world-leading expertise.

IHVI is further expanding its work in cardiogenic shock by launching a four-site registry of programs with dedicated cardiogenic shock teams, including the University of Toronto, the University of Utah and Sentara Health. This registry will pave the way for further advancements in cardiogenic shock outcomes.

“We plan to expand our research collaborations by partnering with other sites with dedicated multidisciplinary shock programs to better understand this complex and frail patient population,” Dr. Tehrani said. “Over time, this will drive further improvements in knowledge and outcomes.”



Alexander Truesdell, MD, Co-Director, Cardiogenic Shock Program



### Patient Transfers

One Call 24/7 | Adult: 703.776.5905 | Pediatric: 877.900.9543 | Direct Admission • Transfer • Specialized Transport

## BUILDING A TEAM OF TEAMS: Strong Collaboration Between Cardiovascular Intensive Care Units Is Associated with Great Outcomes



(L to R): Shashank Sinha, MD; Marina Ocasio, RN; Hala Moukhachen, MD

**I**HVI's 48-bed intensive care unit, divided equally between cardiac ICU (CICU) and cardiovascular ICU (CVICU), serves some of the region's sickest patients.

Over the last three years, IHVI's critical care team has expanded its scope to meet the needs of the region, and its case-mix index has increased 3 to 3.5 times during that period. Over the last 18 months, in addition to caring for critically ill cardiac patients, the teams in CICU and CVICU have risen to the challenge of providing advanced life support for patients who are critically ill with COVID-19.

The CICU and CVICU teams have seen commensurate improvements in outcomes even as their scope of practice has expanded.

Central to the team's success is the evolution of a "team of teams" model with cross-unit collaboration focused on optimizing structures, systems, staffing and training to deliver critical care effectively to this patient population.

At Inova, cardiologists and intensivists co-manage patients with a truly integrated model incorporating cardiac fellows and APPs as well as physical therapists, pharmacists, case managers and many others to take care of the sickest and most vulnerable patients with cardiac critical illness. Cross-disciplinary education and quality initiatives, including the monthly Morbidity Mortality Improvement conference,



among many other efforts, is another key aspect of the team's success. Inova continues to develop as a health system relentlessly focused on continuous improvement.

"The learning health system model of care delivery has led us to implement changes that have allowed us to avert challenges down the road," said Shashank Sinha, MD, Co-Medical Director of IHVI's CICU.

The team measures success using both process and outcome metrics to ensure best practices and standardized protocols are hard wired to support the best outcomes year in and year out.

"Cross-disciplinary collaboration is the cornerstone of the work we do at IHVI," said intensivist Hala Moukhachen, MD, FCCP, Co-Medical Director of IHVI's CICU and Medical Director of Medical Critical Care Services. "Patients benefit from multiple perspectives, which is especially important for fragile and medically complex patients who need critical care."

## CASE STUDY: A Young Patient with Cardiogenic Shock



**T**he CICU and CVICU teams worked together to care for a 37-year-old mother with a history of dilated cardiomyopathy and AFib who was transferred to IHVI for treatment of cardiogenic shock.

The cardiogenic shock team was activated to evaluate her condition and determine the best path forward. Following a multidisciplinary conference and hemodynamic assessment, the team determined that the patient would need the highest level of life support, venoarterial ECMO. Additionally, she was supported on the ventilator with vasopressors and an Impella device.

Throughout her stay, the multidisciplinary cardiogenic shock team collaborated to formulate and enact a treatment plan to offer the best chance of the best outcome. Ultimately, she was successfully removed from ECMO support and was able to leave the hospital on medications for heart failure, returning home to her family.

Inova's nationally recognized approach to the management of cardiogenic shock combined with the multidisciplinary collaboration in the CICU and CVICU provided a coordinated effort to ensure this and many other critically ill patients' survival.

### Coronary Care Unit (CCU)

- Emergent cardiopulmonary resuscitation
- Grouping of patients by cardiac diagnosis
- Telemetry monitoring for arrhythmias
- Nurses as first responders
- Focus on STEMI patients



### CICU and CVICU

Core team – cardiologists, intensivists, cardiac fellows, APPs, physical therapists, pharmacists, case managers



SPECIALIZED TEAMS

- Mechanical circulatory support
- Therapeutic hypothermia
- Advanced modes of ventilation
- Renal replacement therapy
- Invasive and noninvasive monitoring
- Therapy for advanced heart failure
- Interventions for pulmonary hypertension



ADDITIONAL SUPPORT

- Advanced nursing practice
- Performance improvement
- In-depth use of information technology
- Protocols for patient safety



**Coordinated Care for Complex Cardiovascular Disease and Severe Comorbid Conditions**



**Patient Transfers**

One Call 24/7 | Adult: 703.776.5905 | Pediatric: 877.900.9543 | Direct Admission • Transfer • Specialized Transport

# ADVANCED HEART FAILURE



Mitch Psozka, MD, PhD

## Heart Transplant Survival

2021	Expected	Observed	Risk Ratio
Patient Survival (1 year)	91.65%	96.02%	0.63

SRTR Jan. 2022 Report

## Ventricular Assist Device (VAD) Post-Implant Survival

Years after device implant	Intermacs	IFH (VAFH – 0151)
1	80.2%	80.4%
2	70.1%	72.9%
5	42.6%	50.9%

STS Intermacs 6/06 - 9/21

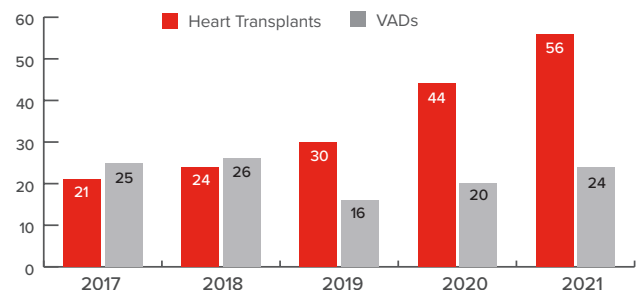
## VAD and Heart Transplant Volumes

	2021
VAD Volume – Durable Devices	24
Heart Transplant Volumes	56
Heart-Lung Transplant Volume	1



The Joint Commission Gold Seal of Approval® for Ventricular Assist Device

## Heart Transplant and VAD Volumes



In 2021, IHVI was the 14th busiest heart transplant program in the U.S.



Refer a Patient

703.776.6453 | [heartfailure@inova.org](mailto:heartfailure@inova.org) | Website: [inova.org/ahf](http://inova.org/ahf)



## Urgent Access Heart Failure Clinics Offering Same-Day or Next-Day Appointments – Now at Three Inova Hospitals

**Optimal management of heart failure patients requires a prompt response to symptoms indicating a deterioration in health status.** Many hospitalizations for decompensated heart failure are considered preventable if patients are identified and treated in a timely manner. To address that need, IHVI has opened urgent access heart failure clinics at three hospitals – Inova Fairfax, Inova Mount Vernon and Inova Loudoun.

The clinics at Inova Fairfax, Loudoun and Inova Mount Vernon hospitals are open Monday – Friday, 8 a.m. – 4 p.m. Initial calls for referrals can be directed to **703.776.2529**.

This service originated at IHVI's Fairfax location in 2019 using a multidisciplinary team of cardiologists, APPs and pharmacists. The service provides patients access to timely assessment by a heart failure APP, lab assessment and outpatient IV bolus diuretics to reduce preventable hospital admissions. Most patients can be seen the same day or the next day.

Since opening, the urgent access heart failure clinic at Inova

Fairfax Hospital has provided treatment during more than 350 visits and has successfully prevented hospitalization for the majority of those treated. Care is coordinated with each patient's cardiologist to assure clear communication around each patient's condition and any recommendations the IHVI team has.

In February 2019, IHVI opened a second clinic at Inova Mount Vernon Hospital with the same goals of providing timely assessment and intervention to prevent unnecessary heart failure hospitalizations. The clinic has had more than 120 visits, with the vast majority effectively preventing hospitalization.

Building on these successes, in 2021, a third urgent access heart failure clinic launched at IHVI's Schaufeld Family Heart Center located on Inova Loudoun Hospital's Lansdowne campus. This initiative, done in collaboration with Virginia Heart, has been instrumental in improving heart failure care in that area and is part of the expansion of Inova's heart failure services for patients across Northern Virginia.



### Refer a Patient

Inova Urgent Access Heart Failure Clinics | 703.776.2529

Available at Inova Fairfax, Inova Mount Vernon and Inova Loudoun hospitals

# CONGENITAL HEART DISEASE

## Neonatal Procedures

	2021
Complex Cardiac Repairs	18
PDA Ligations – Premature Infant	7
<b>Total</b>	<b>25</b>

YTD 01/01/2021 – 11/30/2021

## Pediatric Congenital Heart Surgery and Procedures

	2021
Anomalous Coronary Surgery	1
ASD	4
ASO	2
AVC (Complete, Partial)	1
AVR/Supra-Sub AS	2
COA/Hypoarch	6
COA Nonpump	2
ECMO Cannulation	9
ECMO Procedures	21
Epicardial Pacer/ICD	3
Glenn/Fontan	8
MV Repair/Replacement	0
NORWOOD/STAT 5	0
PAPVR	0
PDA	7
PVR/Conduit/RVOT Procedure	4
Systemic Pulmonary Shunt	1
TAPVR	3
Thoracic Procedure	5
TOF	3
Tricuspid Valve	1
VSD	9
Other STAT Categories	9
Other Cardiac Nonpump	29
<b>Total</b>	<b>130</b>

YTD 01/01/2021 – 11/30/2021

Thanks to advances in pediatric cardiac care, there is a growing population of adults with congenital heart disease who previously might not have survived childhood. Established in 1994 as a partnership between Inova Children’s Hospital and IHVI, Inova’s Adult Congenital Heart Disease (ACHD) Program was one of the first such programs in the country. Today, the ACHD program provides complete continuity of care for patients with a variety of congenital heart defects, including those complicated by heart rhythm problems, heart failure and pulmonary hypertension.

The ACHD program also partners with Inova Women’s Hospital to achieve the safest delivery possible for mothers with congenital heart defects and their babies.

The ACHD clinic is located in IHVI’s Advanced Disease Management Clinic, on Inova Fairfax Medical Campus. This provides patients seamless access to the collective expertise of Inova’s highly skilled pediatric and adult specialists in a single location, to improve outcomes and enhance quality of life.

Areas of specialization cover the full range of IHVI’s advanced cardiac therapies including:

- Adult congenital cardiac catheterization
- Adult congenital EP
- Adult congenital surgery
- Proactive evaluation of tetralogy patients
- Maternal-fetal medicine

## Adult Congenital Heart Surgery

	2021
Anomalous Coronary Surgery	6
ASD	2
AVC (Partial, Transitional)	0
AVR/ASAA/Sub AS	1
MVR	1
PVR	7
PAPVR	2
VSD	0
Other	7
<b>Total</b>	<b>26</b>

YTD 01/01/2021 – 11/30/2021



### Refer a Patient

Adult Congenital Heart Program | 703.776.3599  
Pediatric Congenital Heart Program | 703.776.4428

Fetal Congenital Heart Program | 703.776.6371  
Website: [inova.org/chd](http://inova.org/chd)

## Congenital Heart Disease Patient Gets Second Surgery and Second Chance



**“You need open heart surgery.” With those five words, Scott Boccia’s world turned upside down.**

Scott had always been healthy and active. “I was the kid who played every sport possible. I went on to play, and later coach, college football,” he said. In his 40s, he was a busy dad to three young kids and an involved youth sports coach. Life was good – until he started noticing that he’d become exhausted and dizzy after an elliptical workout or a short sprint.

After his doctor detected a heart murmur, Scott saw a cardiologist who diagnosed him with a bicuspid aortic valve. The condition is a type of congenital heart disease – a structural defect that had been present since birth. Unbeknownst to Scott, this abnormal valve had been hiding in his chest for four decades. And it nearly cost him his life.

Following two open-heart surgeries – most recently at the talented hands of Lucas Collazo, MD, Medical Director of Pediatric and Congenital Cardiac Surgery and Surgical Director of the Adult Congenital Heart Disease Program at IHVI – Scott is thriving. “I owe my life to the skills of my surgeon Dr. Collazo, his surgical team, the nurses and all of the support staff at Inova Fairfax Hospital,” Scott said.

“Bicuspid aortic valve is one of the most common types of congenital heart defect,” said Dr. Collazo. But it’s unpredictable: “It can present itself early in childhood or show up when you’re 75.”

In Scott’s case, the defect remained hidden until he was 42. In early 2012, he had surgery at a non-Inova hospital to replace the damaged valve with a valve made of cow tissue. The surgery went smoothly, and within two months, he was recovered and feeling well. “I wish the story ended there,” he said.

It wasn’t that simple.

“I was plugged back into my active lifestyle, but five years later I realized something wasn’t right,” he said. He began feeling tired and short of breath. He scheduled some tests with his cardiologist. “By the time I got home from that appointment, I had two voicemail messages from my cardiologist,” he said. His valve was failing, and he needed surgery to replace it as soon as possible. “After hours of research, I selected Dr. Collazo, who is an expert in the field of children’s and adult congenital heart disease procedures,” he said. It was a decision that may have saved his life.

“Bicuspid aortic valve is one of the most common types of congenital heart defect. But it’s unpredictable: It can present itself early in childhood or show up when you’re 75,”

– Lucas Collazo, MD, Medical Director, Pediatric and Congenital Cardiac Surgery, IHVI; Surgical Director, Adult Congenital Heart Disease Program, IHVI

### Repairing a Congenital Heart Defect

The surgery, Dr. Collazo said, was complex. Scott had a lot of scar tissue from his previous operation. What’s more, the tissue valve he’d received was small for a person his size. That may have contributed to it deteriorating almost completely in just five years. The damage to the valve had put significant stress on his heart, which was enlarged and struggling to supply blood to the body. “He was in heart failure,” Dr. Collazo said.

He replaced the damaged tissue with a new-generation mechanical valve designed to last a lifetime. The replacement went smoothly, but the stress of surgery combined with heart failure led fluid to build up in Scott’s lungs. He was placed on ECMO. The machine replaced the function of the heart and lungs until his organs could recover. Five days passed before he was able to be removed from the machine.

His recovery was challenging. “I spent the next 36 days in a hospital bed. I had to relearn how to walk, write and speak,” he said. He graduated to a rehabilitation center, where he received occupational and physical therapy. A month and a half after his surgery, Scott finally returned home. “Now, more than three years later, I have worked extremely hard to get back in physical shape and I remain very active,” he said.

### Congenital Heart Disease Treatment at Inova

Scott’s case highlights the importance of taking a personalized approach to the treatment of congenital heart failure. “It’s not one-size-fits-all,” Dr. Collazo said. “It’s our job to help patients understand their options and make educated decisions.”

Weighing those options together, Dr. Collazo and Scott decided that a mechanical valve was the best way forward. Unlike a natural tissue valve, the mechanical valve requires

Scott to take blood thinners to prevent future complications. But the tradeoff of those medications is that his new valve is likely to last his lifetime. “It should be his forever valve,” Dr. Collazo said.

Today, Scott is healthy and active, and he remains ever grateful that he chose Inova for his second surgery. IHVI is a leader in the treatment of congenital heart disease in both children and adults. “We provide cardiac care over the course of a patient’s lifetime, from babies diagnosed with congenital heart disease before birth through childhood and throughout their adult lives,” Dr. Collazo said. “One of the great things about Inova is that we can provide that spectrum of care over the course of a patient’s lifetime, all under one roof.”

Teamwork and good communication are also key to Inova’s success as a leading heart center. Heart surgery like Scott’s requires a coordinated team of surgeons and anesthesiologists, nurses and ECMO staff, a post-op recovery team, and many others who collaborate on a patient’s care. “From soup to nuts, we work together to provide the best outcomes for our patients,” Dr. Collazo said.



Today, Scott still communicates with his care team. “They just didn’t discharge me and move on. I’ve been proactive in reaching out during my annual surgery anniversary (July 20, 2017), and I hear back from many of the team each time, including Dr. Collazo! My goal is to let the entire care team (surgeons, physician assistants, ICU nurses, step-down unit nurses, specialists and other team members) know that they are making a difference in what they do, even if they don’t always hear about the subsequent progress and success of their patient’s recovery.”

Thanks to that expertise and experience, patients like Scott have a second chance at life. “Scott is still here, and he’s doing great,” Dr. Collazo said. “That doesn’t happen unless all the pieces are in place and working together.”

# VASCULAR SERVICES

Vascular Procedure Volumes	2021
Carotid Endarterectomy	229
Endovascular Abdominal Aortic Aneurysm (AAA) Repair*	62
Infrainguinal Bypass	120
Peripheral Vascular Interventions (PVI) **	2,017

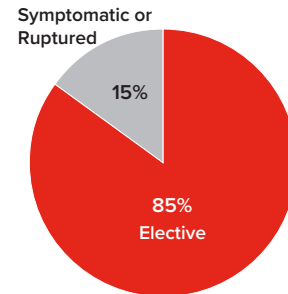
2021 rolling 4Q ending Q2 2021

2021 PVI annualized from YTD January – September data

\*Performed by aortic team – vascular surgery and interventional radiology

\*\*Volumes combined for vascular surgeons and interventional radiology

## Urgency of Endovascular AAA Repair



2021 rolling 4Q ending Q2 2021

The Society for Vascular Surgery Vascular Quality Initiative (VQI®) is a collaboration intended to improve the quality, safety, effectiveness and cost of vascular healthcare. Data displayed here represent only procedures and surgeries performed at IHVI's Inova Fairfax Medical Campus. The timeframe covers only Q1 and Q2 data for both Inova Fairfax Medical Campus and the benchmark data. Q3 and Q4 data were not yet available at time of publication.

### Endovascular AAA Repair – Perioperative Mortality

Inova	All Other Regional Participants	All Other National Participants
0%	1.10%	0.60%

### Endovascular AAA Repair – Perioperative Length of Stay

Inova	All Other Regional Participants	All Other National Participants
2.0 + 2.9; 1.0	2.4 + 3.5; 1.0	2.7 + 11.6; 1.0

### Carotid Endarterectomy – Perioperative Mortality

Inova	All Other Regional Participants	All Other National Participants
0.0%	0.20%	0.60%

### Carotid Endarterectomy – Perioperative Length of Stay

Inova	All Other Regional Participants	All Other National Participants
2.3 + 2.9; 1.0	2.6 + 4.1; 1.0	3.1 + 10.0; 1.0

### Infrainguinal Bypass – Perioperative Mortality

Inova (n=39)	All Other Regional Participants	All Other National Participants
0.00%	1.20%	1.30%

### Infrainguinal Bypass – Perioperative Length of Stay

Inova	All Other Regional Participants	All Other National Participants
5.6 + 4.7; 3.0	7.8 + 8.4; 5.0	9.7 + 63.7; 6.0

Value of the variables are displayed as mean + standard deviation; median.



## Outpatient Vascular Ultrasound Studies – 14,944

January – December 2021



### Refer a Patient

Inova Vascular Services | 571.472.4600 | [vascular@inova.org](mailto:vascular@inova.org) | Website: [inovavascular.org](http://inovavascular.org)

## Multidisciplinary Approach to Treating Complex Wounds



Vickie Driver, MD

**C**hronic nonhealing wounds – those that do not progress through the healing stages in a predictable and timely manner – can cause serious problems such as chronic pain, loss of function, decreased mobility, and increased isolation and stress. Today, about 6.5 million Americans are suffering with chronic non-healing wounds, and this number is projected to increase as the United States population gets older.

Inova Wound Healing Centers (IWHC) treat patients with vascular ulcers, diabetic ulcers, traumatic wounds and other nonhealing, chronic wounds in four outpatient clinic locations. As one of the largest wound care systems in the Washington, DC, region, the centers see more than 24,000 visits per year at Inova Mount Vernon Hospital, Inova Fair Oaks Hospital, Inova Loudoun Hospital and Inova Fairfax Wound Healing Center, located adjacent to Inova Fairfax Medical Campus.

With a multispecialty team approach to treating complex wounds, the centers draw from many fields of medical expertise including plastic surgery, podiatric surgery, vascular surgery, orthopedic surgery and nursing. IWHC providers also partner with several additional specialists including infectious disease, interventional radiology, interventional cardiology, OB/GYN surgery, metabolic health, primary care, dermatology, rheumatology, oncology and lymphedema to provide patients with specialized, comprehensive care.

In 2021, IWHC saw a large volume of patients despite the COVID-19 pandemic. While the majority of patients were treated for vascular, traumatic and pressure wounds, the centers also specialize in treating diabetic patients with foot and leg ulcers, surgical wounds, amputation site wounds, atypical wounds, and burns.

“Today, about 6.5 million Americans are suffering with chronic nonhealing wounds, and this number is projected to increase as the United States population gets older.”

– Vickie R. Driver DPM, MS, FAFAS, FAAWC,  
System Chief, Wound Care and Hyperbaric Medicine;  
Director, Wound Care and Hyperbaric Research;  
Co-Director, Limb Preservation Program, IHVI

A particular strength of Inova’s wound healing program is hyperbaric oxygen therapy (HBO). Inova commonly uses HBO for a variety of conditions such as late effects of radiation, diabetic foot ulcerations and sudden hearing loss. The patient inhales 100-percent oxygen for short periods of time in a pressurized chamber. This allows for increased amounts of oxygen to enter the body’s tissues to help heal, fight off infection, decrease swelling and aid in the growth of new blood vessels.

HBO is currently available at Inova Mount Vernon Hospital, Inova Fair Oaks Hospital and, as of March 2022, at Inova Loudoun Hospital. HBO chambers at Inova Mount Vernon Hospital were upgraded in 2019, providing patients with the latest, most advanced technology.

In the fall of 2021, IHVI welcomed Vickie R. Driver, DPM, MS, FAFAS, FAAWC, as System Chief for Wound Care and Hyperbaric Medicine and Co-Director of the Limb Preservation Program for IHVI.

Dr. Driver is responsible for coordinating operational and administrative services for the wound healing centers across Inova. She leads clinical care and oversees policies and procedures to ensure a seamless system of care. Additionally, Dr. Driver will develop a robust clinical research program related to wound care and hyperbaric medicine and will enhance educational programs offered by Inova in limb preservation including fellowship training, resident education and CME programs with regional and national status.



### Refer a Patient

Inova Wound Healing Centers | 703.664.8025 | Website: [inova.org/wound](https://www.inova.org/wound)  
Locations: Mount Vernon • Fair Oaks • Fairfax • Loudoun

# Inova Heart and Vascular Institute Services

Inova Heart and Vascular Institute	IFMC	IAH	IFOH	ILH	IMVH	OFF/AMB
<b>Adult Congenital Heart Clinic</b>	•					
<b>Advanced Heart Failure Program</b>	•					
Heart Failure Specialist Consults	•	•		•	•	•
Heart Transplantation Medical Management	•					•
Mechanical Circulatory Support – VAD/LVAD	•					
Remote Home-Based Monitoring	•					
<b>Cardiac and Respiratory Failure</b>	•					
Cardiogenic Shock Team	•					
ECMO	•					
Impella®	•			•		
Pulmonary Embolism Response Team (PERT)	•	•		•		
<b>Cardiac Catheterization</b>	•	•		•		
AMI	•	•		•		
Chronic Total Occlusion Program	•	•				
PCI	•	•		•		
<b>Cardiac Rehabilitation</b>	•	•		•	•	
<b>Cardiac Rhythm Disorders/Electrophysiology</b>	•	•		•		
AFib Ablation	•	Available 2022		•		
AFib Center	•					•
AV Node Ablations	•	•		•		
PVC Ablations	•					
SVT and VT Ablation	•	•		•		
Cryoballoon and Radiofrequency Ablation	•	•		•		
FIRM Mapping and Ablation	•					
Fluoroless EP Studies	•	•		•		
ICD	•	•		•		
Implantable Loop Recorders	•	•		•		
Laser Lead Extraction	•					
Pacemakers	•	•		•		
Conventional	•	•		•		
Leadless	•	•		•		
<b>Cardio-Oncology Program</b>	•					•
<b>Cardiac Surgery</b>	•					
Adult Congenital Surgery	•					
AFib Surgery/Convergent Therapy	•					
Aortic Surgery	•					
Heart and Lung Transplantation	•					
Minimally Invasive CABG	•					
Open and Minimally Invasive Valve Replacement Surgery and Repair	•					
Open CABG	•					
<b>Cardiovascular Genomics Center</b>	•					•
<b>Lung Services</b>	•	•		•	•	•
Alpha-1 Antitrypsin Deficiency Clinical Resource Center	•					•
Cystic Fibrosis Care Center	•					•
Interventional Pulmonology	•					



Inova Heart and Vascular Institute	IFMC	IAH	IFOH	ILH	IMVH	OFF/AMB
<b>Lung Services, cont.</b>						
Lung Transplantation Medical Management	•					
Pulmonary Embolism Response Team (PERT)	•	•		•		
Pulmonary Fibrosis Foundation Care Center	•					•
Pulmonary Hypertension Comprehensive Care Center	•					•
Pulmonary Rehabilitation	•	•		•	•	
WASOG Sarcoidosis Clinic	•					•
<b>Noninvasive Cardiovascular Diagnostics</b>						
Cardiac MRI	•	•*				•
Cardiac Stress Testing (Nuclear Cardiology, Pharmacologic)	•	•	•	•	•	•
CT Angiography	•	•		•	•	•
CT Calcium Scoring	•	•		•	•	•
Echocardiography (Stress Echo)	•	•	•	•	•	•
Peripheral Vascular Ultrasound (Venous, Arterial)	•	•	•	•	•	•
<b>Pediatric Cardiovascular Services</b>						
Catheterization	•					
Cardiac EP	•					
Cardiac Surgery	•					
Congenital Heart Disease Program	•					
Genomics Testing and Counseling	•					•
<b>Structural Heart Disease Program</b>						
PFO Closure	•					
Stroke Risk Reduction – WATCHMAN FLX	•					
TAVR	•					
Transcatheter Mitral Valve Repair – MitraClip	•					
Transcatheter Mitral Valve Replacement (TMVR)	•					
Transcatheter Tricuspid Valve Replacement	•					
<b>Vascular Services</b>						
Endovascular and Open Surgical Procedures	•	•	•	•	•	•
Hyperbaric Oxygen Therapy			•		•	•
Limb Preservation Program	•	•	•	•	•	•
Lower Limb Revascularization	•	•	•	•	•	
Peripheral Arterial Disease Treatment	•	•	•	•	•	•
Vascular and Interventional Radiology	•	•	•	•	•	
Vascular Diagnostic Imaging	•	•	•	•	•	•
Wound Care	•	•	•	•	•	•

\* Inpatient only

## LEGEND

### IFMC

Inova Fairfax Medical Campus  
Inova Heart and Vascular  
Institute  
3300 Gallows Rd.  
Falls Church, VA 22042

### IAH

Inova Alexandria Hospital  
4320 Seminary Rd.  
Alexandria, VA 22304

### IFOH

Inova Fair Oaks Hospital  
3600 Joseph Siewick Dr.  
Fairfax, VA 22033

### ILH

Inova Loudoun Hospital  
Schaufeld Family Heart Center  
44035 Riverside Pkwy.  
Suite 120  
Leesburg, VA 20176

### IMVH

Inova Mount Vernon  
Hospital  
2501 Parkers Ln.  
Alexandria, VA 22306

### OFF/AMB

Inova office/ambulatory  
service – includes services  
now located at Inova  
Specialty Center and  
non-hospital-based locations.



For a complete list of currently enrolling clinical trials, visit [inova.org/trials](https://www.inova.org/trials)

## Advanced Practice Providers (APPs)



APPs have been an integral part of IHVI's team for more than four decades. The first physician assistant hired in Virginia came to work with the IHVI cardiac surgical team in 1977, and there has been subsequent growth and expansion to include APPs working throughout IHVI, as part of the multidisciplinary care teams, to transform care delivery.

### Highlights include:

- **More than 100 APPs** – both nurse practitioners and physician assistants – working at all five IHVI hospitals and in many of our outpatient settings.

### APPs serve in both inpatient and outpatient units:

- **Inpatient areas:** EP, interventional and noninvasive cardiology, complex coronary disease, advanced heart failure, ACHD, pulmonary hypertension and CTEPH, advanced lung disease and lung transplant, structural heart disease, cardiac and vascular surgery, and all inpatient units including the CICU and CVICU.

- **Outpatient clinics:** cardiology, vascular, cardiac surgery, heart failure, advanced heart failure, heart transplant and VAD, electrophysiology, structural heart disease, pulmonary hypertension, lung transplant and advanced lung disease, and adult congenital heart disease.

APPs are responsible for evaluating and treating medical problems, coordinating care in collaboration with the multidisciplinary team, communicating with families and the other members of the healthcare team, planning for discharge, and conducting overall patient management.

## CONTACT US – Inova Heart and Vascular Institute

### Patient Transfers

Cardiac and Vascular Access — One Call 24/7

Direct admission • Transfer • Specialized Transport • Cardiogenic Shock Transfers

Adult: 703.776.5905 | Pediatric: 877.900.9543

### IHVI Cardiac Connect

Centralized scheduling for cardiology arrhythmia and vascular consults, diagnostic cardiology and vascular studies

877.634.6682 | Fax: 571.665.6882

## SPECIALTY PROGRAMS AND SERVICES

#### Inova Arrhythmia

571.472.3270

Email: [arrhythmia@inova.org](mailto:arrhythmia@inova.org)

Website: [inova.org/arrhythmia](http://inova.org/arrhythmia)

#### Inova AFib Center

571.472.2342

Email: [afib@inova.org](mailto:afib@inova.org)

Website: [inova.org/afib](http://inova.org/afib)

#### Inova Cardiac Rehabilitation Program

Inova Alexandria Hospital: 703.504.3398

Inova Fairfax Medical Campus: 703.776.3635

Inova Loudoun Hospital: 703.858.6674

Inova Mount Vernon Hospital: 703.664.8238

Website: [inova.org/cardiocrehab](http://inova.org/cardiocrehab)

#### Inova Cardiac Surgery

571.472.4600

Website: [inova.org/cvsurg](http://inova.org/cvsurg)

#### Inova Cardio-Oncology Program

571.472.2972

Website: [inova.org/cardioonc](http://inova.org/cardioonc)

#### Inova Cardiovascular Genomics Program

Adult: 703.776.6453

Pediatric: 703.942.8300

Email: [cvgenomics@inova.org](mailto:cvgenomics@inova.org)

Website: [inova.org/cvgenomics](http://inova.org/cvgenomics)

#### Inova Congenital Heart Disease Program

Adult: 703.776.3599

Email: [achdclinic@inova.org](mailto:achdclinic@inova.org)

Pediatric 703.776.4428

Fetal 703.776.6371

Website: [inova.org/chd](http://inova.org/chd)

#### Inova Heart Failure and Transplant

703.776.6453

Email: [heartfailure@inova.org](mailto:heartfailure@inova.org)

Website: [inova.org/ahf](http://inova.org/ahf)

#### Inova Urgent Access Heart Failure Clinics

703.776.2529

#### Inova Lung Services and Transplant

703.776.7939

Email: [ltxreferrals@inova.org](mailto:ltxreferrals@inova.org)

Website: [inova.org/lung](http://inova.org/lung)

#### Inova Sports Cardiology Program

571.472.2900

Email: [sportscardiology@inova.org](mailto:sportscardiology@inova.org)

Website: [inova.org/sportscardio](http://inova.org/sportscardio)

#### Inova Structural Heart Disease Program

703.776.3135

Email: [valve@inova.org](mailto:valve@inova.org)

Website: [inova.org/structuralheart](http://inova.org/structuralheart)

#### Inova Wound Healing Centers

703.664.8025

Website: [inova.org/wound](http://inova.org/wound)

#### Inova Vascular Services

571.472.4600

Email: [vascular@inova.org](mailto:vascular@inova.org)

Website: [inovavascular.org](http://inovavascular.org)

## JOIN US REMOTELY!

IHVI Cardiology Grand Rounds  
2nd Tuesday of every month  
12:30 p.m. – 1:30 p.m.  
Free CME-Accredited Program

Subscribe to our email list:  
[inova.org/signup](http://inova.org/signup)

View notices of previous speakers  
and other CME opportunities at:  
[inova.org/hearteducation](http://inova.org/hearteducation)

## SAVE THE DATE!

2022 IHVI Cardiovascular Symposium  
April 22 – 23



### Refer a patient:

Cardiac Connect  
877.634.6682  
F: 571.665.6882

- Cardiology consults
- Diagnostic cardiology studies
- Vascular consults
- Vascular studies

### Patient Transfers:

One Call 24/7  
Adult: 703.776.5905  
Pediatric: 877.900.9543

- Direct Admission
- Transfer
- Specialized Transport