

Mary Washington Hospital  
Stafford Hospital

# STATE OF THE HEART

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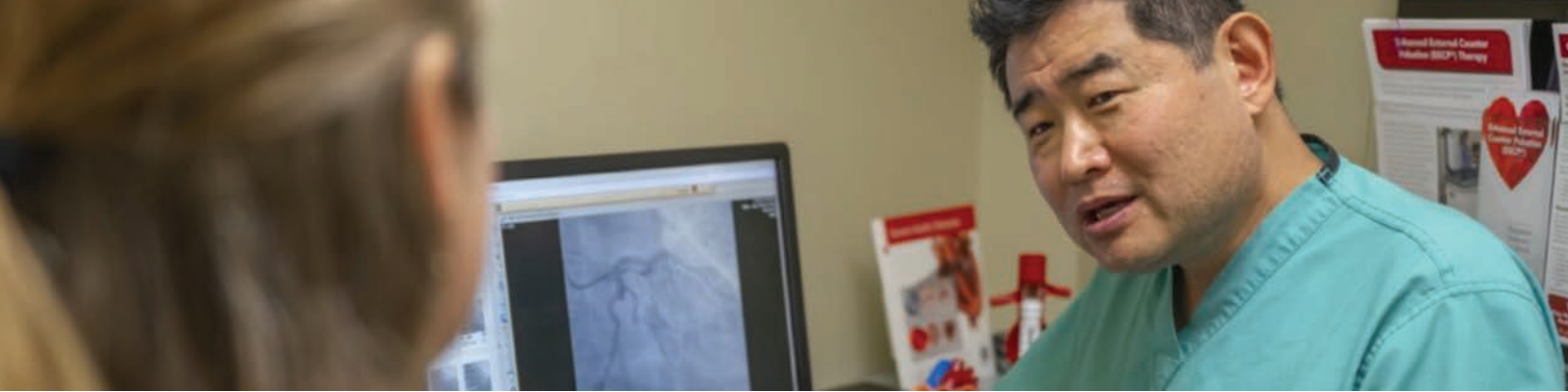
**Mary Washington Healthcare**

Advanced Cardiac Care

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On behalf of the Heart Team at Mary Washington Healthcare, I would like to personally invite you take a moment to read about our cardiac services, highlighting the outstanding experiences our patients are receiving, the unprecedented growth we are experiencing, and the advanced technologies and procedures we are implementing to combat one of our nation's greatest healthcare challenges — fighting cardiovascular disease.

In 2019, Mary Washington Hospital celebrated a significant milestone in cardiac services when it was selected as an IBM Watson 50 TOP Cardiovascular Hospital for the second consecutive 3-year rolling period. At that time, we were in the early stages of growing our transcatheter aortic valve replacement (TAVR) program and Structural Heart Center. In 2023, Mary Washington Hospital was recognized for the third consecutive 3-year rolling period as a TAVR 3-star program by the American College of Cardiology and the Society of Thoracic Surgery. This acknowledgement represents the highest designation offered, with Mary Washington Hospital being the only program in the Commonwealth to receive a 3-star rating, ranking us among the top ten percent of TAVR programs in the country. Based on complication and mortality outcomes data from the Transcatheter Valve Therapy Registry, this designation reflects our commitment to providing not only the best care to our community, but the entire Commonwealth.

With the incidence of atrial fibrillation continuing to rise dramatically, approaching 5 million people in the United States alone, growth in WATCHMAN™ implants has increased almost ten-fold since program inception. Since performing 24 cases in the first year, Mary Washington Hospital will perform more than 200 WATCHMAN™ implants in 2024. The addition of new technology, including 3D mapping in our electrophysiology procedure rooms, has helped further develop efforts to treat atrial fibrillation, including Convergent Hybrid Ablation, a hybrid approach to treating atrial fibrillation with cardiac surgeons and electrophysiologists performing surgical epicardial and endocardial catheter ablation utilizing the “Heart Team” approach.

We are also employing new initiatives and procedures, including development of a Shock Team, focused on early identification and intervention for patients in cardiogenic shock; a laser lead extraction program; a minimally invasive non-surgical approach to removing infected or damaged pacemaker wire leads; and transcarotid artery revascularization (TCAR), a less invasive approach to treating carotid artery disease. Performed using a hybrid Heart and Vascular Team approach, TCAR significantly reduces the risk of stroke and accelerates post-op recovery. While our vision is to provide cutting edge technology to treat patients with acute cardiovascular events, we are also committed to preventive care using minimally invasive diagnostic imaging, such as Heart Flow® and Heart Scan, which allows physicians to assess cardiovascular risk in the asymptomatic moderate-risk patient population.

For those patients with advanced heart failure, CardioMEMS™, a small implant that monitors blood pressures within the heart, represents advanced telemedicine technology being used to reduce hospital readmissions and most importantly, prospectively treat patients before their clinical condition deteriorates rapidly. As we begin construction on our fourth cardiac catheterization laboratory suite, expand critical care services, and develop a new cardiac-focused intensive care unit, we invite you to review our progress in this state-of-the-heart publication. The challenges presented during the COVID-19 pandemic have allowed us to face cardiovascular disease with a renewed energy, further reinforcing our long-standing commitment to excellence in advanced cardiac care for the greater Fredericksburg region.



Dr. Na and Mary Washington Hospital saved my life.”

— Denise Reed,  
Fredericksburg, VA  
open heart surgery patient

Alex Na, MD, FASC  
Medical Director, Cardiac Surgery

# MARY WASHINGTON CARDIOLOGY



For over four decades, the greater Fredericksburg region has been privileged to have community-based cardiac care. While these independent practices have consistently delivered quality care, the challenge arises when offices close or providers relocate, necessitating patients to seek new cardiologists each time.

Enter Mary Washington Cardiology, a new clinical practice by Mary Washington Healthcare that began seeing patients in March 2023. Spearheaded by medical director Aaron Schatz, MD, FACC, our hospital-based cardiology practice not only ensures seamless continuity of care but also introduces the most advanced cardiac treatments and technologies to our surrounding communities.

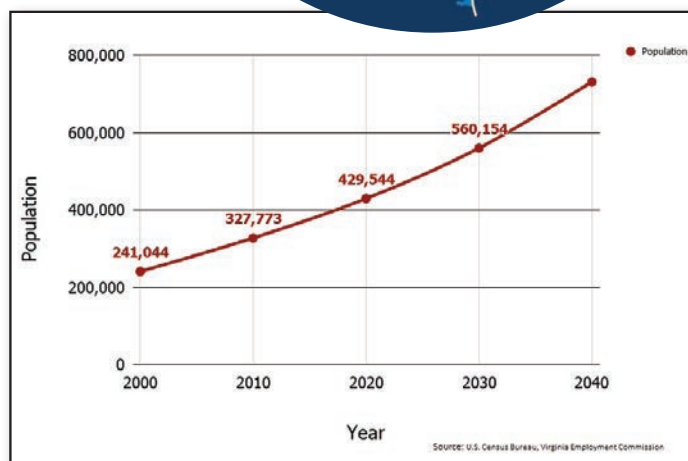
## Fredericksburg Region is Growing Rapidly

The Fredericksburg region consists of Fredericksburg City, Spotsylvania, Stafford, Caroline, and King George counties and is one of Virginia's fastest growing markets, boasting a highly educated labor force, lower cost of business and enviable quality of life.

Situated halfway between Washington, D.C., and Virginia's state capital in Richmond on the I-95 corridor, more than 60% of the nation's population lives within 750 miles of the Greater Fredericksburg region. Accessibility to major cities and markets along the East Coast and the global marketplace, combined with its rich history make the region a favorite for growing families and retirees alike. With an aging population on the rise, the demand for accessible, top-tier cardiac care has become paramount in relocation decision-making.

Also, in the wake of the recent global pandemic, telecommuting has become a norm, prompting many to choose the Fredericksburg area as their residence due to its affordable real estate. This shift has further intensified the number of residents and the demand for expanded cardiology services, creating an imperative for our comprehensive care.

*The region's population grew **+22.4%** from 2010-2019, with even higher projections through 2024. The Fredericksburg region has been designated Virginia's fastest-growing for five consecutive years.*





# Mary Washington Cardiology Implements Collaborative Approach to Patient Care

At Mary Washington Cardiology, community connection is our heartbeat. Our seasoned providers have been delivering expert cardiovascular care to Fredericksburg and the surrounding regions for decades.

Our primary goal is clear – to enhance access to high-quality, cutting-edge cardiac care for all patients. With seven dedicated cardiologists and six cardiology nurse practitioners, our hospital-based practice not only offers a plethora of appointment options but is also on a trajectory of continued growth. We have an unwavering commitment to our community's heart health.



Aaron Schatz, MD, FACC, Cardiologist  
Medical Director, Mary Washington Cardiology



Clarence M. Findley, MD, PhD, MBA, FACC, FSCAI, Interventional  
Cardiologist, Mary Washington Cardiology



Anna Tomdio, MD, FACC,  
Interventional Cardiologist,  
Mary Washington Cardiology

# Meet the Mary Washington Cardiology Team



**Feven Ataklte, MD, MPhil  
Cardiologist**

Preventive and general cardiology including management of hypertension, hyperlipidemia, coronary artery disease, heart failure, atrial fibrillations, syncope, and palpitations.



**Ejaz Khan, MD, FHRS, FACC  
Electrophysiologist**

Cardiac electrophysiology and sports cardiology including cardiac ablations, cardiac device management, WATCHMAN™, and the treatment of Postural Orthostatic Tachycardia Syndrome (POTS).



**Daniel Carlson, MD, FACC  
Electrophysiologist**

Cardiac electrophysiology and general cardiology including management of atrial fibrillation, cardiac devices, and the treatment of hypertension and coronary artery disease.



**Peem Lorvidhaya, MD, FACC  
Electrophysiologist**

Cardiac electrophysiology and general cardiology including cardiac ablations, evaluation of syncope and palpitations, and cardiac device management.



**Sebhat A. Erqou, MD, PhD  
Cardiologist**

General cardiology, management of hypertension, coronary artery disease, heart failure, and research. PhD in epidemiology.



**Aaron Schatz, MD, FACC  
Cardiologist  
Medical Director, Mary Washington  
Cardiology**

Preventive and general cardiology including management of hypertension, hyperlipidemia, coronary artery disease, and heart failure.



**Clarence M. Findley, MD, PhD,  
MBA, FACC, FSCAI  
Interventional Cardiologist**

General cardiology, interventional cardiology, and structural heart disease including aortic stenosis, atrial septal defects, and left atrial appendage occlusion (WATCHMAN™).



**Anna Tomdio, MD, FACC  
Interventional Cardiologist**

General cardiology and interventional cardiology including the evaluation of chest pain, shortness of breath, and fatigue, and the evaluation and treatment of coronary artery disease.



**Luis A. Guzman, MD, FACC, FSCAI  
Interventional Cardiologist**

Vascular specialist, wound healing and peripheral vascular disease. Complex coronary interventions. Chest pain expert.

## Nurse Practitioners

- **Amber M Barron**, MSN, APRN, WHNP-BC, AGNP-BC
- **Elizabeth A. Bird**, DNP, RN, FNP-C, PLNC, CMSRN
- **Ariel Freeman**, FNP-BC, MSN
- **Mindi M. Fry**, FNP-BC, MSN
- **Elizabeth Gotsios**, FNP-BC, MSN
- **Kara Paxton**, MSN, AGACNP-BC



# CARDIAC DIAGNOSTICS & IMAGING



Mary Washington Hospital Cardiac Diagnostics & Imaging team

## Diagnostic tests offered by Mary Washington Hospital include:

- Electrocardiogram (EKG)
- Echocardiograms (ECHO)
- Transesophageal Echocardiograms (TEE)
- Stress Echocardiograms
- Stress Tests
- Nuclear Stress Tests
- Dobutamine Stress Tests
- Heart Scan (coronary calcium scan)
- Cardiac Computed Tomography Angiography (CCTA)
- Tilt Table Test
- Heart Catheterization

The World Health Organization (WHO) classifies cardiovascular disease as the number one global killer. Mary Washington Healthcare helps to fight the battle, offering patients cutting-edge diagnostics and cardiac imaging. Our diagnostic cardiology teams recognize that heart health concerns can strike anyone, so our purpose is clear — to provide our patients with swift, precise answers and effective treatment options. We employ the most advanced diagnostic and imaging tests available, leaving no room for ambiguity in detecting heart problems and delivering accurate and timely diagnoses.

In our pursuit of excellence, our expert team of providers not only evaluate these results but work collaboratively with advance practice providers, nurses, electrocardiogram technicians, and exercise physiologists to determine optimal treatment options.

## Latest Echocardiography Imaging Software

Mary Washington Hospital has made valuable investments in the health of our community by upgrading our echocardiography with new 3D imaging which enables “strain cardiac imaging” — a technique revealing the strain on the walls of each heart chamber. This technological upgrade allows for faster and more accurate diagnoses.

Investing in more electrocardiogram technicians to assist in increasing scan availability, Mary Washington Healthcare has decreased outpatient study wait times from 10–12 weeks to 3–4 weeks.

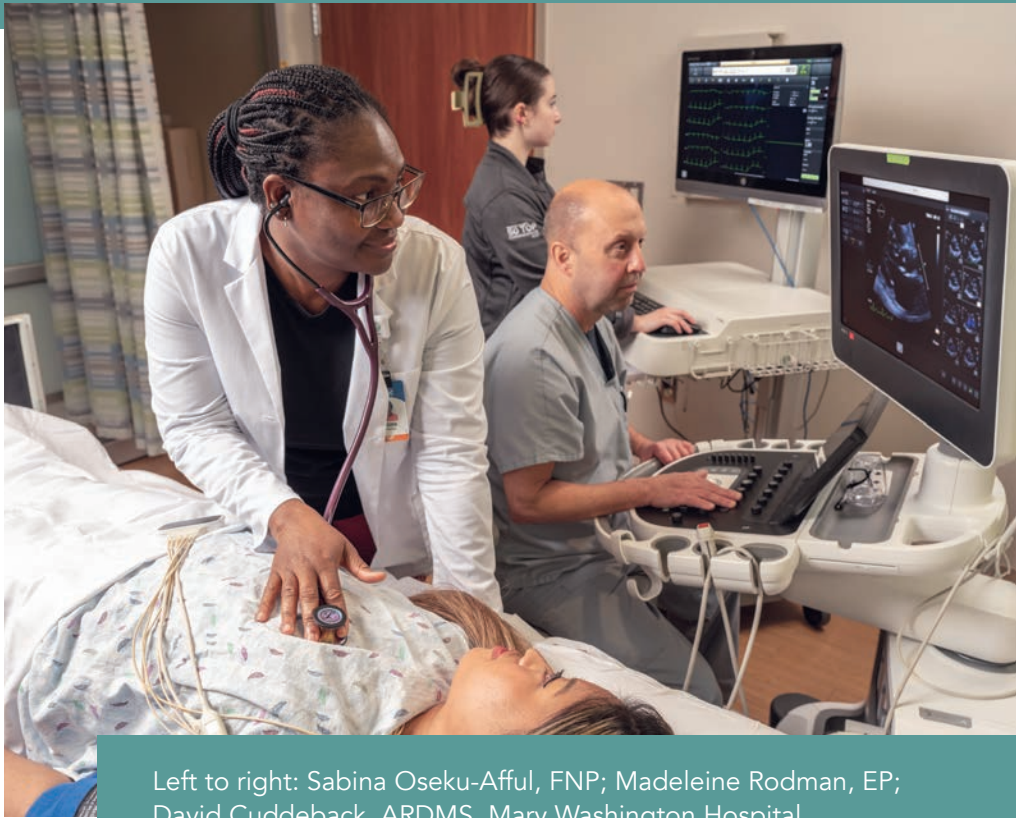
## Tremendous Growth for Outpatient Cardiac Testing

*In a single year, January – December 2023, Mary Washington Hospital’s echocardiography (ECHO) capacity grew from **50 to over 260** outpatients per month — a **430% increase**. During that same time, Stafford Hospital experienced a **100% rise** in scan capacity.*

# Cardiac Stress Testing

A cardiac stress test allows our team of highly-trained diagnostic clinicians, including nurse practitioners, nurses, exercise physiologists and echocardiogram technicians to evaluate the heart function. This diagnostic testing utilizes exercise and/or medications to recreate an environment which causes the patient's heart to pump harder and faster. Data obtained from these tests allow for the cardiac team to see any problems with the blood flow within the heart and establish the most appropriate and best cardiac care plan for our patients.

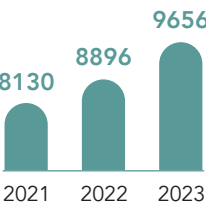
The Mary Washington Healthcare cardiac stress testing departments have recently grown in size and capacity, increasing outpatient availability by 100% to met the needs of our aging and rapidly growing community.



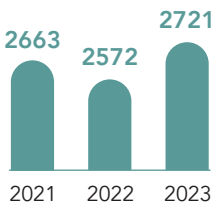
Left to right: Sabina Oseku-Afful, FNP; Madeleine Rodman, EP; David Cuddeback, ARDMS, Mary Washington Hospital

## Echocardiograms

### Mary Washington Hospital

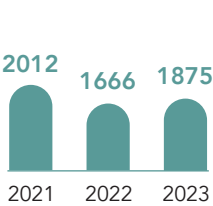


### Stafford Hospital

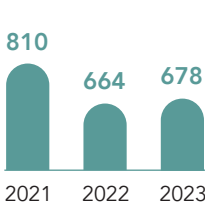


## Stress Tests

### Mary Washington Hospital



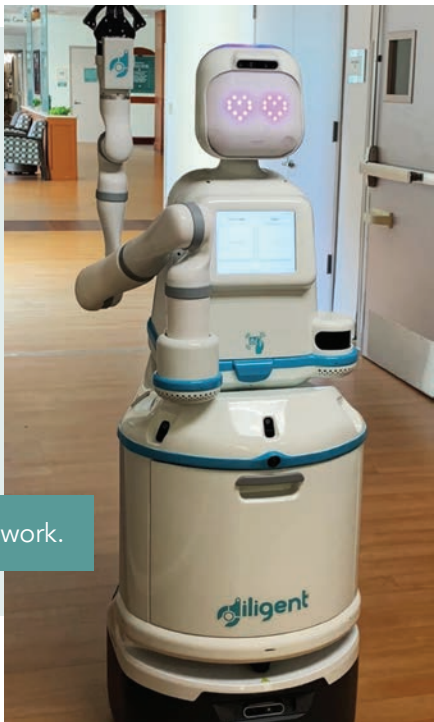
### Stafford Hospital



# Mary Washington Hospital Welcomes Moxi, Robotic Hospital Assistant

Moxi is a point-to-point delivery robot, meaning it can retrieve items in one department and deliver them to another. This allows the nurses, certified nursing assistants and techs to remain on the unit and spend more time with their patients.

As an example, at Mary Washington Hospital, Moxi's services are utilized by our centralized telemetry department with crucial battery replacement. Moxi is on a schedule to pick up and deliver batteries twice a day to telemetry techs to be charged and then returned to hospital units.



Moxi at work.



# Heart Scan by Medical Imaging of Fredericksburg

## Identifying Heart Disease Risk with Non-Invasive Coronary Calcium Scan

Cardiovascular disease is a silent predator, often quietly developing years before symptoms surface. One of the most highly regarded imaging tools is Heart Scan (also known as a Coronary Calcium Scan) — a revolutionary preventive screening that detects coronary artery disease long before stress testing. This low-dose radiation CT scan, or coronary calcium scan, peers into the heart to reveal plaque buildup, determining whether coronary arteries are blocked or narrowed—an indicative factor for atherosclerosis or coronary artery disease (CAD). Results from this 10-minute non-invasive test empower our providers to calculate a patient's five-year risk of a heart attack.

Tailored for asymptomatic patients at intermediate risk, Heart Scan is offered by Medical Imaging of Fredericksburg, in partnership with Mary Washington Healthcare.

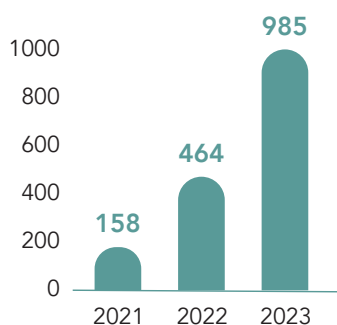
This comprehensive, non-invasive cardiac imaging test identifies critical heart diseases that may have gone undetected by other tests. Heart Scan has proven to be a lifesaving diagnostic tool, uncovering heart disease in cases where traditional assessments fall short. This pioneering approach underscores the indispensable role of coronary calcium scoring in advancing cardiovascular risk assessment and ultimately improving patient outcomes.



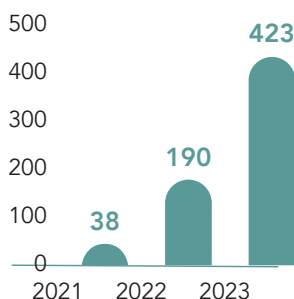
Neil B. Green, MD, Diagnostic Radiologist,  
Mary Washington Healthcare

### Medical Imaging of Fredericksburg

#### Heart Scans



#### Coronary Computed Tomography Angiography (CCTA)



### Mary Washington Healthcare Centralized Telemetry

Centralized Telemetry is a specialized unit that provides continuous tracking and monitoring of the heart rhythms of cardiac inpatients at both Mary Washington and Stafford Hospitals 24-hours a day, nonstop. These patients typically have a cardiac condition such as heart failure, heart disease and/or complications of cardiac issues. Those monitored post cardiac procedure may have had a stent inserted, a pacemaker placed, or coronary bypass surgery.

Telemetry monitoring plays an integral role as part of the patient's care team, supporting bedside clinicians as they provide dedicated care for patients during their hospital stay.

Mary Washington Healthcare Centralized Telemetry monitors an average of 180 inpatients 24/7/365.



# Mary Washington Healthcare EARNs TOP 20% Hospital Ranking CT Quality Award for HeartFlow® Analysis

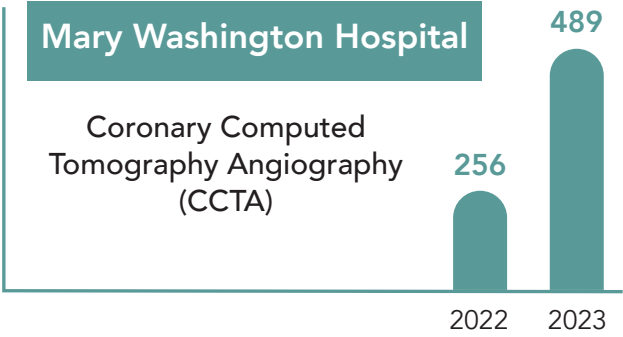


Mary Washington Healthcare earned the HeartFlow® CT Quality Award for the 1st and 4th quarters of 2023 and the 1st and 2nd quarters of 2024. Recipients of this prestigious award are determined based on metrics assessing the quality and adoption of a medical center’s cardiovascular imaging program. Recipients of the award are in the **top 20% of global medical centers** providing higher accuracy and quality for patients and identifying and understanding their heart health by utilizing coronary CT and the HeartFlow® Analysis.

*Pictured left to right:*  
David Mitchell, CT Technologist;  
Mishell Ellis, NP; Gifty Sarfo,  
Radiology Assistant; Violet Bryan, RN;  
Neil B. Green, MD, Diagnostic  
Radiologist; Valerie Dodge, CT Lead  
Technologist; Donna R. Morris, CRA,  
BS, R.T. (R) (MR), Director, Clinical  
Operations, Imaging, Pathology, and  
Laboratory Services; Jessie Mountjoy,  
MBA, BSN, RN, NEA-BC, Director of  
Clinical Operations, Cardiac Services

## HeartFlow® Analysis Measures Blood Flow Through the Heart

The HeartFlow® Analysis is a first-of-its-kind non-invasive technology to aid physicians in the diagnosis of coronary artery disease (CAD), the most common form of heart disease. It takes data from a patient’s non-invasive Coronary Computed Tomography Angiography (CCTA) — a diagnostic imaging scan that creates 3D images of the heart and blood vessels. These images help identify any narrowing of coronary arteries. HeartFlow® then leverages algorithms trained using deep learning (a form of AI) and highly trained analysts to create a personalized, digital 3D model of the patient’s coronary arteries. It then uses powerful computer algorithms to simulate blood flow and assess the impact of blockages on blood flow to the heart. Within hours, the HeartFlow® Analysis is provided to the patient’s physician via a secure web interface and provides information on the extent of a patient’s arterial blockage and the impact the blockage has on blood flow to the heart. Faster, less expensive, and more accurate than invasive procedures, HeartFlow® becomes our strategic imaging tool, guiding targeted treatments and ensuring superior patient outcomes.





# INTERVENTIONAL CARDIOLOGY

## Leading the Charge in Advanced Cardiac Catheterization

Mary Washington Healthcare is at the forefront of excellence in invasive cardiac procedures, with a distinguished legacy of award-winning cardiac care. Continuously introducing new procedures and cutting-edge technological innovations to accommodate patient growth has demonstrated the need to add an additional Cardiac Catheterization Lab. This new lab, slated to open late 2024, will utilize the latest technology available. This expansion and strategic growth is not just an enhancement of our facilities, it underscores an unyielding commitment to provide the highest quality care to heart patients in the Fredericksburg region.

## Precision in Action: Catheterization/STEMI Interventions

Mary Washington Hospital's multi-disciplinary cardiac catheterization lab teams include interventional cardiologists, registered nurses and cardiac technologists, who are on call 24/7, year round. These teams are ready for emergency cases, such as an ST Elevated Myocardial Infarction (STEMI), also known as a heart attack. Our interventional cardiologists use various techniques to open blocked arteries — including balloon angioplasty, thrombectomy, atherectomy, intravascular laser, and stenting.

The rapid, efficient, and coordinated actions of EMS, emergency department (ED), and cardiac teams decrease myocardial injury that happens to a patient's heart during a STEMI. The time from arrival at the hospital ED to the cardiac catheterization lab and balloon deployment to open up the patient's artery is measured as "door to balloon time". The national standard for door to balloon time is 90 minutes or less.

**Mary Washington Hospital consistently averages a door-to-balloon time of less than 70 minutes.**

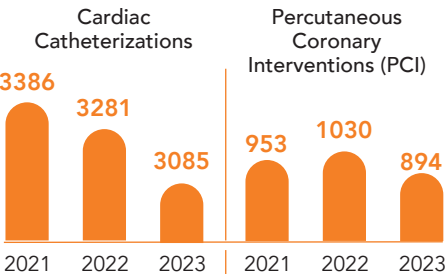


Clarence M. Findley, MD, Interventional Cardiologist, Mary Washington Cardiology

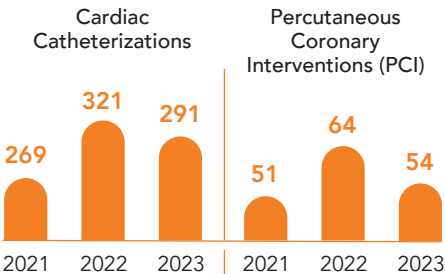


Steven Evans, Cardiovascular Technician

### Mary Washington Hospital



### Stafford Hospital





## Interventional Cardiology Procedures at Mary Washington Hospital

- Left Heart Catheterization
- Right Heart Catheterization
- Intravascular Ultrasound (IVUS)
- Optical Coherence Tomography (OCT)
- Fractional Flow Reserve (FFR)
- Balloon Angioplasty
- Coronary Stenting
- Coronary Atherectomy
- Coronary Thrombectomy
- Intravascular Laser (IVL)
- Chronic Total Occlusion (CTO) Revascularization
- Pericardial Effusion Drain
- Carotid Stenting
- Trans Carotid Artery Revascularization (TCAR)
- Atrial Septal Defects (ASD) Closure
- Patent Foramen Ovale (PFO) Closure
- Peripheral Angioplasty and Stenting
- Renal Angioplasty



“It is a great privilege to be treating the cardiac patients in the Fredericksburg region in our state-of-the-art cardiac catheterization labs. Our highly-skilled team of nurses, techs and interventional cardiologists provide highly specialized life-saving care to every heart - without missing a beat.”

— Samad Zaheeruddin, MD, FACC, RPVI  
Interventional Cardiologist

Chairman, Division of Cardiology, Mary Washington Hospital

Right: Mary Washington Hospital Cardiac Catheterization Lab team

Below l to r: Ashley Thomas, RN,  
Anna Tomdio, MD, Interventional Cardiologist,  
Mary Washington Cardiology



“When we got to the Mary Washington Hospital ED, Dr. Rai went straight to the catheterization and found my “widow maker” was 98% blocked. Three days

later, I was at Charlotte Motor Speedway walking around feeling great! It is amazing to know we have this kind of care in our hometown.”

— Randy Powell, Mary Washington Hospital  
cardiac patient

# Heart Failure

## Growing Prevalence in United States

Heart Failure (HF) is a progressive condition in which the heart's muscle gets injured from something like a heart attack or high blood pressure and gradually loses its ability to pump enough blood to supply the body's needs. The heart can be affected in two ways: it will either become weak and unable to pump blood (called systolic heart failure) or it will become stiff and unable to fill with blood adequately (called diastolic heart failure).

Ultimately, both conditions lead to retention of extra fluid. Many people don't even know they have it because symptoms are often mistaken for signs of getting older. Heart failure does not develop overnight — it's a progressive disease that starts slowly and gets worse over time.

▲ Nearly **6 million Americans** over the age of 20 have heart failure, and **960,000** new patients are diagnosed each year.

▲ The Centers for Disease Control and Prevention cite that half of heart failure patients die within **five years** of diagnosis.

▲ The estimated cost of heart failure in the U.S. is expected to **double by 2030**.

▲ The prevalence rate of Heart Failure (HF) among US adults is approximately **1.9% to 2.6%** for the overall population and is higher among older patients.

▲ The prevalence rate is expected to **increase to 8.5%** among 65- to 70-year-olds.

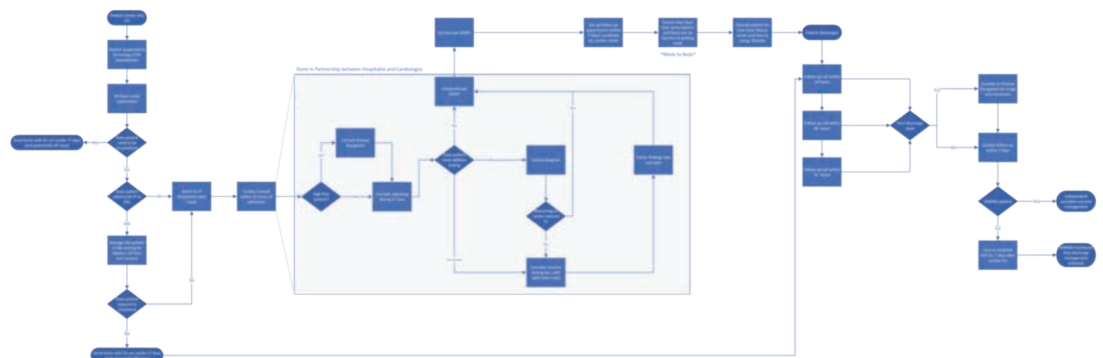
## Congestive Heart Failure Clinical Pathways Project

**The Congestive Heart Failure Clinical Pathways Project at Mary Washington Healthcare involves complex algorithms to ensure patients are receiving the most precise and advanced cardiac care possible.**

A collaborative team of physicians and clinicians, including our emergency department, hospitalists, intensivists, cardiologists, and heart failure nurse navigators, all play an integral part in treating and caring for our heart failure patients.

Congestive heart failure patients are more susceptible to cardiac events. Utilizing advanced technology, including remote patient data collection and implanted devices, our cardiologists and clinical teams are able to monitor and assist with slowing the progression of heart failure. These include:

- CardioMEMS to monitor progression of heart failure
- Cardiac Contractility Modulation (CCM), which helps strengthen the heart
- Implantable Cardioverter Defibrillator (ICD), which helps prevent any sudden cardiac death
- Cardiac Resynchronization Therapy (CRT), a treatment that helps the heart chambers squeeze in a better and more organized way



# Mary Washington Healthcare Heart Failure and COPD Nurse Navigators

Beyond our exceptional team of cardiologists and nurse practitioners, Mary Washington Healthcare boasts a dynamic Cardiac Nurse Navigator team. These seasoned professionals partner with our patients, serving as guides throughout their intricate treatments and therapies, both within the hospital and in the outpatient setting.

Our dedicated nurse navigators specialize in assisting patients dealing with heart failure and chronic obstructive pulmonary disease (COPD). Their impact is two-fold: first, by imparting invaluable knowledge about the condition, and second, by equipping patients with the optimal strategies to manage it. These navigators are the steadfast companions steering patients through their cardiac care, empowering them to take charge of their well-being.

## Heart Failure Management

Patients who are readmitted for heart failure often grapple with a lack of knowledge on how to manage their condition. An important solution includes our nurse navigators, who engage with these patients and provide education on strategies to manage symptoms. From advising on fluid and salt intake reduction to recommending dietary and exercise modifications, our nurse navigators are instrumental in ensuring patients are well-informed and capable of self-care.

## Innovating COPD Care: Reducing Hospital Admissions with Life 2000 Portable Ventilator

In the realm of COPD, our nurse navigators collaborated closely with critical care and pulmonary disease specialist, Ali Hafiz, MD. Together, they pioneered the testing of a groundbreaking device – the Life 2000 portable ventilator. Specifically tailored for patients with Stage 3 or 4 COPD, Life 2000 attaches to oxygen tanks, providing positive pressure to help open the patient's lungs, facilitating enhanced oxygen absorption.

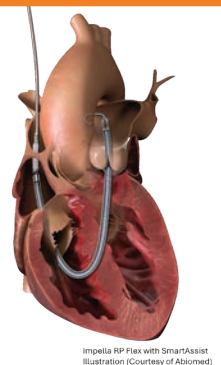


### Mary Washington Hospital Clinical Trial

*After the Life 2000 device was incorporated into the treatment plans of 11 high-risk patients, the group's combined hospital admissions fell from 75 in the first half of the year to just 6 for the remainder of the year.*

## Mary Washington Hospital First in Fredericksburg Region to Use One of the World's Smallest Heart Pump — Impella RP Flex with SmartAssist

Mary Washington Hospital interventional cardiologists have successfully treated their first patient using the Impella RP Flex with SmartAssist, one of the world's smallest heart pumps. This groundbreaking technology provides temporary right heart mechanical circulatory support, offering more comprehensive and advanced care options to patients in the Fredericksburg region suffering from cardiogenic shock due to acute right heart failure.



The Impella RP Flex allows blood to be directly drawn out of the heart's pumping chambers and propelled forward, giving the heart a chance to rest and bridging the patient to recovery or more definitive therapies.

This latest iteration of the Impella RP heart pump received PMA from the U.S. FDA in October 2022 as a safe and effective treatment for cardiogenic shock caused by acute right heart failure. The Impella RP Flex is implanted percutaneously through multiple venous sites and features dual-sensor technology designed to optimize patient management.



# CardioMEMS™

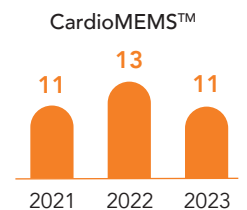
## An Innovative Monitoring System for Heart Failure Patients



In the battle against heart failure, Mary Washington Hospital introduces CardioMEMS™ as an innovative solution. The CardioMEMS™ implant procedure in our advanced cardiac catheterization lab transcends traditional methods by detecting worsening heart failure before symptoms manifest. This isn't merely a device; it's a foresight system.

The CardioMEMS™ HF System uses a miniaturized, wireless monitoring sensor that is implanted in the pulmonary artery (PA) during a minimally invasive procedure to directly measure PA pressure. The system allows patients to transmit PA pressure data from their homes to their healthcare providers allowing for personalized and proactive management to reduce the likelihood of hospitalization.

An at-home monitor sends patient data to our cardiology offices providing a 2-to-3-week forecast. This unique capability empowers our heart failure team to strategically intervene in any issues, resulting in a remarkable 35% reduction in heart failure-related hospitalizations.



“ This innovative technology provides us the ability to monitor our heart failure patients from the convenience of their home and help individualize their therapies to improve their quality of life and reduce their need for unnecessary hospitalizations. Continued investment in new procedures like CardioMEMS is a tremendous benefit to patients and their families as we strive to find the latest solutions to meet the growing healthcare needs of our community.”

— Ashok J. Prasad, MD, Interventional Cardiologist,  
Mary Washington Cardiology in affiliation with Oracle Heart and Vascular

“ With heart failure you're already afraid because you don't know what's going to happen. But when you have people with the knowledge and they take care of you, it means more than I could ever say. With the CardioMEMS device reporting they can detect pressures building up in my heart and adjust the medications that I'm already on at home to prevent another hospitalization.”

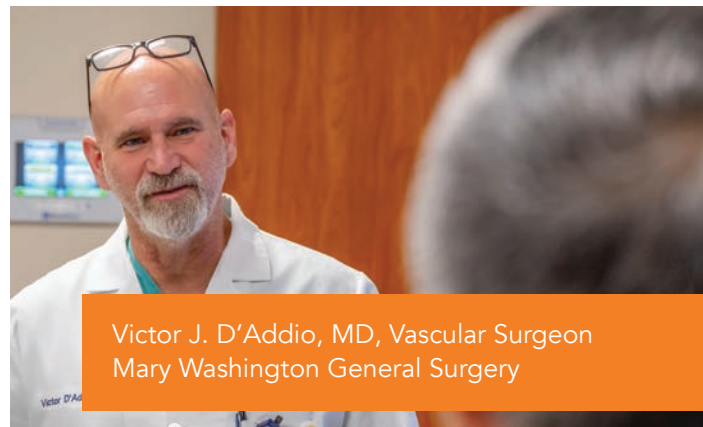


— Cynthia Lewis, Mary Washington Hospital  
cardiac patient

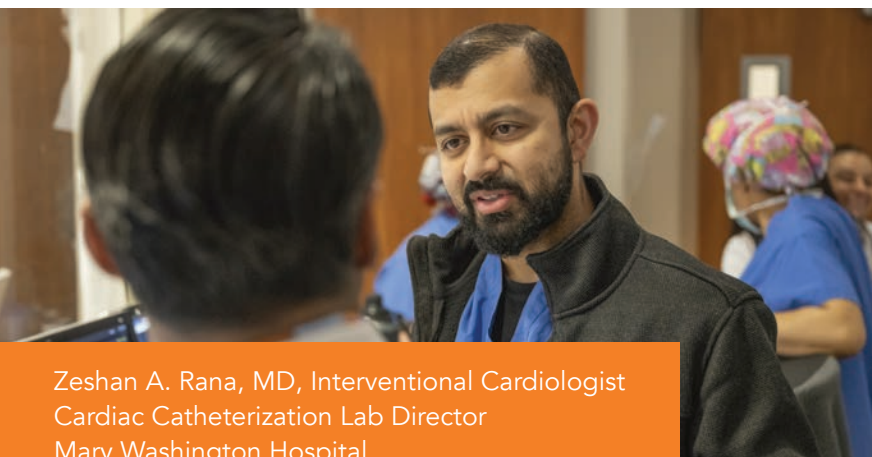
# Transcarotid Artery Revascularization (TCAR)

## Less Invasive Treatment of Carotid Artery Disease

In our relentless quest to conquer carotid artery disease, affecting over 200,000 people annually, Mary Washington Hospital provides patients with Transcarotid Artery Revascularization (TCAR). This minimally-invasive procedure, led by our vascular surgeon and interventional cardiologist, eliminates the risk associated with traditional methods. TCAR isn't just a treatment option; it's a breakthrough, ensuring faster recovery and allowing patients to return home with renewed vigor the very next day. Dr. D'Addio (Vascular Surgery) and Dr. Rana (Interventional Cardiology) operate the TCAR program here at Mary Washington Hospital. They regularly perform these procedures for our patients at risk for stroke and myocardial infarction associated with carotid artery disease.



Victor J. D'Addio, MD, Vascular Surgeon  
Mary Washington General Surgery



Zeshan A. Rana, MD, Interventional Cardiologist  
Cardiac Catheterization Lab Director  
Mary Washington Hospital

### Benefits of TCAR Procedure



Exceptional stroke prevention, even in high surgical risk patients



Less risk of post procedure heart attack (MI) vs open surgery

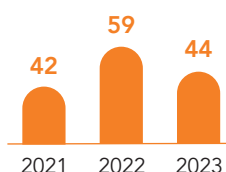


Less risk of nerve injury vs open surgery



Shorter length of stay in hospital vs open surgery

**Mary Washington Hospital**  
TCARs and Carotid Procedures



## Peripheral Artery Disease (PAD)

Peripheral Artery Disease (PAD) is a condition in which the arteries are narrowed caused by plaque which reduces blood flow to the limbs, most often the legs and feet. There are links between PAD and Coronary Artery Disease (CAD) and if untreated can lead to risk of limb amputation, heart attack, or stroke.

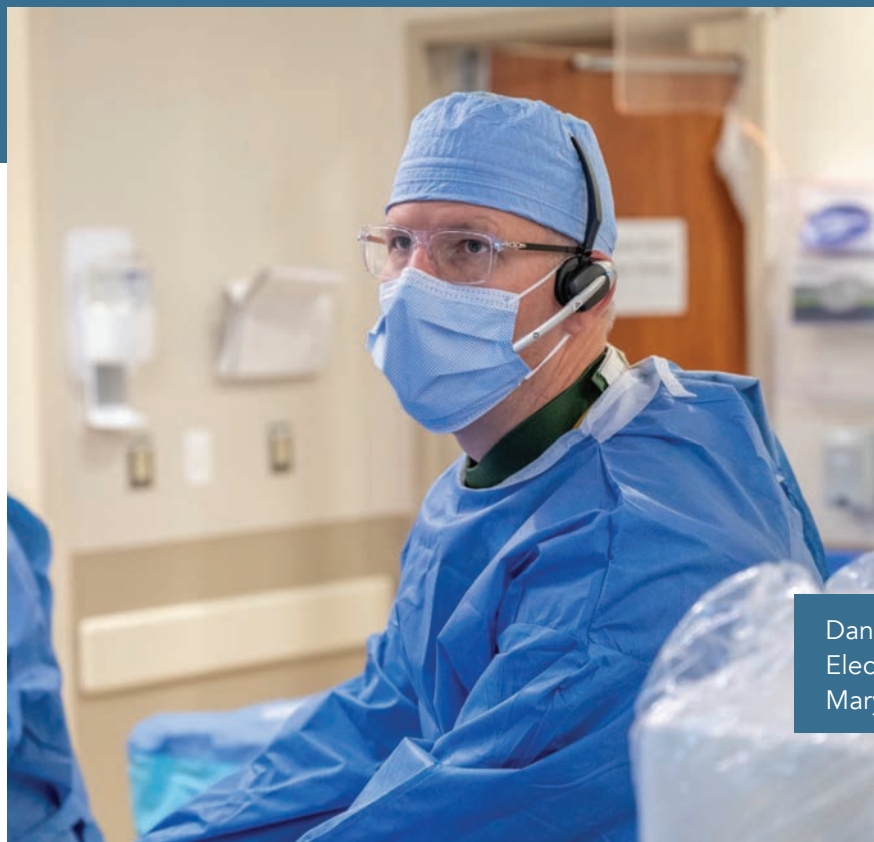
**In the U.S., PAD affects about 10-12 million adults, and causes about 150,000 non-traumatic limb amputations per year, according to the American Heart Association.**

Classic PAD symptoms occur when you walk or climb stairs, then with rest, gets better, although many people (up to 50%) have no symptoms at all.

Early diagnosis and treatment of peripheral artery disease is key to preventing amputations and other cardiovascular complications. Patients will have initial diagnostic testing and may be scheduled for a peripheral angiography in the cardiac catheterization lab using dye and x-ray to view and repair arteries.

Procedures performed by our interventional cardiologists to treat PAD include balloons, intravascular lasers, atherectomy, thrombectomy, drug-eluting balloons, and stenting.

# ELECTROPHYSIOLOGY



Electrophysiology stands at the forefront of Mary Washington Hospital's dynamic healthcare landscape, evolving and expanding to meet the escalating demands of cardiac care. Through the integration of cutting-edge technologies, we are unwavering in our commitment to providing an extensive array of services for patients living with arrhythmias.

Daniel Carlson, MD, Electrophysiologist  
Electrophysiology Lab Director  
Mary Washington Cardiology

**Our electrophysiologists perform a full range of procedures for cardiac conditions, including:**

**Radiofrequency Catheter Ablation for:**

- Atrial Fibrillation (AFib)
- Atrial Flutter (Aflutter)
- Atrial Tachycardia (ATach)
- Supraventricular Tachycardia (SVT)
- Ventricular Tachycardia (VT)
- Premature Ventricular Contraction (PVC)

**Cryoablation for:**

- Atrial Fibrillation (AFib)
- Supraventricular Tachycardia (SVT)

**Cardiac Device Implants:**

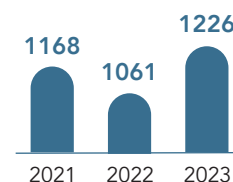
- Pacemaker and Defibrillator
- Bi-Ventricular Pacemaker and Defibrillator
- Implantable Loop Recorder (ILR)
- Implantable Contractility Modulation
- Laser Lead Extraction

## Meeting the Surge in Atrial Fibrillation in Aging Population

Electrophysiology (EP) has emerged as one of the fastest-growing fields in cardiology. Mary Washington Hospital has experienced a substantial surge in the demand for our electrophysiology services, reflecting the urgency to address this prevalent cardiac condition. While medical interventions, such as anti-coagulants, remain crucial, a growing number of AFib patients require minimally-invasive procedures to effectively manage their condition. To meet the ever-growing cardiac care needs of our community, we have expanded to include EP procedures at Stafford Hospital and opened Mary Washington EP Services practice in September 2024. *\*See page 30*

### Mary Washington Hospital

Electrophysiology (EP)  
Procedures





# Atrial Fibrillation



**Atrial Fibrillation (AFib)**, characterized by an irregular heartbeat, poses a substantial threat to millions of individuals in the U.S. AFib patients, particularly those not affected by a faulty heart valve, face an elevated risk of stroke due to the condition's impact on the heart's normal blood-pumping function.

Peem Lorvidhaya, MD, FACC  
Electrophysiologist  
Mary Washington Cardiology

## Facts About AFib

- ▲ It is estimated that **12.1 million people** in the United States will have AFib in **2030**.
- ▲ In 2019, AFib was mentioned on **183,321** death certificates and was the underlying **cause of death in 26,535** of those deaths.
- ▲ Because the number of AFib cases increases with age and women generally live longer than men, more women than men experience AFib.
- ▲ According to the CDC, more than **750,000 hospitalizations** occur each year because of AFib.
- ▲ The death rate from AFib as the primary or a contributing cause of death has been rising for **more than two decades**.

## What are the symptoms of AFib?

Some people who have AFib don't know they have it and don't have any symptoms. Others may experience one or more of the following symptoms:

- Irregular heartbeat
- Heart palpitations (rapid, fluttering, or pounding)
- Lightheadedness
- Extreme fatigue
- Shortness of breath
- Chest pain

## What are the risk factors for AFib?

The risk for AFib increases with age. High blood pressure, the risk for which also increases with advancing age, accounts for about 1 in 5 cases of AFib.

Risk factors for AFib include:

- Advancing age
- High blood pressure
- Obesity
- European ancestry
- Diabetes
- Heart failure
- Ischemic heart disease
- Hyperthyroidism
- Chronic kidney disease
- Moderate to heavy alcohol use
- Smoking
- Enlargement of the chambers on the left side of the heart

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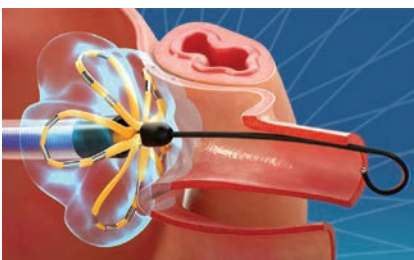
Source: National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention

# Precision through 3D Mapping Technology

Recognizing the critical importance of pinpointing the origin of atrial fibrillation, Mary Washington Hospital has invested in state-of-the-art 3D mapping technology. This advanced system provides our electrophysiologists with a multi-dimensional view of the patient's heart, empowering them to deliver more precise catheter ablation therapy.



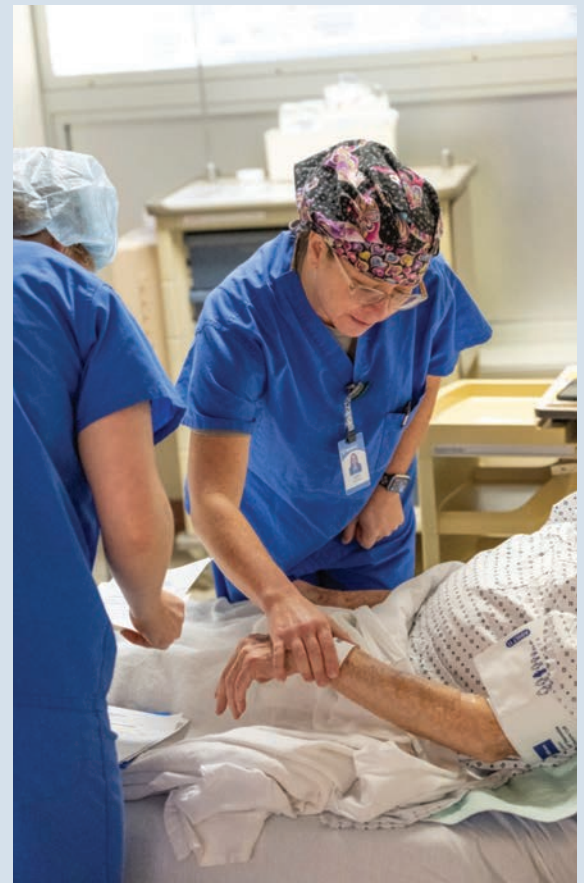
## Pulsed Field Ablation: A New Paradigm in the Treatment of Atrial Fibrillation



Mary Washington Electrophysiologists will soon perform the latest treatment for AFib — Pulsed Field Ablation (PFA), approved by the FDA December 2023. AFib affects millions of people, and creates an increased risk of stroke if left untreated.

PFA uses short burst of non thermal high energy to affect the cells' "necrosis" within the heart tissue that cause AFib. This technology offers safer and faster ablation and decreases the risk of surrounding tissue damage compared to traditional ablation techniques. PFA has also shown to cause fewer complications, such as vein stenosis, esophageal, and phrenic nerve injury, as it uses short pulses that are energy driven and not temperature driven.

AFib has previously been treated with medical management and minimally invasive ablation procedures, utilizing Radiofrequency (RF) and Cryotherapy to target pulmonary veins, where most AFib originates.





# Conduction System Pacing

Mary Washington Hospital's electrophysiologists are implementing Conduction System Pacing (CSP), a technique of cardiac pacing, FDA-approved in 2022, that involves implantation of permanent pacing leads along different sites of the cardiac conduction system, connecting the implant's leads directly to these bundles of intertwined cells that help govern the repeated contractions of the cardiac muscle.

This type of procedure aims to avoid the complications that can sometimes come with traditional pacemaker placements, such as a swelling of the heart's chambers, by more closely mimicking the movements of the body. The deleterious effects of right ventricular pacing (RVP) are well known, including development of congestive heart failure and pacing-induced cardiomyopathy.

Cardiac resynchronization can help improve clinical outcomes in patients with AV block and systolic dysfunction. Conduction System Pacing including His Bundle Pacing (HBP) and Left Bundle Branch Area Pacing (LBBAP) has emerged as an alternative pacing strategy to prevent or mitigate systolic heart failure.



Peem Lorvidhaya, MD, FACC  
Electrophysiologist  
Mary Washington Cardiology

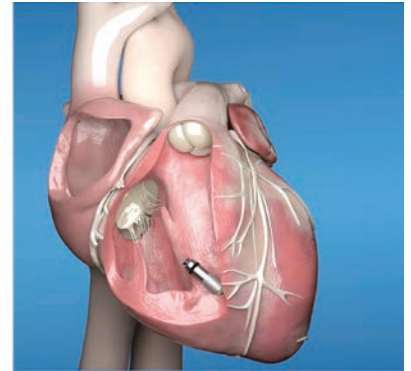




# Implantable Cardiac Devices Improve Quality of Life

## Large Results from Tiny Device: Micra® Wireless Pacemaker

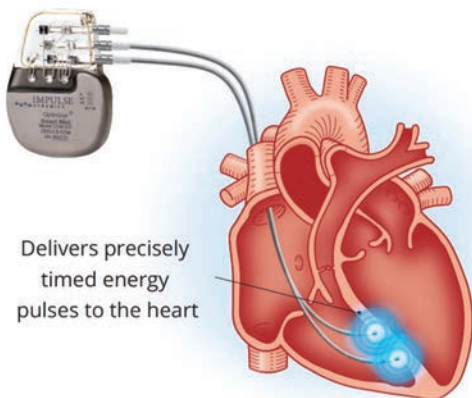
**With approximately 3 million Americans relying on pacemakers,** Mary Washington Hospital pioneers a less-invasive alternative for enhanced cardiac regulation—the Micra® Wireless Pacemaker. Unlike traditional pacemakers that require incisions and lead insertions, our surgeons use a percutaneous approach to implant the leadless pacemaker directly into the right atrium. The absence of a chest scar renders it cosmetically invisible, and it eliminates the need for additional leads while maintaining a 90% reduction in size compared to conventional pacemakers. Moreover, this groundbreaking pacemaker is MRI-compatible, adding an extra layer of convenience for patients.



## Cardiac Contractility Modulation (CCM™)

For heart failure patients seeking resilience, Mary Washington Hospital unveils the potent Cardiac Contractility Modulation (CCM™) for heart failure patients. Heart failure progresses fast and patients require intensive cardiac management to maintain their quality of life.

The Optimizer® Smart System is a minimally invasive implantable device that treats patients experiencing symptoms of moderate to severe Chronic Heart Failure (CHF). The system includes an implantable stimulation device (similar in size to a pacemaker) and an external charging station.



The device is implanted in a small pocket under the skin of the upper chest, along with commercially available pacemaker leads that are placed in the heart's right ventricular septum, while the patient is under light sedation. After implantation, the physician custom-programs and activates the device for the patient. The Optimizer® Smart then begins sending electrical pulses to the heart muscle for a total of 5 to 7 hours a day, in one-hour treatments separated by regular intervals. As a result, patients experience a higher quality of life through the reduction of CHF symptoms such as overwhelming shortness of breath and fatigue.

## Cardiogenic Shock Management Team

Cardiogenic shock is a rare but emergent condition when a patient's heart cannot pump enough blood to meet their body's needs.

Mary Washington Hospital is in the process of launching a specialized Cardiogenic Shock Team comprised of interventional cardiologists, cardiac surgeons, Intensivists, and emergency room physicians to manage cardiogenic shock patients. This multi-disciplinary shock team employs a strategic algorithm for early detection that accesses heart failure symptoms, including shortness of breath, swelling, suspicious chest X-rays, and poor kidney function. This collaboration determines whether the patient needs medical or surgical intervention and is a tactical approach designed to improve access to care and ameliorate heart failure symptoms.

# Convergent Hybrid Ablation

## Electrophysiology and Cardiovascular Surgery Partnership

As with other cardiac procedures at Mary Washington Healthcare, the convergence procedure employs a heart team approach with the cardiac electrophysiologist and cardiac surgeon collaborating to effectively treat patients with chronic atrial fibrillation. Performed either simultaneously or as separate procedures, the convergence procedure begins with the surgeon performing minimally invasive surgery to access the heart.

### Combining Expertise for Lasting Results

Making a small incision below the breastbone to access the heart, the surgeon uses radiofrequency energy to block irregular electrical signals by creating lesions, or scar tissue, on the surface of the heart, primarily in areas known for initiating atrial fibrillation. Once completed, the electrophysiologist employs 3D mapping of the heart's electrical pathways to identify any remaining irregular electrical signals. Using catheter-based techniques, the electrophysiologist performs a second ablation of the heart.

Post-op recovery from the surgical portion of the convergence procedures requires 2-3 days of in-hospital recovery, while the epicardial catheter-based portion can be performed as an outpatient procedure. Patients are often able to be weaned off antiarrhythmic and anticoagulant medications.



Alex Na, MD, Cardiothoracic Surgeon  
Medical Director, Cardiovascular  
Surgery, Mary Washington Hospital

*Compared to catheter-based ablation alone, patients who undergo convergence procedures experience **70% freedom from atrial fibrillation**, compared to 40%, after one year.*



“The important thing to know about atrial fibrillation is it increases the risk of having blood clots or stroke. So, we try to reduce this risk by using blood thinning medicine. If the medications don't work, we then have various procedures and surgeries to treat AFib. Once treatment options are explored and discussed, I believe shared decision making with patients works best.”

— Ejaz Khan, MD. Electrophysiologist  
Mary Washington Cardiology



# CARDIOVASCULAR SURGERY

## Cardiovascular Surgery Excellence

Led by medical director Alex Na, MD, our cardiac surgery program performs a variety of acquired and congenital cardiac surgery procedures.

Our commitment to excellence is driven by a series of proactive measures aimed at mitigating risk and complications associated with these procedures. Our performance in these initiatives, largely focusing on blood conservation, antibiotic stewardship, blood glucose control, atrial fibrillation prevention, and readmission reduction, significantly reduces the risk of complications associated with cardiac surgery.

As members of a state quality initiative, our program has established the benchmark for performance in many of these measures. This distinction is not merely a result of our investment in quality measures but reflect our relentless pursuit of excellence through enhanced care coordination and patient education in tandem with our highly skilled cardiac surgeons.

John Cardone, MD, Cardiothoracic Surgeon  
Medical Director, Structural Heart  
Mary Washington Hospital





## Vigilant Oversight with Virginia Cardiac Surgery Quality Initiative (VCSQI)

Mary Washington Healthcare's commitment to the highest quality standards begins with the Cardiac Surgery Quality Committee. This multidisciplinary team is comprised of surgeons, advanced practitioners, representatives from anesthesia, physical therapy, respiratory therapy, nursing, nutrition, perfusion, home health, pharmacy, and other key departments. The group meets monthly to collectively assess program performance and progress, identify avenues for improvement, and introduce new protocols and practice guidelines for care.

As part of our commitment to quality, we actively participate in the Virginia Cardiac Surgery Quality Initiative (VCSQI), the largest cardiac surgery quality group in the nation. Governed by a board of cardiac surgeons and cardiologists, the VCSQI has provided evidence-based practice guidelines that shape our approach. Following these recommendations, we have witnessed improvements in crucial areas such as atrial fibrillation, blood conservation/blood transfusion, early extubation, renal failure, and stroke. Our involvement in VCSQI has translated into substantial outcomes improvement, often establishing the statewide benchmark for success.



*For the past decade, **more than 80%** of our patients have been successfully weaned from the breathing machine within **4 to 6 hours** after surgery, setting benchmarks for excellence. Additionally, Mary Washington Hospital's 30-day readmission rate has been one of the lowest in the state of Virginia, averaging **7.6%** during that same time period.*



Mary Washington Hospital perfusionists collaborated with cardiac surgeons in 2022, to implement a **Goal-Directed Perfusion Initiative** focused on implementing evidence-based measures to reduce stroke and acute kidney failure after cardiac surgery. Since inception, these efforts have dramatically reduced the rare instance of devastating complications, establishing new standards for excellence.

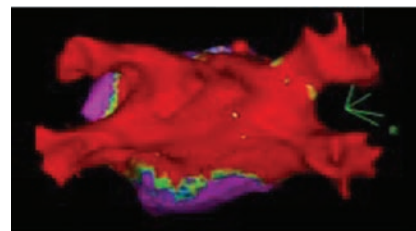
## Setting National Standards in Blood Conservation

Acknowledging that blood transfusion poses risk, Mary Washington Hospital introduced an aggressive blood conservation program in 2012 that continues to reduce the need for blood transfusion as well as preserve the patient's own blood. Since inception, less than 7% of patients require blood intra-operatively, more than half the national standard. Post-operatively, on average 20% of patients receive blood, nearly half the national benchmark. This proactive approach translates into fewer complications, ultimately leading to superior patient outcomes and care.



## Mary Washington Hospital Cardiac Surgeons Take Different Approaches to Atrial Fibrillation Management

While the incidence of atrial fibrillation continues to increase across the country, the number of patients with atrial fibrillation (AFib) who also need cardiac surgery has increased. According to the Society of Thoracic Surgery, as many as 30% of all patients have experienced either atrial fibrillation or flutter prior to cardiac surgery. For this reason alone, Mary Washington Hospital's cardiac surgery medical director, Dr. Alex Na, felt it was time to reevaluate efforts to treat atrial fibrillation. Na and his associate, Dr. John Cardone, helped acquire a new device, the Synergy Encompass Clamp. This device allows the surgeons to perform a continuous ablation of the posterior wall of the left atrium using radio-frequency energy, treating one of the predominate areas of the heart known for causing atrial fibrillation.



### AtriClip FLEX-V for Left Atrial Appendage (LAA) Closure

Drs. Na and Cardone have also changed the way they manage the left atrial appendage (LAA), applying a new device, the AtriClip FLEX V. The left atrial appendage is often linked as a source of clot formation and cause for stroke in AFib patients. The AtriClip isolates the appendage from the rest of the heart, eliminating the risk of clot entering the patient's main circulation. Additionally, in patients with AFib, the clip helps to eliminate electrical pathways that may cause AFib, and for some patients the clip significantly reduces their need for long-term anticoagulation.

“We have been performing a modified cardiac Maze procedure with pulmonary vein isolation for quite a while, and felt it was time to look at some of the new technology and advanced techniques in atrial fibrillation and left atrial appendage management. An ablation is nothing more than a series of burns that help eliminate the electrical pathways that cause AFib. We are excited about the advances we are making in treating patients with atrial fibrillation. We know that patients who stay in a normal heart rhythm after heart surgery live longer lives and believe this change will have a positive impact on our patients.”

— Alex Na, MD, Cardiothoracic Surgeon, Medical Director, Cardiovascular Surgery, Mary Washington Hospital

## Cardiac Surgery Nurse Navigators: Compassionate Patient Support

Navigating the intricacies of cardiovascular surgery can be daunting for patients. Recognizing this, Mary Washington Hospital introduced the Cardiac Surgery Nurse Navigator Program in 2010. Over the past 14 years, our dedicated nurse navigator has served as an invaluable liaison between our surgical team, patients, and their families.

Our compassionate Cardiac Surgery and Structural Heart nurse navigator guides patients through every facet of their surgical journey, offering pre-surgery education, outlining risks and complications, and providing post-surgery guidance. Beyond clinical support, the nurse navigator offers crucial psychological support, connecting with patients after discharge to monitor recovery progress and identifying patients in need of prompt follow-up.

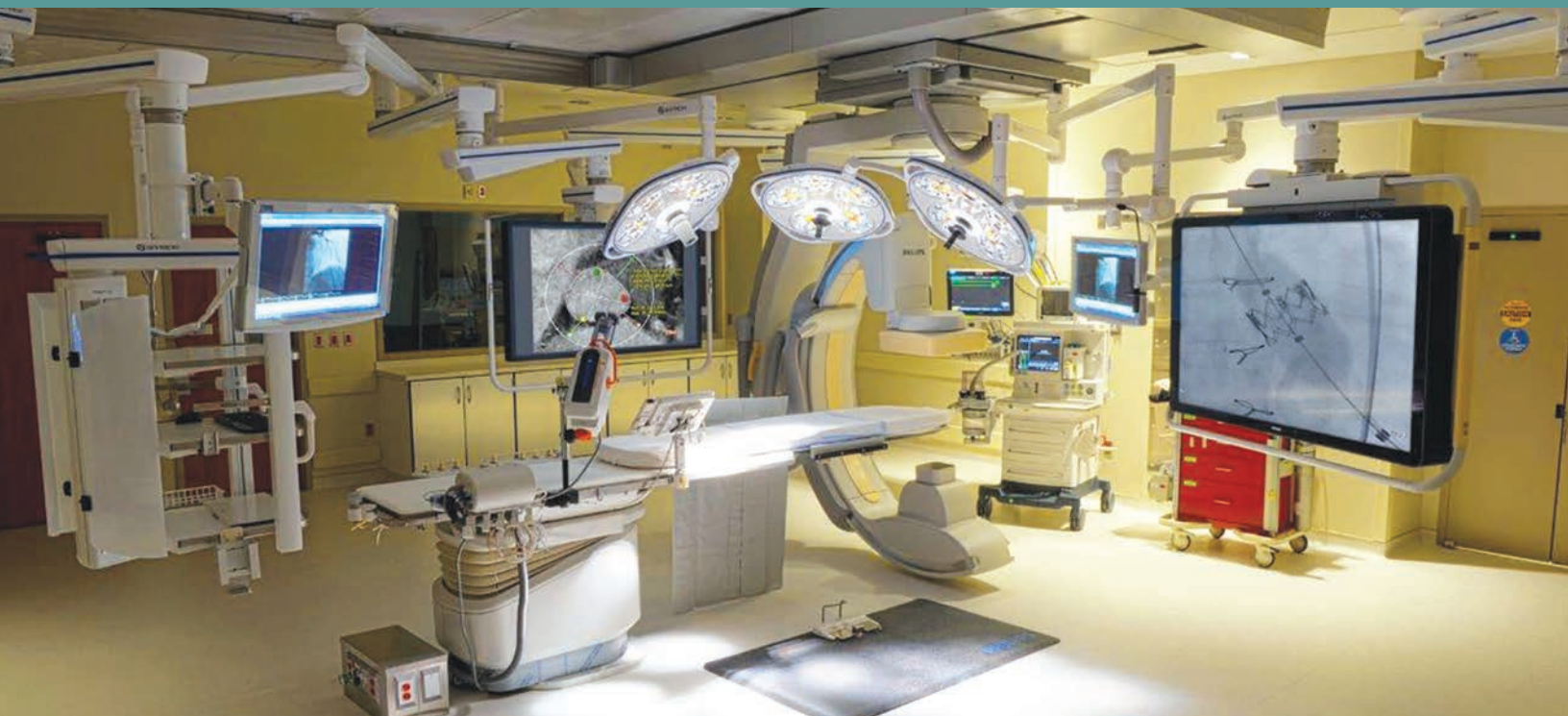
The continuity of care provided by nurse navigators results in fewer readmissions and a streamlined path to cardiac rehabilitation for our patients.



Barbie Schumm, RN, Cardiac Nurse Navigator  
Mary Washington Hospital



# STRUCTURAL HEART PROGRAM



## Transcatheter Aortic Valve Replacement (TAVR)

In 2016, Mary Washington Hospital performed its first Transcatheter Aortic Valve Replacement (TAVR), introducing the “heart team” approach and opening the door for further collaboration in minimally invasive technologies and growth in structural heart procedures.

The Mary Washington Hospital TAVR program, led by Structural Heart Medical Director, John Cardone, MD, is comprised of structural heart advanced practitioners, interventional cardiologists, cardiac surgeons, anesthesiologists, radiologists, advanced practitioners, and other clinicians. The structural heart advanced practitioners coordinate testing and patient consultation while leading the implanting team during weekly valve conference through the process of determining the best treatment option for patients, including TAVR, surgical aortic valve replacement or medical management.

TAVR procedures are performed in a specialized operating room called a Hybrid Cardiac Room, combining the key elements of a catheterization lab and operating room, while led by our cardiac interventionalists and surgeons. During the procedure, a small incision is made in the leg, and a catheter (a hollow tube) is inserted into the artery and guided to the heart. A new heart valve is then positioned inside the diseased valve with guidance from special imaging equipment. The valve is implanted, opening the narrowed valve, and allowing blood to flow easily out of the heart to the rest of the body. The procedure takes between one and two hours and most patients can go home within 1-2 days.

*Mary Washington Hospital's TAVR program performed **120 procedures** in 2023, representing a nearly **270% increase** since program inception in 2016.*





# Aortic Stenosis

**Aortic Stenosis (AS)** is one of the most common diseases of the heart and when left untreated can be fatal. Characterized as a narrowing of the valve that prevents normal blood flow from the heart, aortic stenosis is often seen in elderly patients but is also found in younger patients with congenital AS. Patients who have AS and begin to experience heart failure symptoms have a poorer 5-year survival prognosis than lung cancer.

## Aortic Stenosis Can Routinely be Detected by an Echocardiogram



▲ More than **250,000** of people in the United States have **undiagnosed** severe aortic stenosis.

▲ AS is the **second most common** valvular lesion in the United States.

▲ AS is present in about **5% of the population at age 65** with increasing prevalence with advancing age.

▲ More than **2.5 million people over the age of 75** in the United States have aortic stenosis.

### Heart valve disease is staged into four basic groups:

#### **Stage A: At risk.**

Risk factors for heart valve disease are present.

#### **Stage B: Progressive.**

Valve disease is mild or moderate.

#### **Stage C: Asymptomatic severe.**

There are no heart valve symptoms, but the valve disease is severe.

#### **Stage D: Symptomatic severe.**

### Symptoms of aortic stenosis may include:

- Chest pain
- Rapid, fluttering heartbeat
- Trouble breathing or feeling short of breath
- Feeling dizzy or light-headed, even fainting
- Difficulty walking short distances
- Swollen ankles or feet
- Difficulty sleeping or needing to sleep sitting up
- Decline in activity level or reduced ability to do normal activities

Source: American Heart Association

# Mary Washington Hospital Joins TOP 10 PERCENT of all TAVR Heart Valve Programs in US & Canada

In 2023, Mary Washington Hospital achieved the prestigious 3-star rating from the Society of Thoracic Surgeons (STS) and the American College of Cardiology (ACC) Transcatheter Heart Valve Registry, recognizing our exceptional transcatheter aortic valve replacement (TAVR) care. The STS star rating system is one of the most sophisticated and highly regarded overall measures of quality in health care, rating the benchmarked outcomes of structural heart programs across the United States and Canada. The 3-star rating for TAVR outcomes is calculated using a combination of quality measures.

**Mary Washington Hospital is the only TAVR program in Virginia to receive this exclusive 3-star rating for three consecutive rolling periods from 2018-2023.**



“The Society of Thoracic Surgeons congratulates STS National Database participants who have received three-star ratings. Participation in the database and public reporting demonstrates a commitment to quality improvement in health care delivery and provides patients and their families with meaningful information to help them make informed decisions about health care.”

— David M. Shahian, MD, Chair.  
Task Force on Quality  
Measurement

**3-star Rating:** The hospital's site difference and confidence intervals are all >0 (positive numbers) that do not cross the registry benchmark of 0.00. This implies a hospital has better than expected performance.

**30-Day Risk Adjustment TAVR Composite** consists of six ordered categories based on the worst possible outcome (30-day death) to the best possible outcome (e.g. alive and free of major complications) during hospitalization and the 30-day follow-up period as defined below:

- 1 30-day death
- 2 30-day stroke
- 3 30-day life-threatening/major bleed
- 4 Acute kidney injury (stage III)
- 5 30-day moderate to severe paravalvular leak
- 6 None of the above

## Setting Records with TAVR FastTrack Program

Mary Washington Hospital's Structural Heart Program, in response to its tremendous growth since 2016, developed a TAVR FastTrack Program in 2022. This program identifies lower risk patients, allowing them to recover in a unit designed to expedite recovery, with early transition to a cardiac specialty care unit focusing on early ambulation and resumption of daily tasks. This allows many patients to be discharged after one day of recovery while significantly reducing the risk of readmission and other complications. As a result, Mary Washington Hospital saw a 20% reduction in length of stay and a 23% reduction in 30-day readmission.



*Nearly 80%  
of all TAVR patients  
were eligible to  
recover using the  
TAVR FastTrack  
program  
in 2023*

*l to r: Mike Brown, CCP, Program Director  
Cardiac Surgery/Structural Heart and Chief Perfusionist  
Mary Washington Hospital*

*John Cardone, MD, Cardiothoracic Surgeon, Medical  
Director, Structural Heart, Mary Washington Hospital*

## Collaborative Decision-Making: Weekly Valve Conferences

The pursuit of delivering the highest quality care is a collective endeavor at Mary Washington Hospital. Our commitment to exploring every possible treatment option is exemplified through weekly valve conferences, where our interventional implant team engages in in-depth discussions. Comprised of surgeons, nurse practitioners, anesthesiologists, radiologists, and industry representatives, this multidisciplinary team meticulously reviews each patient's case, assessing diagnostic images, medical history, and potential barriers to procedures. Through consensus-driven decisions, we ensure the most informed and personalized treatment options for optimal patient outcomes.







## WATCHMAN™ Left Atrial Appendage Occlusion (LAAO) for AFib Patients Intolerant to Blood-thinning Medications

Atrial fibrillation is an abnormal heart rhythm that is most prevalent with increasing age. Since 2010, atrial fibrillation has increased globally from 33.5 million to more than 59 million in 2019. Patients with chronic atrial fibrillation are often placed on blood thinners to reduce their risk of a life-threatening clot, potentially causing a stroke. Unfortunately, not all patients can tolerate taking a blood thinner and have a high risk for a life threatening bleeding event.

The WATCHMAN™ Left Atrial Appendage Occlusion (LAAO) device, a quarter-size implant, is strategically placed in the left atrial appendage via a small minimally invasive incision in the groin, substantially reducing risk of stroke and complications associated with blood thinners.

The LAAO implant provides AFib patients with an alternative to the long-term use of blood thinners, conventionally prescribed to mitigate stroke risk. Recent changes in insurance coverage have further facilitated accessibility to this life-changing device, extending its benefits to a wider patient population.

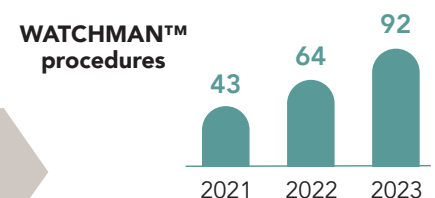
Patients undergoing the LAAO closure device implantation experience a streamlined hospital stay, typically returning home the same day of the procedure without further need for anticoagulation.

**The majority of patients are able to come off anticoagulation medications right after undergoing the WATCHMAN™ procedure, emphasizing the efficacy and efficiency of this advancement in cardiac care.**

“The WATCHMAN™ implant allows physicians to stop anticoagulation immediately after the procedure, significantly improving our patients' quality of life and reducing their risk of having a life-threatening bleeding event.”

— Arijit Chanda, MD, Interventional Cardiologist  
Mary Washington Hospital

Mary Washington Hospital achieved **10-fold growth** in WATCHMAN™ procedures in 2023.



# STAFFORD HOSPITAL CARDIAC SERVICES

## A Community Hospital with a Big Heart for Cardiac Care

At Stafford Hospital, we are not just dedicated to cardiac care; we're committed to providing the best possible experience for our heart patients. As part of the Mary Washington Healthcare family, we share in the more than 120-year pledge to advance community health while keeping cardiac care close to home.

## Mary Washington Cardiology in affiliation with Oracle Heart & Vascular

Our Stafford, VA cardiology practice offers board-certified cardiovascular experts who provide each patient with a full spectrum of cardiac care that not only focuses on addressing challenges, but also in setting goals for therapy, helping to achieve optimal cardiovascular health. Whether evaluation, diagnosis, or management of cardiovascular diseases, we work closely with patients, their families and primary care providers to build an individualized treatment plan according to each unique need.



“As the Stafford region continues to grow, Stafford Hospital remains steadfast in its commitment to invest in cutting-edge technologies and procedures aimed at enhancing the care of our cardiac patients. The incorporation of electrophysiology procedures signifies our ongoing dedication to delivering the highest standard of healthcare to the surrounding communities.”

— Daniel Carlson, MD, FACC, Electrophysiologist,  
Mary Washington Electrophysiology Services



Stafford Hospital Cardiac Catheterization Lab team



## Electrophysiology Services Expand to Stafford Hospital

In February 2024, Stafford Hospital began offering Electrophysiology (EP) procedures, including ablations, Implantable Cardioverter Defibrillators (ICDs), pacemakers, and generator upgrades. By September 2024, Mary Washington Electrophysiology Services opened a practice in the Stafford Medical Pavilion, where Dr. Daniel Carlson, Electrophysiologist, is now seeing outpatients and plans to further expand the electrophysiology program and providers at Stafford Hospital to meet the evolving needs of the community.



## Stafford Hospital's First Pulsed Field Ablation Performed

Daniel Carlson, MD, FACC, Electrophysiologist recently performed the first pulsed field ablation at Stafford Hospital. Used extensively across the globe, this technology is designed to treat patients with paroxysmal atrial fibrillation (AFib), which causes an irregular and often abnormally fast heart rate.



# CARDIAC & PULMONARY REHABILITATION

## AACVPR CERTIFIED PROGRAM

American Association of Cardiovascular  
and Pulmonary Rehabilitation

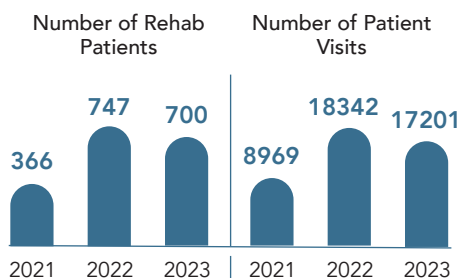


## Guiding Patients Toward Optimal Recovery and Lifelong Wellness

The Cardiac and Pulmonary Rehabilitation Program at Mary Washington Healthcare is the ideal choice for individuals who have experienced chest pain, have had a heart attack, coronary artery stenting, or valve replacement. In addition, those who live with heart conditions like heart failure or angina, or deal with pulmonary challenges such as chronic obstructive pulmonary disease (COPD) will also benefit greatly.

Participants can expect to engage in a structured regimen encompassing weekly exercise sessions, strategically conducted two to three times a week. The rehabilitation period is customized for each patient and ranges from six to 18 weeks, entailing a total of 36 sessions, each lasting between 60 to 90 minutes. Patients in our program are cared for by our multidisciplinary cardiopulmonary team which includes exercise physiologists, registered nurses, and respiratory therapists. Together, they provide comprehensive, individualized patient care.

### MWHC Cardiac & Pulmonary Rehabilitation



### Benefits of Outpatient Cardiac and Pulmonary Rehabilitation Include:

- Improved stamina and endurance
- Relief and support from depression, fear, and anxiety
- Improved chances of returning to work and favorite activities
- Improved physical functioning (strength and flexibility)
- Management of diabetes with exercise
- Lower blood pressure
- Lower levels of "bad" (LDL) cholesterol and fats in the blood (triglycerides)
- Slowed development, or even reversal of hardening of the arteries (atherosclerosis)
- Weight loss, with increased activity and nutrition intervention
- Assistance in making positive lifestyle changes.



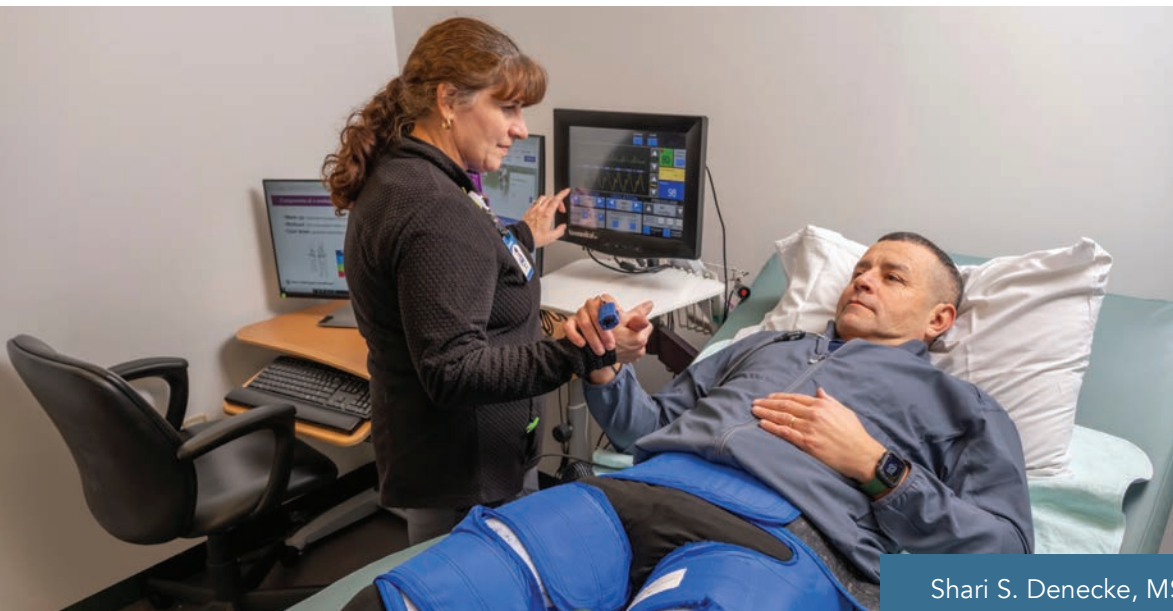
# Enhanced External Counter Pulsation (EECP®) Therapy

## Specialized, Innovative Treatment Tailored for Individuals Living with Ischemic Heart Disease

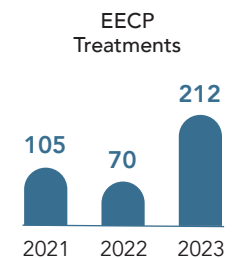
External Enhanced Counter Pulsation (EECP®) therapy is an advanced and secure outpatient treatment provided by Mary Washington Healthcare's esteemed Cardiac and Pulmonary Rehabilitation Program. This non-invasive therapy is specifically designed for those dealing with conditions like angina and heart failure.

Our comprehensive EECP® therapy has demonstrated consistent improvements in symptoms, exercise performance, and overall quality of life, delivering lasting benefits that extend up to two years. The treatment regimen comprises one-hour sessions conducted five days a week, totaling 35 sessions.

Throughout the therapy, patients recline comfortably on a specialized table, enveloped by large blood-pressure-like cuffs encircling their calves, thighs, and hips. These cuffs strategically inflate and deflate between heartbeats, orchestrating an enhanced blood and oxygen supply to the heart muscle. This targeted approach significantly augments the heart's ability to efficiently pump blood throughout the body, promoting improved cardiovascular function and overall well-being.



### MWHC Cardiac & Pulmonary Rehabilitation



Shari S. Denecke, MS, ACSM-CEP, CET, CCRP, FAACVPR, Exercise Physiologist, administering EECP Therapy at Mary Washington Healthcare Cardiac & Pulmonary Rehabilitation

## Additional Services

### Walking Oximetry Testing

The **Six-Minute Walk Test (6MWT)** is used as a simple measure of aerobic exercise capacity by measuring the functional capacity of patients with chronic obstructive pulmonary disease, pulmonary hypertension, interstitial lung disease, heart failure, post COVID-19 pneumonia with prolonged respiratory symptoms. Functional capacity is determined by measuring the distance walked on a flat, hard surface in a period of 6 minutes to simulate exercise. An **Oxygen Titration Test** evaluates a patient's oxygen needs at rest and during simulated exercise. Oxygen titration occurs during the 6MWT (if required).

### Supervised Exercise Therapy for Symptomatic Peripheral Artery Disease (SET-PAD)

**Peripheral Artery Disease (PAD)** is caused by systemic atherosclerosis which affects the vessels in the lower extremities. Some patients complain of intermittent claudication (IC) resulting from activity. This pain can consist of aching, cramps in the calves, thighs or buttocks which typically occurs during walking and resolves with rest. The treatment program is primarily walking - the cornerstone for exercise for those with IC. SET-PAD patients are scheduled for 36 exercise sessions, attending 3-5 days a week, over 12 weeks. The program's goal is to assist patients to improve their ability to perform daily tasks with decreased pain, including education on risk factor prevention and positive lifestyle changes.



# COMMUNITY EDUCATION

## Advancing Medical Knowledge and Enhancing the Quality of Cardiovascular Care in the Region

Mary Washington Healthcare proudly hosted the 16th Annual Virginia Heart and Vascular Institute (VHVI) Symposium in 2024, a gathering that drew the participation of over 190 physicians and other medical providers.

We were fortunate to have Jaideep Patel, MD, Johns Hopkins Cardiology and Ajay Pillai, MD, VCU Health join us as keynote speakers. Our mission is to explore the innovation and collaboration taking place in the Fredericksburg region ultimately benefits our patient population.

The symposium faculty shared extensive knowledge and experience pertaining to heart disease treatments including interventional cardiology, cardiovascular surgery, electrophysiology, and heart failure.

Since its inception in 2006, this symposium has evolved into a paramount platform for continuing medical education (CME), delving into the latest advancements in cardiovascular procedures, cutting-edge technologies, surgical methodologies, and treatment breakthroughs.



Ed O'Shea, also known as our "Miracle Patient" was invited to attend the symposium as his case study was presented by his cardiologist, Dr. Zaheeruddin. Ed is seated in the center, surrounded by his Mary Washington Hospital clinical heart team.





## Ask the Cardiac Experts Facebook Live

Mary Washington Healthcare held a series of Facebook Live Ask the Cardiac Experts events in 2023-2024 covering topics including Atrial Fibrillation (Afib), electrophysiology treatments, Coronary Artery Disease, Transcatheter Aortic Valve Replacement (TAVR), and women's heart health.



## Advanced Cardiac Care Expo

Mary Washington Hospital recognizes the American Heart Association's annual Wear Red Day for heart health each February with our Advanced Cardiac Care Expo. Attendees discover technologies for cardiac surgery and heart procedures, cardiac screenings, tests, and diagnostics. They also learn the risks and signs of heart disease and keys to maintaining long-term heart health.





## Dinner with Heart Docs

Throughout the year, our Mary Washington Healthcare Advanced Cardiac Care team gathers area senior adults for catered dinners where they can see presentations from our cardiologists and cardiac surgeons. These special events are held at some of the region's 55+ adult communities, assisted living and long-term care facilities. Heart health strategies, latest cardiac technologies and treatments are discussed, with lively Q&A sessions concluding each evening.



## Art of Aging, an Annual Community Event, Gathers Hundreds of Senior Citizens

Mary Washington Healthcare is the Platinum Sponsor for the Partners in Aging, Inc's annual Art of Aging event, where seniors explore 70+ exhibitors with services, education, and resources for a happy, healthy lifestyle.

Our teams provide attendees information about heart disease symptoms and risk factors, the latest cardiac procedures and treatments, tips for heart-healthy living, and free blood pressure checks.





# INVESTING IN THE FUTURE

## Shaping the Future of Cardiology at Mary Washington Healthcare



In recent years, Mary Washington Healthcare has made significant investments with a range of groundbreaking advancements in cardiology and our momentum continues to grow. In 2025, we are excited to take a major leap forward with the introduction of new state-of-the-art facilities and innovative programs, enhancing cardiac care for our surrounding communities.

### Expansion of the Cardiac Catheterization Lab at Mary Washington Hospital

We are proud to announce the expansion of our cardiac procedural capabilities at Mary Washington Hospital with the addition of a new catheterization lab. This latest investment brings our total to four labs—three dedicated cardiac catheterization labs and one hybrid lab.

This \$3 million expansion not only increases our capacity but also doubles the size of our pre- and post-procedure areas. With the ability to perform up to seven additional procedures daily, we anticipate serving approximately 1,500 more patients each year. The ergonomic design, state-of-the-art equipment, and collaborative spaces will elevate our standard of patient care to new heights.

### Atrial Fibrillation Pathway Program

We are revolutionizing Atrial Fibrillation (AFib) care with our innovative AFib Pathway Program. Patients can now have peace of mind after leaving the emergency department, thanks to our streamlined approach. This program ensures that patients receive timely and appropriate treatment, reducing the risk of future complications. By initiating a clear sequence of actions, we facilitate swift and effective management of AFib.



## Enhancing Cardiac Imaging with Advanced MRI and CT Technology

Mary Washington Healthcare is committed to expanding our diagnostic imaging capabilities. We have recently invested in a second dual-source CT scanner and a second 1.5T MRI scanner, both of which support specialized cardiac procedures.

Notably, Mary Washington Hospital is the only facility accredited by the American College of Radiology (ACR) to perform cardiac MRI within a 50-mile radius.

## Revolutionizing Treatment: MitraClip™ for Leaky Heart Valves

Mitral valve regurgitation is no match for our resolve. Partnering with our Structural Heart Program, Mary Washington Hospital plans to offer MitraClip™ — a minimally invasive procedure that seals mitral valve leaks and reduces strain on the heart. Proven by research, MitraClip™ reduces hospitalizations by 51% and lowers mortality risk by 33%, making it a game-changer in cardiac care.

## The Outpatient Lasix Clinic to Treat Heart Failure

Mary Washington Hospital is in the planning phases of opening the region's first-ever outpatient Lasix clinic in 2025. Lasix is a loop diuretic (water pill) that prevents your body from absorbing too much salt. Lasix is used to treat fluid retention (edema) in people with congestive heart failure, liver disease, or a kidney disorder such as nephrotic syndrome. By removing excess fluid from the body, Lasix helps reduce the workload on the heart, allowing it to pump blood more effectively.

This can help improve symptoms such as shortness of breath, swelling, and fatigue and prevent further deterioration of the heart's function. No more inconvenience, no more emergency room visits — just seamless access to diuretic services for patients grappling with heart failure and COPD. This planned clinic not only lowers the cost of care but drastically reduces hospitalizations and mortality rates. Our advanced practice nurses will administer intravenous diuretic medications, ensuring a thorough and successful fluid removal process.

“As the field of cardiovascular care continues to grow, our commitment to treating cardiac patients with the highest level of expertise remains our top priority. Building a team of dedicated specialists allows us to offer



comprehensive, cutting-edge care that meets the unique needs of each patient. By investing in our facilities and expanding community education, we aim to not only treat heart conditions but also empower our community to take proactive steps toward better heart health.”

— Aaron Schatz, MD, FACC, Cardiologist  
Medical Director, Mary Washington Cardiology





**Mary Washington Healthcare**

Advanced Cardiac Care

*The future of cardiac care is in  
Fredericksburg, now.*

**Heart.**[mwhc.com](https://www.mwhc.com)

