CARDIOVASCULAR AND SURGICAL OUTCOMES 2022

BayCare

BayCareHeart.org

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Table of Contents

Dear Colleague,

The physicians and team members of the BayCare cardiovascular service line are pleased to present the annual clinical outcomes for 2022. Though the emergence of COVID-19 presented significant challenges, these outstanding clinical results for BayCare patients are a direct result of dedicated teams of caregivers who took those challenges in stride and were able to continue to provide extraordinary care. Our cardiovascular service line is structured to allow multidisciplinary teams to manage the vast range of cardiovascular disease conditions, while using the latest technology, to address cardiovascular disease at every level and rigorously benchmarking our progress against various national cardiovascular registry metrics. The following pages highlight volume and select clinical outcomes within BayCare. We hope you can use the information to help with patient care and treatment decisions. For more information or to refer a patient to any of our programs, call (844) 344-1990.

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Why Choose Us?

Awarded the highest three-star rating from the Society of Thoracic Surgeons (STS), BayCare is the largest not-for-profit health care system in West Central Florida. From our three flagship cardiovascular institution leaders in complex arrhythmias, advanced structural heart and valve, open-heart surgery and advanced heart failure, to the clinically integrated network of hospitals, outpatient centers, surgery centers, labs and outpatient imaging facilities, BayCare physicians and patients have access to experts across our health care system. In addition, through our expansive network footprint, patients can move easily within the system to get the care and clinical expertise they need, regardless of their location.

At BayCare, quality means serving the needs of our customers. With the support of nearly 30,000 team members, BayCare fosters a forward-thinking culture that's advancing superior health care and creating an environment that allows quality to flourish.

To refer a patient to any of our cardiovascular programs or facilities: (844) 344-1990

BayCare's cardiovascular and thoracic programs offer:

26 Cardiac catheterization labs

8 Electrophysiology labs

10 Cardiovascular operating suites

6 Hybrid operating suites

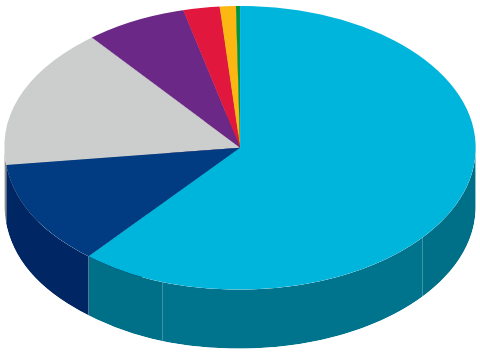
265+ Cardiovascular specialists

3.06 Days
Average length of stay

3 Three-star STS rating

54,325
Inpatient and outpatient cardiovascular cases

BayCare Inpatient and Outpatient 2022 Volume



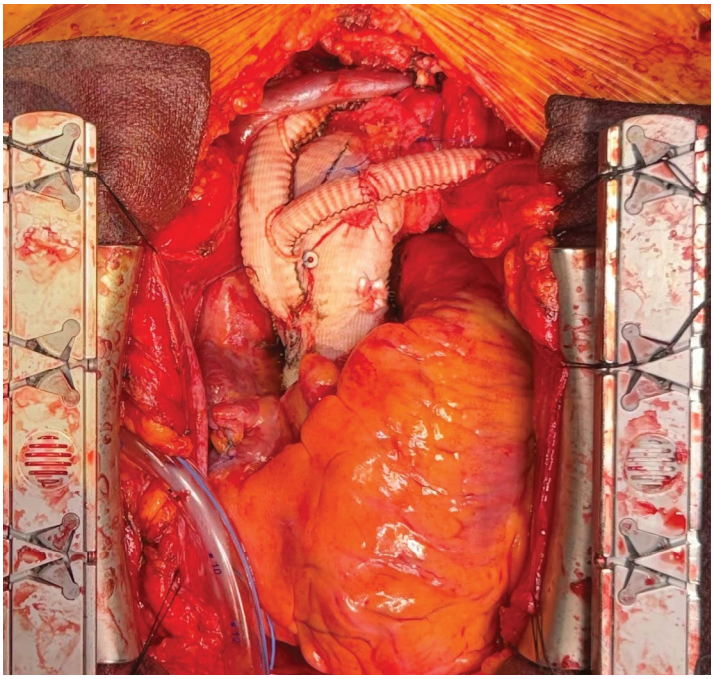
Medical cases	33,287
Intervention cases	6,515
Procedural cases	8,711
Rhythm cases	3,770
Open-heart cases	1,387
Structural heart cases	561
Mechanical/Circulatory cases	94

BayCare inpatient and outpatient cardiovascular case volume for 2022

Cardiovascular Surgery

The cardiovascular surgeons at BayCare recognize that when it comes to your patients' care, quality and outcomes are of the utmost importance. Our cardiovascular and cardiothoracic surgeons are all members of the Society of Thoracic Surgeons (STS), whose mission is to enhance the ability to provide the highest quality patient care. BayCare participates in the STS National Adult Cardiac Surgery Database, which includes over 1,200 participating institutions throughout the country. Participation in this database allows the surgeons and teams to utilize a powerful computer model that defines a patient's surgical risk based on the planned procedure and the patient's overall health characteristics. This allows well-informed discussions with your patients and their families as they make important decisions about their cardiovascular health.

Cardiovascular surgery is currently performed at three BayCare facilities: Morton Plant Hospital, St. Joseph's Hospital and Winter Haven Hospital. Cardiothoracic surgeons Dr. David Evans, Dr. John Ofenloch and Dr. Andrew Sherman acknowledge that "Cardiac surgery is one of the most scrutinized and data-driven specialties, with data collection on nearly every aspect of patient care. The BayCare cardiovascular surgeons remain committed to utilizing the extensive information provided to us via the Society of Thoracic Surgeons database in order to implement meaningful changes in the treatment of our patients throughout West Central Florida. Through frequent collaborative meetings and constant evaluation of data-driven best practices, we have impacted countless patients' lives. We strive to provide the highest quality of care from the moment we meet our patients, during their operative procedures, continuing into the postoperative period and well into their recovery." For information on BayCare's management and treatment of pediatric and adult congenital heart disease, see the Pediatric and Adult Congenital Heart section of this book on page 18.



BayCare's cardiovascular surgical procedures include:

- Aortic aneurysm repair
- Aortic valve repair and replacement
- Carotid endarterectomy and stenting
- Coronary artery bypass grafting (CABG)
- Endovascular aneurysm repair (EVAR)/Thoracic endovascular aortic repair (TEVAR)
- Extracorporeal mechanical circulatory support (ECMO)
- Implantable defibrillator insertion and lead extraction
- Intracardiac mechanical circulatory support devices *(ex: Impella)*
- Minimally invasive valve replacement/repair *(ex: transcatheter aortic valve replacement (TAVR))*
- Mitral valve repair and replacement
- Redo cardiac surgery
- Surgical treatment of advanced heart failure with ventricular assist device (VAD)
- Surgical treatment for atrial fibrillation *(Maze, Convergent, AtriClip)*
- Surgical treatment for infected and failed heart valves
- Angiovac extraction of intracardiac thrombus or infection
- Ligation of the left atrial appendage (LLA)

BayCare's cardiovascular surgical programs participate in a multitude of national research clinical trials to give our patients state-of-the-art care in their communities.

A Look at Volume

2022 Open-Heart Surgery Breakdown	
	BayCare
Isolated CABG	782
Surgical Valve	561
Other Cardiac Surgery	180

Surgical Valve = Represents total number of valves, not patients
Other Cardiac Surgery = Includes all procedures that fall outside any STS procedure identification category

2022 Surgical and Transcatheter Valve Volume	
	BayCare
Aortic Valve	398
Mitral Valve	229
Tricuspid Valve	29
Transcatheter Valve *(aortic and mitral)*	412

Represents total number of valves, not patients

2022 Surgical Treatment for Atrial Fibrillation	
	BayCare
Concomitant treatment (MAZE/PVI)	73
PVI	51
Convergent *(standalone)*	23
Total LLA closures	**136**

Surgical Treatment for Cardiac Arrhythmias

Surgical treatment for cardiac arrhythmias, typically atrial fibrillation (AFib), has become increasingly important within advanced cardiovascular surgery programs. Often these patients are treated in a comprehensive manner incorporating cardiovascular surgeons and cardiac electrophysiologists. Intraoperatively, surgeons have an ideal opportunity to treat AFib with a Maze procedure or other type of ablation. Additionally, the left atrial appendage may be closed or occluded at the time of surgery to potentially reduce the patient's stroke risk secondary to AFib.

Arrhythmia surgery is commonly performed in conjunction with mitral valve surgery but can also be performed concomitantly with other valve surgery or CABG. Untreated atrial fibrillation affects not only a patient's quality of life but also their longevity. AFib is a major cause of morbidity and stroke in patients with cardiovascular disease. "BayCare cardiovascular surgeons have made treatment of AFib a high priority in alignment with the recommendations of the major societies," according to Dr. Andrew Sherman, chief of cardiac, vascular and thoracic surgery at St. Joseph's Hospital. "A multidisciplinary team gives patients with AFib an individualized treatment approach that's been proven in recent literature to positively impact their quality of life and life expectancy. A significant point of emphasis in the management of our shared patients with AFib involves closure of their left atrial appendage (LAA) for stroke prevention. BayCare has one of the highest volumes of minimally invasive approaches to LAA exclusion in the country."

BayCare's cardiovascular surgeons also perform a unique hybrid approach called the convergent procedure for treatment of AFib. Recently, convergent hybrid AFib therapy became the only FDA-approved minimally invasive ablation procedure to treat patients who have been in continuous AFib. Consistent with our commitment to innovation, we also perform this procedure robotically.

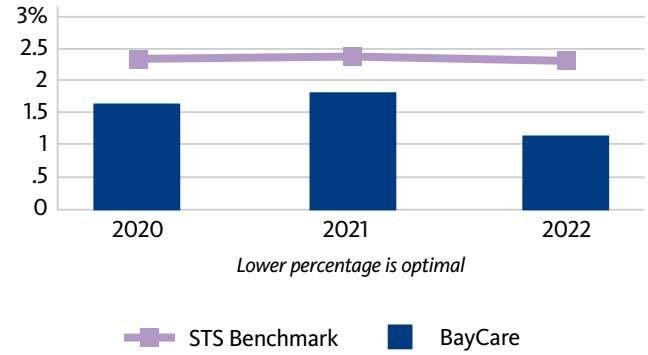
A Look at Quality

Composite Overall Star Ratings 2022	
Isolated CABG	★ ★ ★
Mitral Valve Repair/Replacement (MVRR)	★ ★ ★

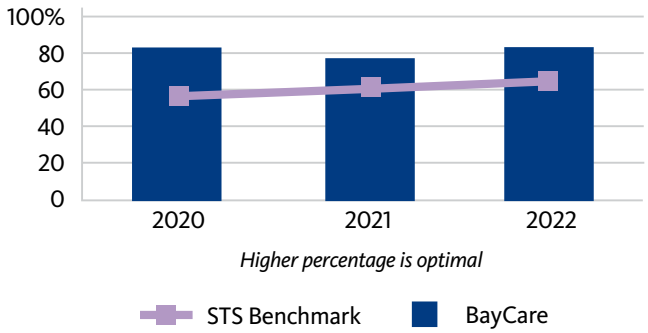
Three-star designation represents the highest possible quality rating.

Composite Quality Metrics for Isolated CABG at BayCare | 2020–2022

Risk-Adjusted Operative Mortality for Isolated CABG



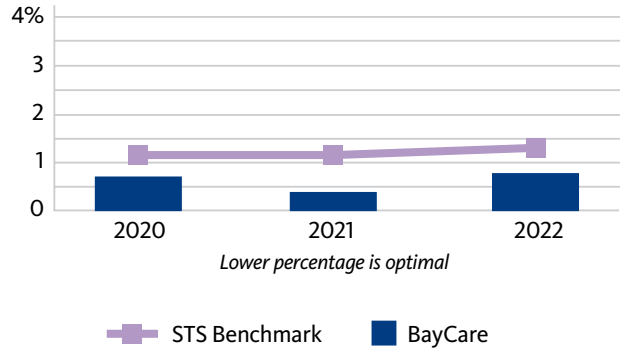
Percent of Isolated CABG Patients Extubated in Less Than Six Hours



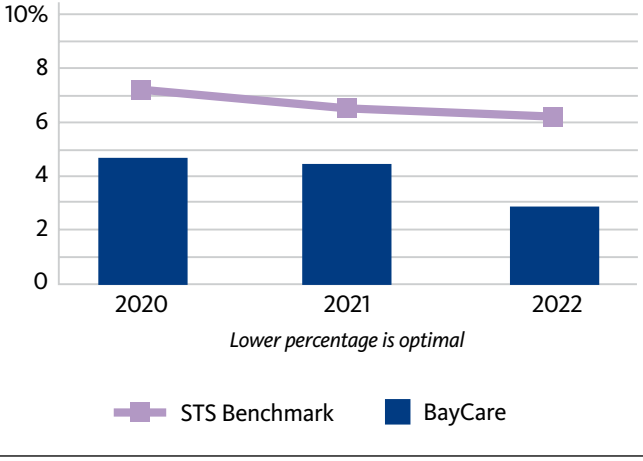
Deep Sternal Wound Infection for Isolated CABG		
	STS Benchmark	BayCare
2020	0.30%	0.14%
2021	0.33%	0.13%
2022	0.30%	0.13%

Lower percentage is optimal

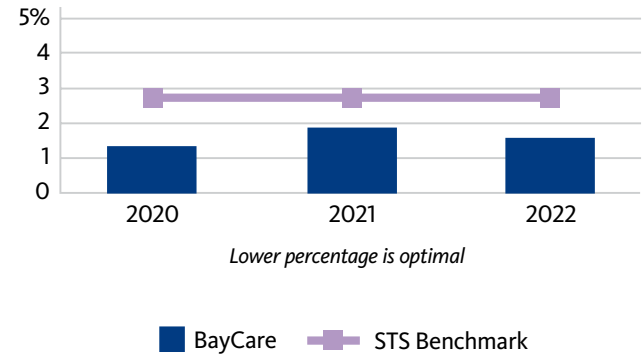
Risk-Adjusted Isolated CABG with Permanent Stroke



Risk-Adjusted Isolated CABG Prolonged Ventilation (Mechanical > 24 Hours)



STS Major Cardiac Procedures Risk-Adjusted Mortality



Importance of Blood Conservation

Multiple strategies are used within BayCare cardiovascular surgical programs to limit operative blood loss and patient exposure to blood products. Techniques to limit bleeding and return shed blood to the patient include:

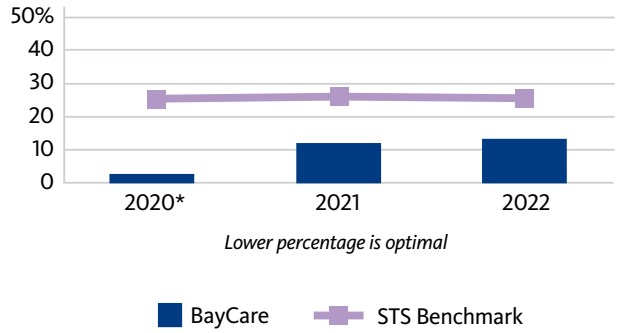
- Optimization of the patient's own clotting mechanism before surgery, which includes discontinuation of blood thinners and antiplatelet medications before surgery
- Treating anemia and supplementing deficiencies
- Cell saver technology which scavenges blood from the surgical field
- Cardiotomy suction in the OR to return all blood lost to the patient
- Meticulous surgical technique to minimize bleeding
- Medication administration during surgery to enhance the patient's own clotting mechanism
- Specialized medications used to address specific deficiencies in coagulation

Emphasis on Arterial Grafting for CABG

"Arterial bypass grafts have been proven to provide superior long-term outcomes and, as such, our utilization of multiple arterial grafts, including radial artery and bilateral internal mammary artery grafts, is significantly higher than regional and national averages," according to chief of cardiothoracic surgery and medical director of the Morgan CVICU/OR at Morton Plant Hospital, Dr. John Ofenloch. "BayCare cardiovascular surgeons are committed to providing the highest quality surgical care. Not only are in-hospital and 30-day mortality rates important, but also long-term freedom from further cardiovascular events."

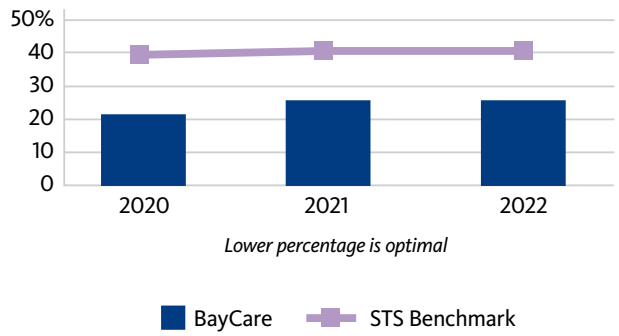
BayCare cardiovascular surgeons have used the internal mammary artery for CABG surgery in 100 percent of appropriate cases over the past several years. Use of a second arterial graft, either an additional internal mammary artery or a radial artery graft, is increasingly employed as a strategy by our cardiovascular surgeons to enhance long-term freedom from repeat intervention and cardiovascular events.

Blood Utilization for CABG Surgeries: Represents Intraoperative Blood Use

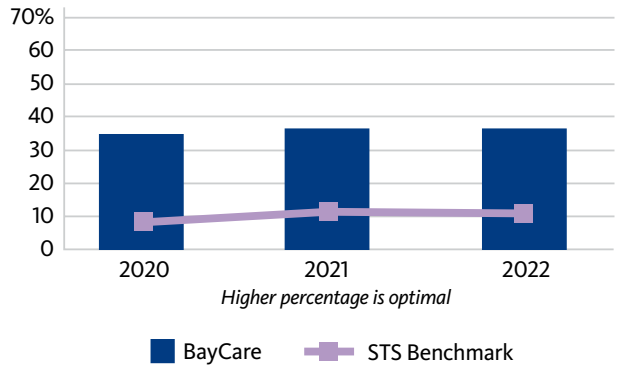


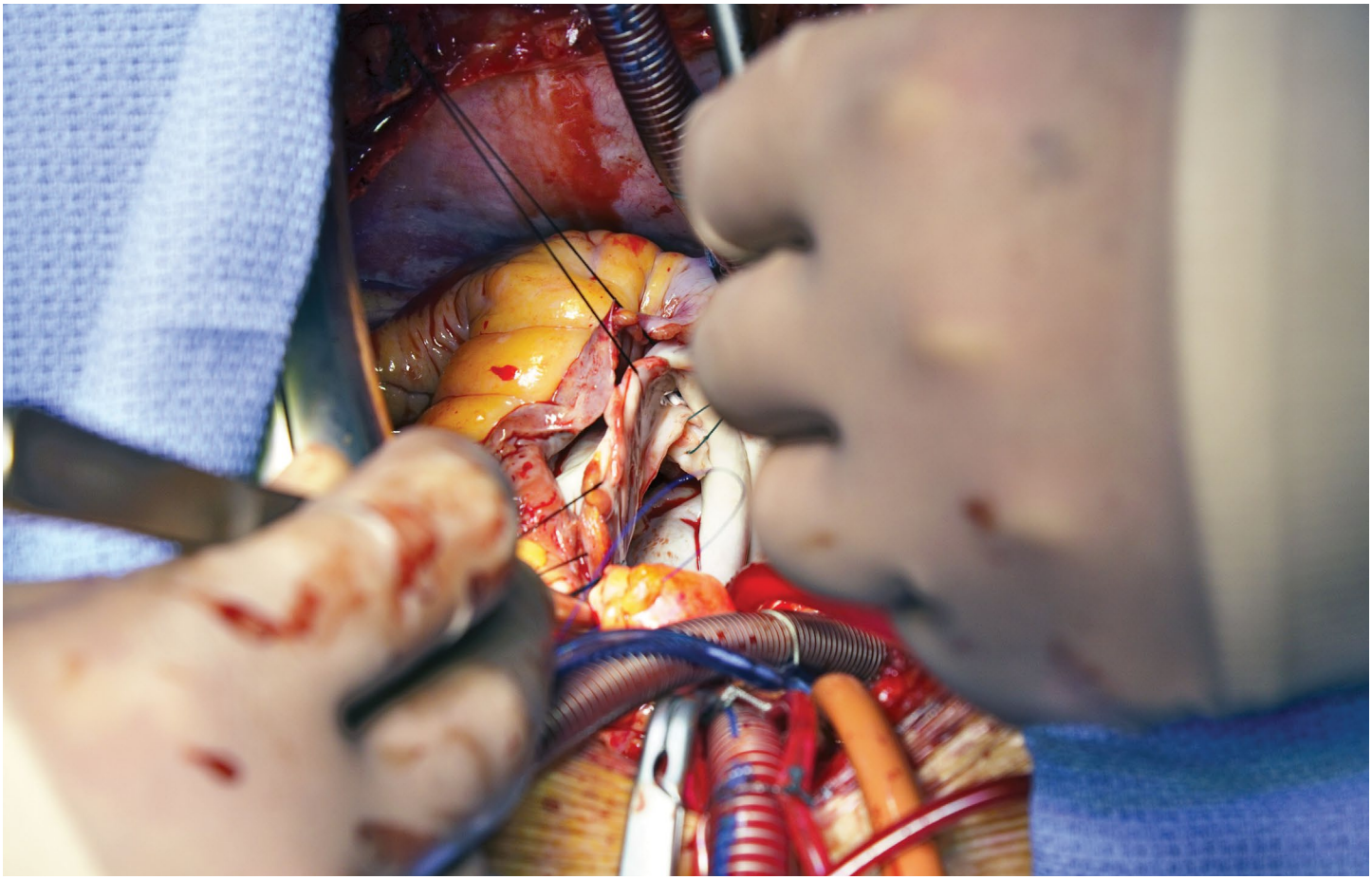
**2020 blood utilization percentage was corrected – issue with IQVIA report resolved*

Blood Utilization for CABG Surgeries: Represents Intraoperative and Postoperative Blood Use



Radial Artery Usage





Isolated Mitral Valve Repair

The gold standard for mitral valve regurgitation in reasonable-risk patients remains an open surgical mitral valve repair, during which BayCare surgeons use a variety of techniques, including mitral leaflet resection, chordal replacement, mitral valve leaflet augmentation and annular reconstruction.. It's imperative that these procedures are performed with very low complications. As noted in the adjacent table on isolated mitral valve repair, BayCare's surgeons have reported no major complications over the last two years.

While the three BayCare cardiovascular surgery programs are actively involved in transcatheter mitral valve repair procedures, these procedures are reserved for patients otherwise felt to be at high risk for open-heart surgery. The alternative options include edge-to-edge repair (TEER) or enrollment in an investigational trial for transcatheter mitral valve replacement.

Isolated Surgical Aortic Valve Replacement (SAVR)

Isolated open surgical aortic valve replacements (SAVR), in the era of transcatheter aortic valve replacement (TAVR), must continue to be performed with excellent outcomes, especially with respect to risk-adjusted mortality, stroke and infection rates. Younger patients and patients with anatomy more suitable for SAVR or not suitable for TAVR continue to benefit from these excellent results. We're extremely proud of our results for this group of patients, as depicted in the corresponding chart.

Composite Quality Metrics for Isolated Mitral Valve Repair

Isolated Mitral Valve Repair (2020–2022)	
Volume	274
Mortality	1.82%
Stroke	1.09%
Deep Sternal Wound Infection	0.0%

Composite Quality Metrics for Isolated Surgical Aortic Valve Replacement (SAVR)

Isolated SAVR (2020–2022)	
Volume	290
Mortality	1.03%
Stroke	0.69%
Deep Sternal Wound Infection	0.0%

Advanced Structural Heart and Valve

Structural Heart and Valve Disease Treatment

Team-based advanced treatment for structural heart and valve disease is available within BayCare. Several hospital facilities in Hillsborough, Pinellas and Polk counties have developed dedicated structural heart teams that specialize in the medical and surgical care of these cardiac problems. Our structural heart and valve teams are comprised of physicians and health care providers from multiple heart and vascular specialties who have interest and expertise in the treatment of complex cardiac conditions.

According to Dr. Joshua Rovin, medical director of the Center for Advanced Valve and Structural Heart Care at Morton Plant Hospital, "Our program's success has been built upon the foundation of our experienced multidisciplinary heart team. We always strive to provide the right care at the right time for our patients, following the latest guidelines developed by our collective professional cardiology and cardiovascular surgical societies. Our teamwork and outcomes have allowed us to participate in multiple national research trials. Such trials provide us the opportunity to treat our patients with heart valve disease using the latest minimally invasive technologies."

Our specialists from the divisions of cardiovascular surgery, interventional cardiology, cardiac imaging and cardiac anesthesia work together to provide innovative heart treatment solutions and the best possible outcomes for patients with structural heart abnormalities. Many affiliated health care providers participate on the dedicated heart team as well, including nurses, physician assistants, advanced nurse practitioners and cardiac imaging specialists. Structural heart disease may affect the heart muscle as well as the valves that regulate blood flow within the heart. Some structural heart abnormalities are congenital, and others are the result of acquired heart disease. Many of these abnormalities ultimately result in congestive heart failure (CHF). Some of the most common conditions and their treatments are described in the Medical Terminology and Procedure Review section on page 25.

For information on BayCare's management and treatment of pediatric and adult congenital heart disease, see the Pediatric and Adult Congenital Heart section of this book on page 18.

BayCare's advanced structural heart and valve procedures include:

- Aortic surgery and surgery for aneurysms of the aorta
- Balloon aortic and mitral valvuloplasty
- Complex repeat heart valve surgery
- Left atrial appendage closure
- Surgical aortic and mitral valve repair and replacement
- Surgical treatment of atrial fibrillation
- Transcatheter aortic valve replacement (TAVR)
- Transcatheter mitral valve edge-to-edge repair (MitraClip™)
- Transcatheter mitral valve replacement (TMVR)
- Transcatheter paravalvular leak closure
- Transcatheter patent foramen ovale (PFO) closure and atrial septal defect (ASD) closure
- Tricuspid valve repair and replacement
- Valve-in-valve and ring procedure for the aortic and mitral valves

To refer a patient to any of our cardiovascular programs or facilities: (844) 344-1990

Surgical Innovation

Surgical innovation and advances in cardiovascular surgical care are paramount to the success of the BayCare cardiovascular program. Over the past decade, BayCare hospitals, with the collaboration between cardiovascular surgeons and cardiologists, have implemented many new programs which have benefited many patients. Valve surgery, in particular, has been an area of rapid progression and growth. As an example, transcatheter valve surgery avoids a sternal incision, and most patients can be discharged home the day after their procedure.

- Greater than 50 percent of all BayCare cardiovascular surgical and transcatheter cases involve valve surgery.
- One quarter of all BayCare cardiovascular cases are transcatheter based.
- Nearly half of all BayCare valve procedures are currently performed by a transcatheter approach.

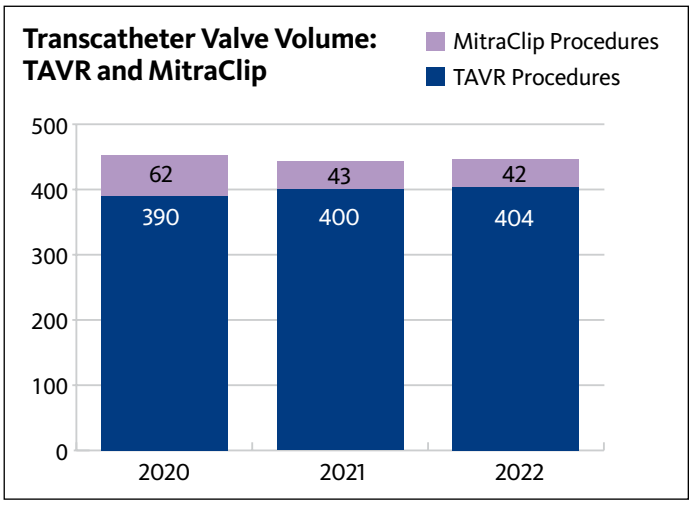
2021 TAVR 30-Day Outcomes		
	BayCare *(in hospital)*	**BayCare** *(30-day outcomes)*
	*N=397 (%)**	
Observed mortality	0.25% (1/397)	0.76% (3/397)
Stroke (any)	1.26% (5/397)	1.76% (7/397)
Access site vascular complications	1.51% (6/397)	2.27% (9/397)

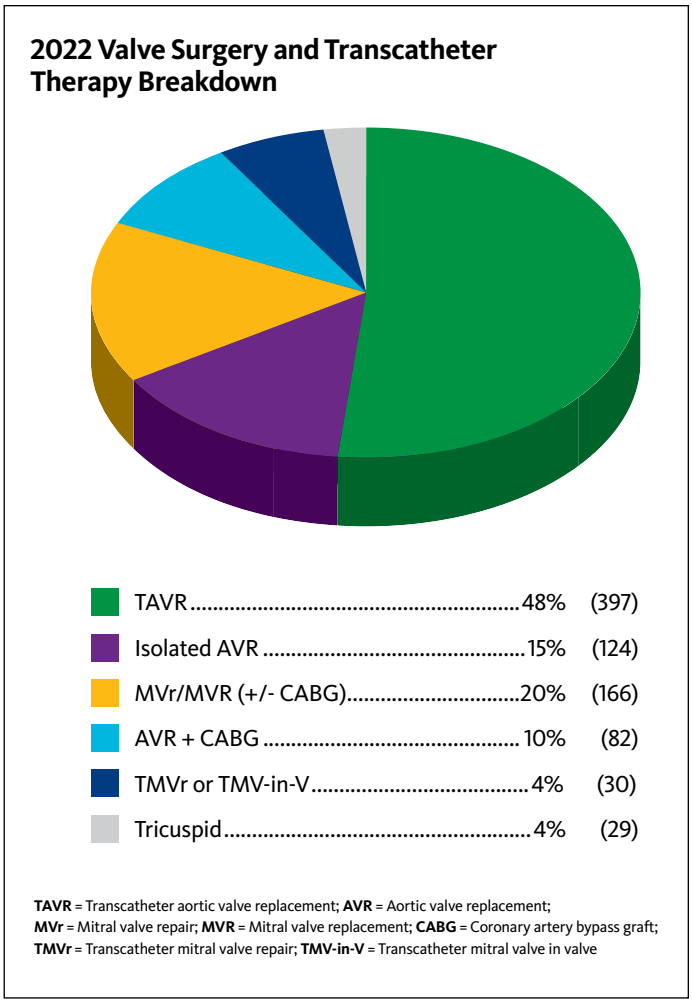
*Includes research cases

2022 TAVR 30-Day Outcomes		
	BayCare *(in hospital)*	**BayCare** *(30-day outcomes)*
	*N=397 (%)**	
Observed mortality	0.50% (2/404)	0.50% (2/404)
Stroke (any)	1.49% (6/404)	1.49% (6/404)
Access site vascular complications	1.73% (7/404)	0.25% (1/404)

*Includes research cases

A Look at Volume





TAVR = Transcatheter aortic valve replacement; **AVR** = Aortic valve replacement; **MVr** = Mitral valve repair; **MVR** = Mitral valve replacement; **CABG** = Coronary artery bypass graft; **TMVr** = Transcatheter mitral valve repair; **TMV-in-V** = Transcatheter mitral valve in valve

Arrhythmia

Arrhythmias, rhythm disorders of the heart, affect a wide variety of patients with and without underlying heart disease. Rhythm abnormalities can affect people of all ages, from the unborn to those of advanced age. Symptoms of rhythm disorders can range from the most obvious, which include syncope, chest pain, dizziness, symptoms of stroke and palpitations, to more subtle ones like exertional fatigue. In some cases, it might be that a rhythm disorder has no symptoms at all.

For more than 25 years, arrhythmia specialists at BayCare helped further the discipline of treating rhythm disorders by participating in clinical research trials, supporting the development of procedures and catheter design, and actively collaborating with other rhythm specialists as well as other cardiac specialists across the spectrum of cardiac care. This unique combination enhances the ability of our expert rhythm disorder teams to provide high-quality outcomes for patients while maximizing patient safety. Our network throughout West Central Florida also contains one of the only facilities to provide management of arrhythmia for both adults and pediatric patients.

Our comprehensive programs offer a multitude of diagnoses and treatments, utilizing the latest technologies as well as patient support opportunities, such as implantable device support groups. "The treatment of cardiac arrhythmias is continuously evolving. At BayCare, our rhythm specialists collaborate in ways not often seen in today's health care environment." All aspects of patient care are periodically reviewed, including how to deliver the best care in the most efficient and cost-effective manner for our patients.

"Through sharing of ideas, techniques and the latest research, BayCare physicians provide cutting-edge treatments and evidence-based care for patients," according to Dr. Rodrigo Bolaños, clinical leader of arrhythmia management for BayCare's cardiovascular service line and medical director of electrophysiology at Winter Haven Hospital.

Common arrhythmia disorders and the procedures that manage them are listed in the Medical Terminology and Procedure Review section of this book on page 25. For volume related to surgical management of arrhythmias, see the Cardiovascular Surgery section of this book on page 5.

To refer a patient to any of our cardiovascular programs or facilities: (844) 344-1990

BayCare's arrhythmia programs include:

- Management of complex arrhythmia using ultrasensitive 3-D mapping
- Atrial fibrillation (AFib) ablation using radiofrequency, cryoablation and electroporation (on trial)
- Hybrid ablation for advanced AFib
- Ventricular tachycardia and ventricular fibrillation ablation with and without hemodynamic assist
- Left atrial occlusion and ligations, both catheter-based and surgical techniques
- Surgical Maze procedure
- Convergent hybrid Maze

Cardiac rhythm management (CRM) device implants include:

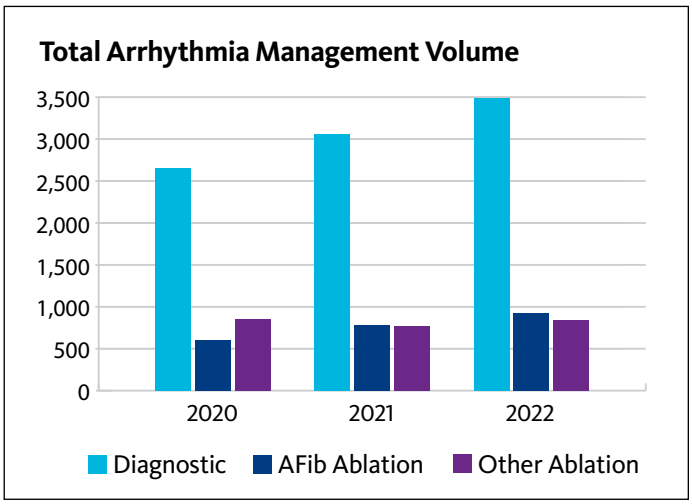
- Transvenous and subcutaneous implantable cardioverter defibrillators (ICD)
- Biventricular pacing, left bundle pacing and His bundle pacing
- Injectable loop recorders
- Permanent and leadless pacemakers (PPM)
- Device/Lead extraction and venoplasty

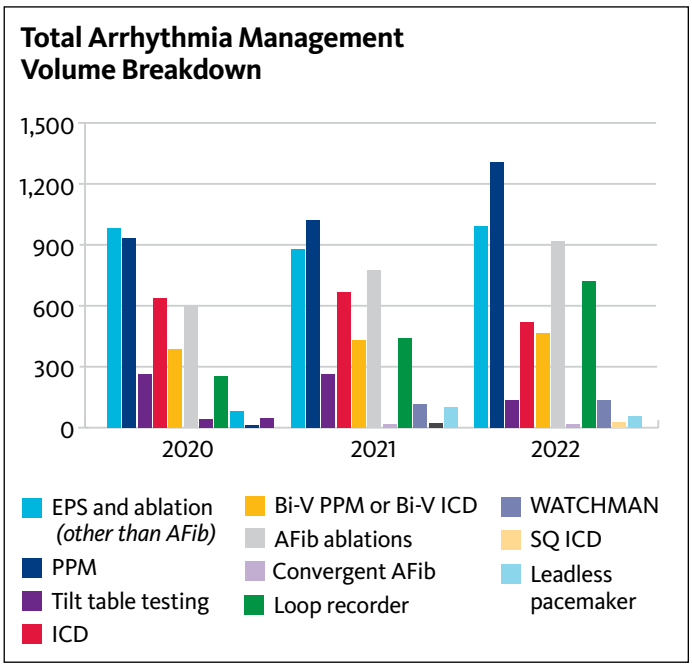
Cardiac rhythm management (CRM) diagnostic testing includes:

- Tilt table testing
- Ambulatory monitoring
- Cardiac imaging using sophisticated equipment such as 3-D reformatting of MRI, CT and ultrasound
- Diagnostic electrophysiology studies as part of decision making tool for device implantation

Information on BayCare's management and treatment of pediatric and adult congenital heart disease can be found in the Pediatric and Adult Congenital Heart section of this book on page 18.

A Look at Volume





Percutaneous Coronary Intervention

The landscape of coronary disease treatment is changing and evolving rapidly with more complex diseases being treated with percutaneous techniques. Examples of innovative procedures and technologies include the use of long, drug-eluting stents that provide excellent long-term patency rates, the ability to open arteries that have been occluded chronically and the ability to support the failing heart muscle with different percutaneous devices (i.e., Impella). Coronary artery disease continues to be one of the main causes of mortality in the world. It's recommended that all patients receive optimal medical therapy to prevent progression of disease and reduce the ischemic burden. Patients who remain symptomatic despite medical therapy, have extensive ischemia based on cardiac testing or develop unstable coronary syndromes greatly benefit from prompt cardiac catheterization and referral for percutaneous coronary intervention. This can result in improvement in quality of life and preservation of myocardial function.

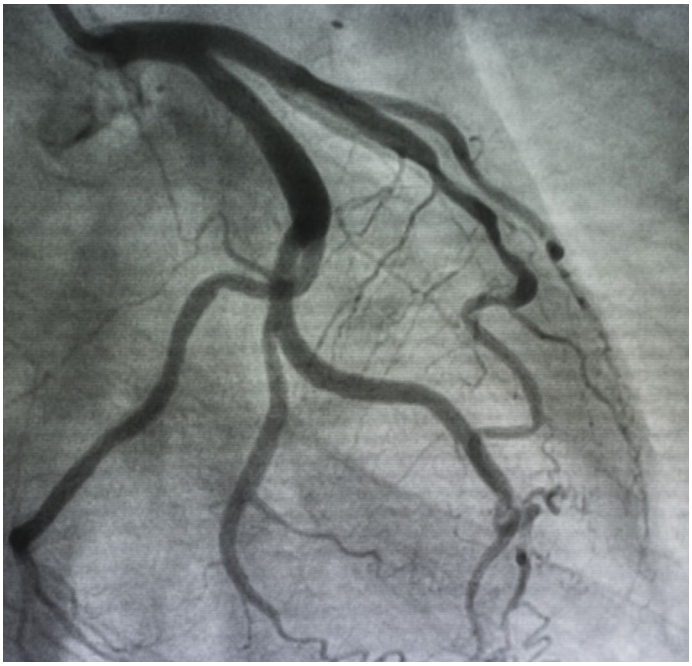
Angioplasty, or percutaneous coronary intervention (PCI), is performed at Bartow Regional Medical Center, Mease Countryside Hospital, Morton Plant Hospital, Morton Plant North Bay Hospital, St. Anthony's Hospital, St. Joseph's Hospital, St. Joseph's Hospital-North, St. Joseph's Hospital-South, South Florida Baptist Hospital and Winter Haven Hospital. All locations are also STEMI-receiving facilities.

Cardiac catheterization procedures can be done by advancing catheters through the radial artery in the wrist as well as the femoral artery in the peripheral groin area. Radial procedures have been linked to a decrease in length-of-stay and bleeding risks and a shorter duration of bedrest after a catheterization procedure. Many of the physicians at these hospitals can perform radial procedures when appropriate.

BayCare's PCI procedures include:

- Diagnostic coronary angiography
- Diagnostic peripheral angiography
- Mechanical support in cardiogenic shock
- Percutaneous coronary intervention (PCI)
- Peripheral vascular intervention (PVI)

The cardiac catheterization, percutaneous coronary intervention (PCI) and peripheral intervention volumes included in this year's outcomes book reflect cases performed in the cardiac catheterization labs throughout BayCare. These volumes include a variety of procedures that address a multitude of diseases both chronic and acute in nature.



The PCI procedures include the treatment of coronary artery disease by angioplasty, stenting, lithotripsy, atherectomy and chronic total occlusion revascularization. In addition, BayCare is one of few health care systems in the state to offer coronary brachytherapy, a treatment modality for stents that have developed scar tissue. Through a combination of these various modalities, many patients who have no other options have been able to achieve symptom relief.. Many of the peripheral intervention procedures include the treatment of peripheral vascular disease by thrombectomy, angioplasty, stenting, lithotripsy and/or catheter-directed thrombolysis to improve quality of life, relieve pain and, in more advanced cases, for limb salvage. These procedures can be performed using a variety of access points including femoral, popliteal and pedal vessels, depending on the lesion being addressed.

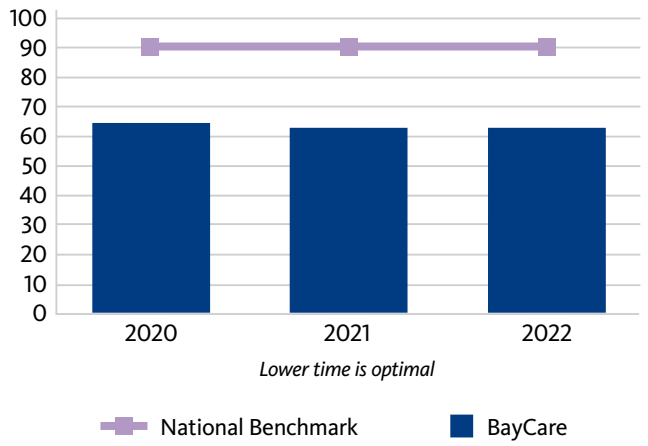
A Look at Volume

PCI Volume			
	2020	2021	2022
PCI volume	4,479	4,826	4,534
Total peripheral vascular intervention volume	4,372	4,664	4,523
Diagnostic cath lab volume	11,056	12,696	12,505

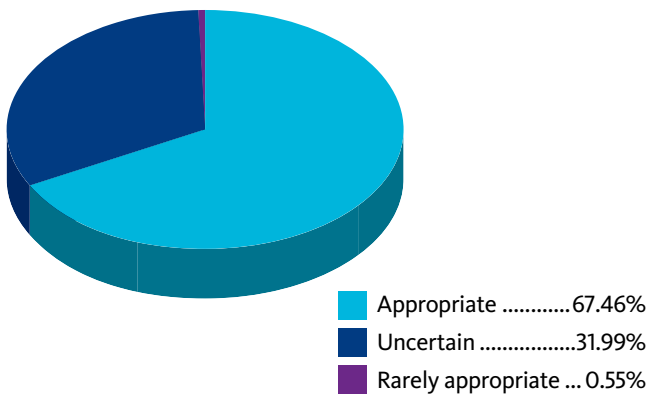
Our previous volumes were counted by each procedure or unit of service; this means one patient can have more than one procedure code per encounter. We've changed this to only count each patient procedure encounter as one count, which reflects how we look at our registry data. However, this reduces the total volume by counting patients and not units-of-service for each patient.

A Look at Quality

Average STEMI Door-to-Balloon Time in Minutes



2022 Proportion of Evaluated PCI Procedures Without Acute Coronary Syndrome

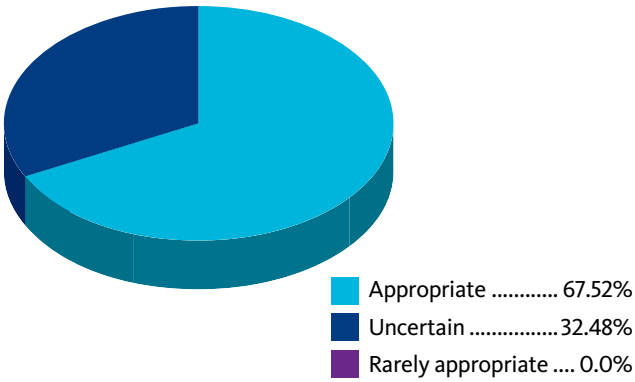


A Closer Look: Same-Day Discharge for Percutaneous Coronary Intervention (PCI)

As part of BayCare's continuous improvement processes, cardiovascular leaders across our system regularly review cardiovascular processes and procedures to look for opportunities to improve not only patient care and outcomes but also patient experience. One area of focus has been continued enhancement of our guidelines for discharging interventional cardiovascular patients on the same day they have a procedure. Guidelines for patients with PCI procedures (angioplasty-stent) were the first area of focus implemented at all the BayCare facilities. This effort has helped us improve patient satisfaction and hospital turnaround with less utilization of inpatients beds. Additionally, safe discharge home for patients when an overnight stay isn't necessary also decreases patient cost. Currently, more that 74 percent of PCI procedure patients are discharged on the same day. In addition to PCI, atrial fibrillation ablation procedures were added to the same-day discharge guidelines in 2021, with more than 60 percent of ablation patients meeting the guidelines for same-day discharge.

In 2021, cardiovascular leadership expanded the same-day discharge process to encompass new cardiac rhythm management (CRM) devices and WATCHMAN procedures across BayCare. For these new areas, roughly 43 percent of patients with CRM devices and 29 percent of WATCHMAN patients were discharged on the same day.

2022 Proportion of Evaluated PCI Procedures With Acute Coronary Syndrome



Appropriate: Meets ACC/NCDR guidelines for performing PCI
Uncertain: Currently insufficient evidence
Rarely Appropriate: Not generally acceptable

To refer a patient to any of our cardiovascular programs or facilities: (844) 344-1990

Heart Failure

Heart failure is any condition in which the heart is unable to supply the body with the necessary amount of blood flow and oxygen. Heart failure is the fastest-growing form of cardiovascular disease and is expected to increase by nearly 50 percent by 2030. It's estimated that roughly seven million people are currently affected by heart failure. The rate of heart failure increases with age as well, and there are an estimated 900,000 new cases of heart failure diagnosed each year in the United States. Many patients with heart failure also have other conditions, such as coronary disease, chronic obstructive pulmonary disease (COPD), diabetes, kidney disease and arrhythmia, which further complicate management. BayCare offers comprehensive care for patients with all types, causes and severity of heart failure, whether they're admitted to one of our hospitals, at home or at a skilled nursing facility.

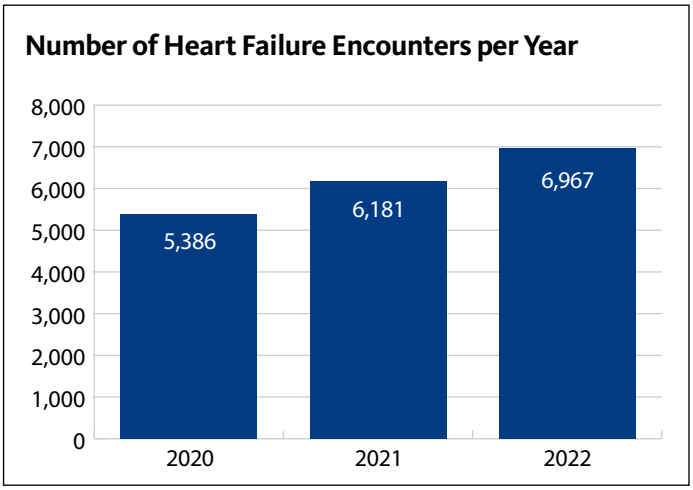
Our Heart Function Clinics specialize in the management of heart failure at all stages and from all causes. The clinics serve the needs of patients with secondary heart failure due to other medical conditions as well as heart failure from primary heart muscle diseases (cardiomyopathy). The Heart Function Clinic network allows BayCare to offer optimal and consistent care to heart failure patients across our entire system. BayCare Heart Function Clinics are located on the campuses of Mease Countryside Hospital, Morton Plant Hospital, St. Anthony's Hospital, St. Joseph's Hospital and Winter Haven Hospital.

Additional services offered are:

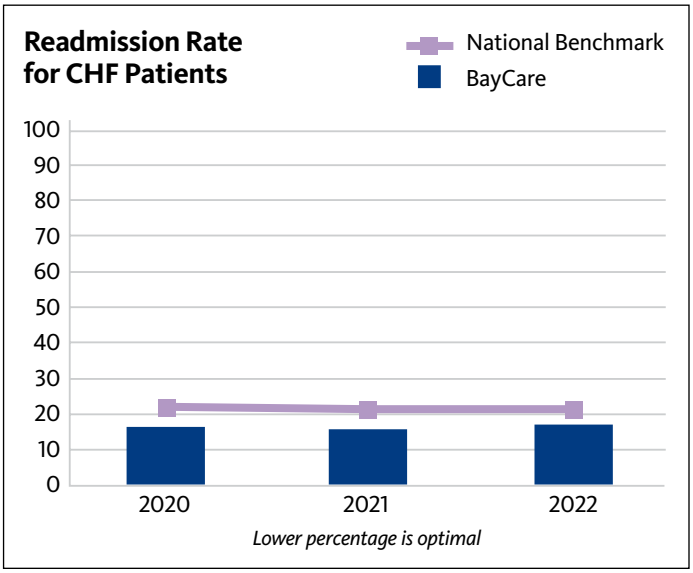
- Access to support groups for patients and caregivers
- Comprehensive evaluation for cause of cardiomyopathy
- Coordination of home-based care and monitoring
- Coordination of multiple chronic condition care
- Device therapy management
- Emergency room care follow up
- Home infusion therapy
- Hospital readmission risk management
- Inpatient continuity of care and transition management
- Opportunity to participate in clinical research trials
- Team-based longitudinal outpatient care

To refer a patient to any of our cardiovascular programs or facilities: (844) 344-1990

A Look at Volume



A Look at Quality



A Closer Look: BayCare's Ventricular Assist Device (VAD) Program

Advanced heart failure occurs when patients with heart failure experience persistent severe symptoms that interfere with daily life despite maximum medical treatment. A left ventricular assist device (LVAD) is an implantable mechanical pump that works with the heart to deliver adequate blood flow to the body.

BayCare's Advanced Heart Failure Program provides destination therapy for heart failure patients. Destination therapy is defined as those patients who require mechanical support but who aren't transplant candidates. Currently, the Heartmate III is the LVAD that we implant at BayCare hospitals. The LVAD program at St. Joseph's Hospital currently manages patients who have both Heartmate II and III devices.

Our experience has reflected that of the national experience with increased survival and improved quality of life. Patients can go from being essentially in the hospital with cardiogenic shock back to their lives and homes, participating in their communities. With LVAD therapy, we're giving these patients new life and allow them to remain active members of society.

Guidelines for LVAD referral:

I	IV inotropes
N	NYHA IIIB/IV or persistently elevated natriuretic peptides
E	End-organ dysfunction (Cr>1.8 mg/dL or BUN >43 mg/dL)
E	EF ≤ 35%
D	Defibrillator shocks
H	Hospitalizations >1 with heart failure
E	Edema (or elevated PA pressure) despite escalating diuretics
L	Low blood pressure, high heart rate
P	Prognostic medication—progressive intolerance or down-titration GDMT

Pediatric and Adult Congenital Heart

BayCare is home to Tampa Bay's only comprehensive congenital heart disease (CHD) center, the Patel Children's Heart Institute at St. Joseph's Children's Hospital. Our center is capable of delivering full spectrum care for the CHD patient from fetal diagnosis to late adulthood. This unique program is located on the campus of St. Joseph's Children's Hospital in Tampa. In 2018, the Adult Congenital Heart Association awarded the Tampa Bay Adult Congenital Heart Center at St. Joseph's Hospital the status of ACHD—Accredited Comprehensive Care Center.

Developed in collaboration with the Children's Hospital of Pittsburgh, the center's congenital heart surgical program is a leader in patient volume, surgical outcomes, early extubation and short length of stay. Surgical planning often begins at fetal diagnosis, allaying family anxiety and ensuring that parents know what to expect when their child is born. Throughout the CHD center and programs, there's a strong belief in quality, excellence and transparency. The CHD center actively participates in various National Databases for Quality Improvement and Benchmarking, including the Society of Thoracic Surgeons Congenital Heart Surgery Database (STS CHSD), Improving Pediatric and Adult Congenital Treatment (IMPACT), the Pediatric Cardiac Critical Care Consortium (PC4) and the Extracorporeal Life Support Organization (ELSO).

The physicians at the CHD center specialize in the care of patients with congenital heart disease at all ages, including but not limited to the following conditions:

- Aortic stenosis
- Aortic valve and obstructive left heart lesions
- Atrioventricular canal defects
- Atrioventricular septal defect
- Cardiac tumors
- Coarctation of the aorta
- Double outlet right ventricle
- Ebstein's anomaly of the tricuspid valve
- Fetal arrhythmias
- Fetal heart failure
- Heterotaxy syndrome (isomerism)
- Hypoplastic left heart syndrome (HLHS) and single ventricle heart disease

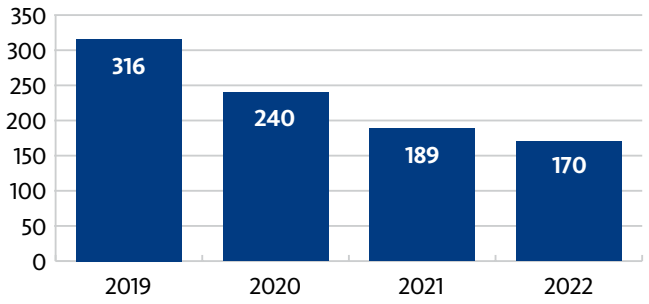
- Interrupted aortic arch
- Mitral and tricuspid valve dysfunction
- Pulmonary arteria (PA)
- Pulmonary arterial hypertension
- Pulmonary stenosis
- Single ventricle heart defect
- Tetralogy of Fallot (TOF) and TOF with PA
- Total anomalous pulmonary venous return (TAPVR)
- Transposition of Great Arteries
- Tricuspid atresia
- Truncus arteriosus
- Ventricular septal defect (VSD)

Services and procedures include:

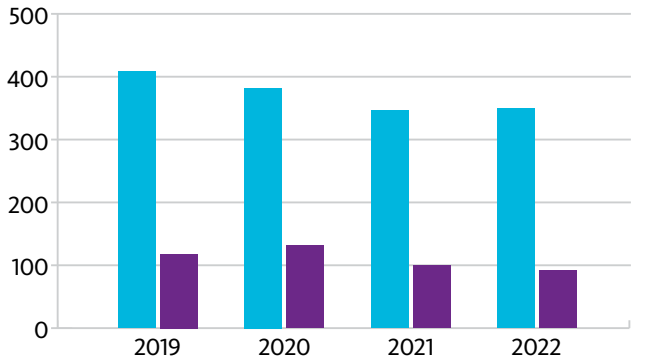
- Specialized pediatric/congenital cardiology services treating a wide range of patients with mild to complex heart conditions
- Cardiac catheterization designed especially for children and adults using a less invasive alternative for some heart conditions. The catheterization laboratory is one of the most widely used congenital laboratories in Florida, performing over 400 procedures annually, most of which are interventions. Some procedures include:
  - Atrial septal defect (ASD) device closure
  - Atrial septostomy
  - Balloon valvotomy
  - Coil embolization
  - Electrophysiology studies with/without ablation
  - Implantable cardioverter defibrillators (ICD) and pacemakers
  - Patent ductus arteriosus (PDA) device closure, including newborns weighing less than 2kg
  - Radiofrequency and cryoablation *(often without fluoroscopy)*
  - Stent implantation
  - Transcatheter valve replacement *(Melody valve, Sapien valve, Sapien valve with Altera pre-stent, Harmony valve)*
  - Ventricular septal defect (VSD) device closure
- Pediatric and adult congenital cardiac imaging including:
  - 3-D echo
  - Cardiac MRI available in collaboration with pediatric cardiologist
  - Echocardiology laboratory: The first center for transthoracic, transesophageal and fetal echocardiography in West Central Florida accredited by the Intersocietal Accreditation Commission (IAC)
  - Fetal echocardiology
- Pediatric and adult congenital cardiovascular surgery serving children and adult congenital heart patients. Some procedures offered include:
  - Arterial switch
  - Atrioventricular septal defect repair
  - Complex valve repair and valve conduits
  - Fontan procedure and Fontan conversion
  - Hybrid, palliation and repair of hypoplastic left heart syndrome (HLHS) and single ventricle heart disease
  - Pacemakers
  - Tetralogy of Fallot (TOF) and TOF with pulmonary atresia repair
  - Various hybrid procedures
- Pediatric and adult congenital cardiac anesthesiology serving the particular needs of congenital heart patients including early extubation and pain management that may include more favorable cardiac performance, reduced length of ICU and hospital stay, and a lower rate of ventilator-associated respiratory infections. More than 60 percent of our congenital heart patients leave the operating room without a breathing tube.
- A state-of-the-art cardiac intensive care unit staffed with specialized cardiac critical care physicians and advanced practice professionals. Cardiac ICU physicians are in-house 24 hours a day. The unit cares for the entire spectrum of congenital heart patients ranging from newborns requiring complex surgical repairs to adults undergoing procedures for congenital heart disease.

A Look at Volume

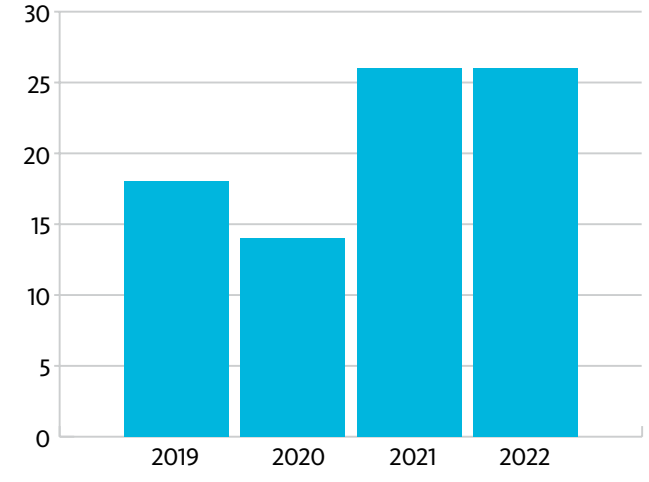
BayCare Congenital Heart Surgical Volume



BayCare Congenital Heart Interventional Volume



BayCare Congenital Heart Transcatheter Valve Volume



A Look at Quality for 2019–2022

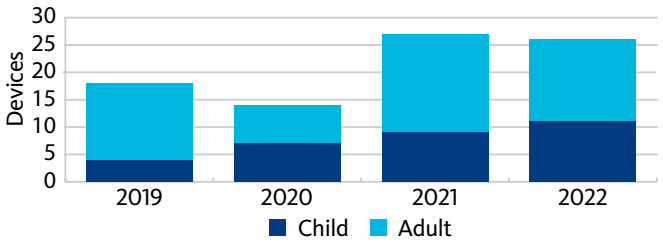
Operative Mortality	
BayCare	**STS Benchmark**
2.0%	2.6%

Lower percentage is optimal

Data provided from STS Fall Feedback Report for timeframe January 1, 2019-December 31, 2022, based on discharged patients

SJCH Cath Lab Volume (2019–2022) Total Cath Patient Cases				
	Total Cases	**Pediatrics (Age 0–17)**	**Adults (Age 18+)**	**Patients free from major adverse event (MAE) (IMPACT)**
2019	544	397	147	478/484=98.8%
2020	529	397	132	437/445=98.2%
2021	453	323	130	391/397=98.5%
2022	448	323	125	384/390=98.5%

BayCare Congenital Heart Transcatheter Valve (TPVR) Volume—Implanted (2019–2022)



BayCare Congenital Heart Neonatal and Infant Surgical Procedure—30-Day and One-Year Mortality					
Procedure	**n**	**30-Day**	**30-Day Mortality (%)**	**One-Year Mortality (n)**	**One-Year Mortality (%)**
Aortic arch repair	26	0	0%	1	3.8%
VSD repair	28	0	0%	0	0%
TOF repair	34	0	0%	0	0%
Complete atrioventricular canal repair (CAVC)	24	0	0%	0	0%
Arterial switch	13	0	0%	0	0%
Coarctation repair	11	0	0%	0	0%

Local data provided for period January 2019–December 2022

A Look at Quality for 2019–2022 *(Data provided from STS Feedback Report for January 1, 2019-December 31, 2022)*

Percent of Operative Mortality by Benchmark Procedure Group		
Benchmark Operations	**BayCare Mortality Rate**	**STS Benchmark Aggregate Mortality Rate**
Arterial switch procedure (ASO)	0%	1.81%
ASO+VSD	0%	4.90%
Atrioventricular septal defect (AVC)	0%	1.70%
Coarctation of the aorta (off bypass)	0%	0.93%
Truncus	0%	8.88%
Fontan procedure	0%	1.08%
Glenn procedure	0%	1.54%
Norwood procedure	23.5%	11.79%
Tetralogy of Fallot (TOF) procedure	0%	0.90%
Ventricular septal defect procedure	0%	0.43%

Based on discharged patients. Lower percentage is optimal.

Postoperative Length-of-Stay (PLOS) by Benchmark Procedure		
Benchmark operations	**BayCare**	**STS Benchmark**
Arterial switch procedure (ASO)	10	17
ASO+VSD	15	20
Atrioventricular septal defect (AVC)	8	17
Coarctation of the aorta *(off bypass)*	3	14
Truncus	15	36
Fontan procedure	9	12
Glenn procedure	7	19
Norwood procedure	31	58
Tetralogy of Fallot (TOF) procedure	6	13
Ventricular septal defect procedure	3	11

PLOS is expressed as a median in days. Fewer days is optimal.

Percent of Patients Extubated in Operating Room by Benchmark Procedure		
Extubated in the OR	**BayCare**	**STS Benchmark**
Arterial switch procedure (ASO)	0%	3.97%
ASO+VSD	0%	2.57%
Atrioventricular septal defect (AVC)	46.1%	14.2%
Coarctation of the aorta *(off bypass)*	30.7%	28.9%
Truncus	0%	1.54%
Fontan procedure	94.7%	60.2%
Glenn procedure	53.8%	36.2%
Norwood procedure	0%	0.76%
Tetralogy of Fallot (TOF) procedure	50%	23.7%
Ventricular septal defect procedure	72.7%	37.9%

Higher percentage is optimal

Cardiac Rehabilitation

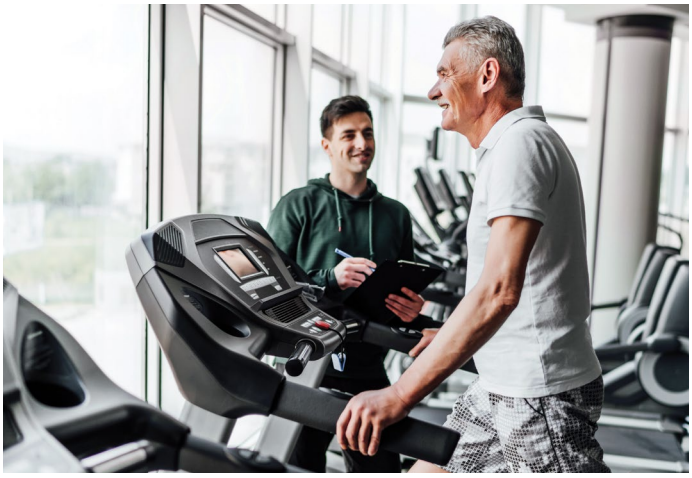
Cardiac rehabilitation programs are comprehensive inpatient and outpatient services involving supervised exercise, cardiac risk factor modification, nutritional planning, education and counseling. The goal is to limit the physiological and psychological effects of coronary artery disease, reduce the risk of sudden death and stabilize or reverse the atherosclerotic process. Each patient is assessed, and an individual treatment plan is developed to help the patients reach their goals.

Cardiac rehabilitation is a class 1 recommendation from the AHA and ACC for patients who have experienced a cardiac event. It's recognized as an integral component of the continuum of care for patients with cardiovascular disease.

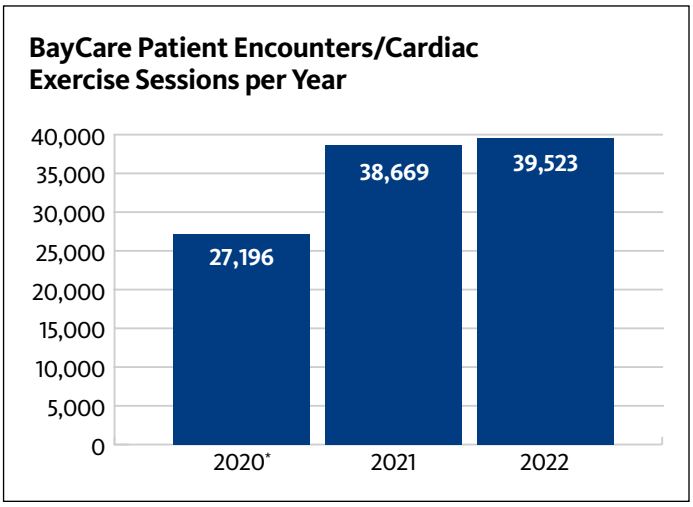
Diagnosis indicated for enrollment include:

- Coronary artery bypass grafting (CABG)
- Heart failure
- Heart transplant
- Myocardial infarction (MI)
- Percutaneous coronary intervention (PCI)
- Peripheral vascular disease (PVD)
- Stable angina
- Valve repair/replacement

BayCare's cardiac rehabilitation programs are some of the largest in the country, offering seven locations covering a four-county area. All our programs are nationally certified by the American Association of Cardiovascular Pulmonary Rehab (AACVPR) and the staff are certified cardiac rehab professionals (CCRP). They have experience working with the patients who have internal cardiac defibrillator (ICD), LifeVest, sudden death syndrome (SDS), postural orthostatic syndrome (POTS) and heart failure (HF).



A Look at Volume



**All BayCare rehabilitation centers were operating at reduced capacity to allow for social distancing. All Morton Plant Mease and Winter Haven Hospital's programs were closed for six weeks in August and September due to staffing shortages.*

Vascular

In 2021, BayCare was proud to include vascular service line information and outcomes for the first time. This momentous occasion has been facilitated by the merger of the Society for Vascular Surgery (SVS) and the American College of Cardiology vascular registries that capture metrics from across a wide range of vascular disease states, both arterial and venous.

The landscape of vascular medicine has seen a great deal of change, marked by the rapid development and disruptive nature of new technology, forcing changes to the long-standing model of specialist education in multiple disciplines and a rebranding of what it takes to be a true vascular interventionalist of today. At BayCare, our quality philosophy fosters a continuous improvement process that has helped us embrace the many changes that have and continue to occur within vascular medicine.

At BayCare, the vascular service line is a multidisciplinary approach to the care of the vascular patient that brings together vascular surgeons, interventional cardiologists and interventional radiologists in both the inpatient and outpatient setting. This has allowed BayCare to take advantage of the unique skill sets of each specialist, becoming a recognized regional and national care provider in the management of vascular disease. From our participation in carotid artery national clinical trials such as CREST-II and Roadster along with the recognition gained in the management of abdominal aortic aneurysms, our multidisciplinary vascular teams provide cutting-edge care across the communities of West Central Florida.

BayCare's vascular treatments and procedures include:

- Carotid endarterectomy
- Carotid stents, including transcarotid artery revascularization (TCAR)
- Endovascular/open abdominal aortic aneurysm (AAA) repairs
- Hemodialysis access
- Lower extremity amputation
- Lower extremity bypass *(infra/supra inguinal)* or percutaneous interventions
- Peripheral vascular interventions (PVIs)
- Thoracic endovascular aneurysm repair (EVAR)

A Look at Volume

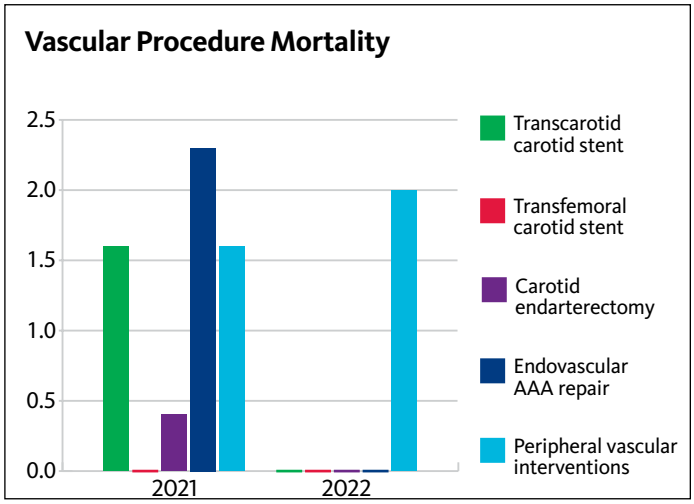
BayCare is proud to present our procedure volumes across the system for carotid artery disease, endovascular abdominal aortic aneurysm repair and peripheral vascular interventions. This data speaks to the trust that's been placed in our institutions and providers by the community so that we can continue to provide excellent and compassionate vascular care.

Vascular Procedure Volume		
	2021	**2022**
Transcarotid carotid stent	123	183
Transfemoral carotid stent	70	50
Carotid endarterectomy	283	244
Endovascular AAA repair	130	110
Peripheral vascular interventions	730	616

Higher volume is optimal

Within clinical practice, it's well established that performing a higher volume of procedures helps enhance clinical performance. This has been shown for several vascular surgical procedures to include open abdominal aortic aneurysm repair and carotid artery stenting[1,2,3]. The Society for Vascular Surgery (SVS) recommends an annual hospital EVAR volume of 10 cases per year and a 25-case minimum of carotid stenting for clinical privileging. BayCare has incorporated procedural volume requirements in initial physician credentialing and in maintenance of privilege requirements for select complex vascular interventions.

A Look at Quality



Lower percentage is optimal

SVS guidelines include a recommendation that AAA repairs be performed at centers with hospital mortality rates of **<2 percent** for EVAR and **<5 percent** for open repair of elective infrarenal AAAs[3]. Although there are no specific 30-day mortality benchmarks for carotid endarterectomy and carotid artery stenting, a detailed review of the work from the Society for Vascular Surgery Vascular Quality Initiative as presented by M.L. Schermerhorn et al.[4], reports 30-day mortality rates of **0.9 percent** for TCAR and **0.4 percent** for CEA *(n=1182 vs. 10,797 patients respectively)*. A review across BayCare shows that we remain competitive across all reported categories for mortality.

[1]Sharma, G et al. Association and interplay of surgeon and hospital volume with mortality after open abdominal aortic aneurysm repair in the modern era. J Vasc Surg. 2021 May; 73(5):1593-1602.e7.

[2]Calligaro et al. Guidelines for hospital privileges in vascular surgery and endovascular interventions: Recommendations of the Society for Vascular Surgery. J Vasc Surg. 2018 May; 67(5):1337-1344.

[3]Chaikof, EL et al. The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm. J Vasc Surg. 2018 Jan; 67(1):2-77.e2.

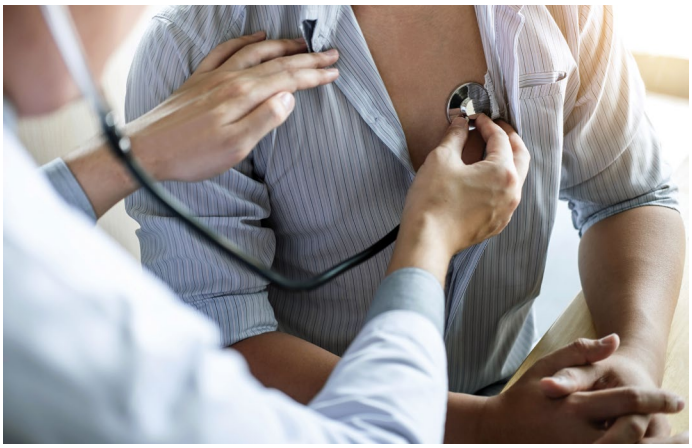
[4]Schermerhorn, ML, et al. In-hospital outcomes of transcarotid artery revascularization and carotid endarterectomy in the Society for Vascular Surgery Vascular Quality Initiative. J Vasc Surg. 2020 January; 71(1):87-95.

Research and Clinical Trials: Currently Enrolling

Within the BayCare network, we recognize clinical research makes the latest scientific discoveries available to the community long before they become accessible to the general public. So, we're committed to participation in clinical research with the goal of helping to improve the health of our community. For some patients, current treatments might not be working, or they might have bad side effects. BayCare takes part in numerous clinical research trials to learn about cardiovascular disease and its effects on patients, help find effective treatments to improve quality of life and health outcomes, and find out if a medication used for one condition could also help with another condition. For a full list of active cardiovascular BayCare clinical trials, visit our Clinical Research and Trials page.

Medical Terminology Review

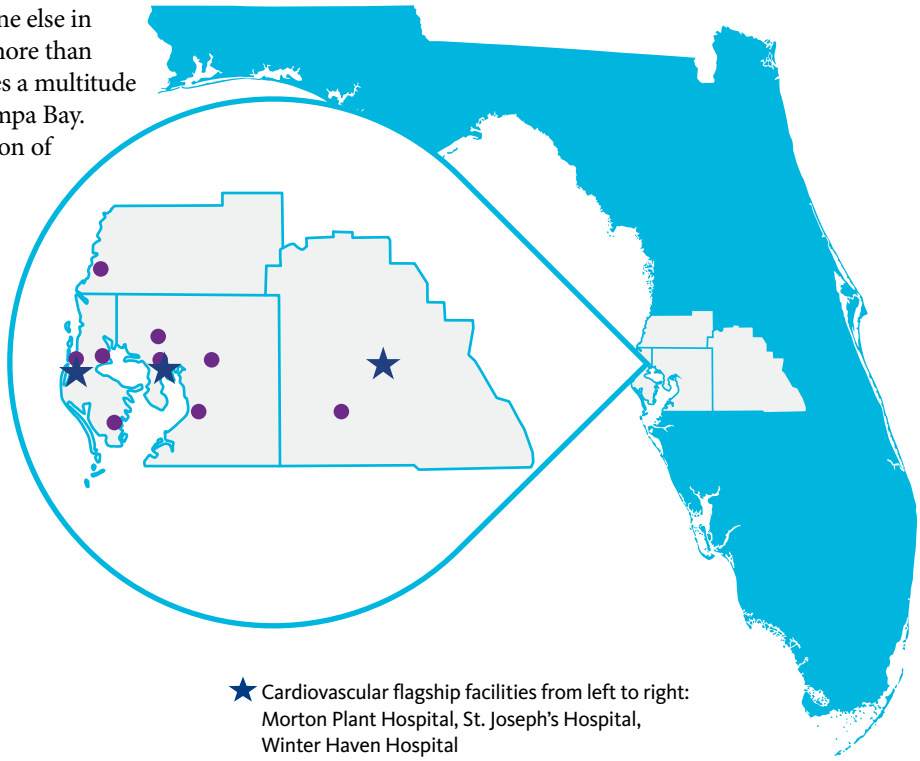
There are lots of different common conditions and important terminology to help you understand cardiovascular diseases and conditions discussed throughout this book. For supportive information on these conditions, visit our Common Heart Diseases and Conditions page.



Our Facilities

At BayCare, we take care of more hearts than anyone else in Tampa Bay. In the last year alone, we helped heal more than 21,000 hearts—that's a lot of lives. BayCare provides a multitude of cardiac services at 11 facilities located across Tampa Bay. On the following pages, you'll find a brief description of our different facilities by county.

"As technology advances, physicians have more options available to them to manage patients with complex illnesses. BayCare facilities have embraced the 'heart team' concept to provide optimal care to these patients to achieve the best possible outcomes," according to Dr. Mahesh Amin, medical director, BayCare cardiovascular services.



★ Cardiovascular flagship facilities from left to right: Morton Plant Hospital, St. Joseph's Hospital, Winter Haven Hospital

● Clockwise from top: Morton Plant North Bay Hospital, St. Joseph's Hospital-North, South Florida Baptist Hospital, Bartow Regional Medical Center, St. Joseph's Hospital-South, St. Joseph's Children's Hospital, St. Anthony's Hospital, Mease Countryside Hospital, Mease Dunedin Hospital

Hillsborough County

St. Joseph's Hospital
Heart and Vascular Institute

St. Joseph's Children's Hospital

St. Joseph's Hospital-North

St. Joseph's Hospital-South

South Florida Baptist Hospital
Steve and Krista Howard Heart and Vascular Center

Pasco County

Morton Plant North Bay Hospital

Pinellas County

Mease Countryside Hospital

Mease Dunedin Hospital

Morton Plant Hospital
Morgan Heart Hospital

St. Anthony's Hospital

Polk County

Bartow Regional Medical Center

Bostick Heart Center at
Winter Haven Hospital

To refer a patient to any of our cardiovascular programs or facilities: (844) 344-1990

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BayCare

BayCareHeart.org

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