Last year, a 65-year-old male patient was referred by Joonun (Chris) Choi, MD, Cardiologist at Stamford Health, to Edward Lin, MD, Cardiologist at Stamford Health, for an advanced heart failure evaluation. Thirty years ago, the patient had suffered a myocardial infarction that weakened his heart. Soon after, he experienced a progressive decline in his heart function and underwent coronary artery bypass surgery.

Over the ensuing years the patient struggled with worsening heart failure symptoms and recurrent ventricular tachycardia (VT), a dangerous heart rhythm. Throughout this period, he was able to maintain a good quality of life under the care of a multidisciplinary team of heart specialists at Stamford Health who managed his complex condition with a combination of stent procedures, catheter ablation for VT, adjustment of multiple anti-arrhythmic medications, and high doses of the newest heart failure medications such as Entresto™.

“In spite of the clinicians’ best efforts, many heart failure patients inevitably progress toward advanced heart failure,” said Dr. Lin. “To help him live longer and improve his symptoms, I told him his best option was to consider advanced heart failure therapies.”

After a comprehensive evaluation, Dr. Lin deemed the patient eligible for the HeartMate 3™ Left Ventricular Assist Device (LVAD), the newest generation of a miniature instrument that is surgically connected to the left ventricle of the heart to help it pump blood throughout the body. An external, wearable system consisting of a controller and two batteries is attached by a percutaneous cable (driveline).

“Six million people in the U.S. have heart failure, and the number continues to rise,” explained Dr. Lin. “Because heart failure is often a progressive condition, many people eventually struggle with advanced heart failure, which has a life expectancy that is worse than most cancers.”

“LVAD is a standard-of-care treatment for patients with advanced heart failure who have not responded to optimal medical therapy,” continued Dr. Lin. “It is used as either a bridge to heart transplantation or destination therapy. The survival rates with the newest generation of LVAD devices are nearing that of heart transplantation. In addition, among these patients who are all New York Heart Association (NYHA) class III or IV before they receive the LVAD, 80% become NYHA class I or II within a couple months of the surgery. Many are able to resume their favorite activities, including traveling and playing golf.”

Stamford Health is collaborating with CUMC to provide life-saving advanced heart failure therapies such as LVAD to eligible patients. Patients begin the evaluation process at the Heart and Vascular Institute (HVI) and then complete the evaluation and have their surgery performed at CUMC by world-renowned LVAD and heart transplant surgeons.

In this case, the patient was transferred from Stamford Hospital to NewYork-Presbyterian/CUMC, where he received the HeartMate 3™ LVAD. “The patient is doing very well on the LVAD, without shortness of breath or repeat hospitalizations,” said Dr. Lin. “He is back to work and is undergoing evaluation for a heart transplant.”

“I had a crisis in my life, which was complete heart failure,” said the patient. “The people at Stamford Health, through their association with Columbia and their new heart failure program, basically saved my life. Before the LVAD, I was having multiple shocks to my defibrillator. I am now completely shock-free and arrhythmia-free. My quality of life has improved 100%. Most importantly, I was treated like a person throughout the whole experience.”
In 2018, the Heart & Vascular Institute (HVI) fulfilled its mission of providing exceptional patient-centered care while continuing to exceed performance expectations. “In 2018, we increased case volume, quality performance and highly capable specialists in HVI Cardiology,” said David Hsi, MD, Chief of Cardiology and Co-Director of the HVI. “These achievements are the result of a multidisciplinary team approach to the diagnosis, management and prevention of cardiovascular disease that addresses each patient’s individualized needs.”

“Quality performance and volume has increased significantly in Cardiac Surgery and Interventional Cardiology procedures, which is a reflection of our organic growth here at the HVI,” said Michael Coady, MD, Chief of Cardiac Surgery and Co-Director of the HVI. “We are constantly striving to offer patients in our community the highest level of care using the latest technologies and interdisciplinary approaches. As a result, the HVI is fast becoming the regional heart center of excellence in Fairfield County.”

Innovations in Aortic Valve Replacement

The HVI is at the forefront of innovation in providing lifesaving treatment for patients with aortic valve disease with the Inspiris Resilia, a new aortic bioprosthesis that offers enduring benefits to younger patients who need aortic valve replacement.

“The Inspiris Resilia is an ideal, state-of-the-art technology for patients under age 70 who need an aortic valve replacement,” explained Dr. Coady. “It has unique anti-calcification properties that make it more durable and longer-lasting than existing valves. Should calcification or regeneration occur with age, the frame has built-in joints that enable it to expand, which facilitates re-replacement of a new valve inside the existing one using a minimally invasive transcatheter aortic valve replacement (TAVR) procedure.”

“This new aortic valve perfectly fits our mission to adopt the latest advancements that will prolong and enhance quality of life for our heart patients,” added Dr. Coady. “The Inspiris Resilia is an important component of a long-term management strategy for younger, active patients who need aortic valve replacement and want to avoid lifelong anticoagulation medications and other complications associated with existing valves.”

The New Mitral Valve Clinic

In 2018, the HVI launched the Mitral Valve Clinic to offer timely recognition and treatment for patients with moderate to severe mitral valve regurgitation, a serious disease that can cause atrial fibrillation (AFib), pulmonary hypertension, left ventricular (LV) dysfunction and heart failure. “Early diagnosis and intervention of mitral valve disease preserves heart function and improves quality of life,” said Dr. Hsi. “Unfortunately, many patients are referred for surgery late in the disease process, after they have developed co-morbidities and are now at increased risk for adverse cardiovascular events at the time of surgery.”

At the Mitral Valve Clinic, a multidisciplinary team of cardiologists, cardiac surgeons and cardiac imaging specialists adhere to ACC/AHA guideline-based recommendations for patients with more than moderate mitral regurgitation, which include evaluation with 3D transesophageal echocardiography imaging, appropriate medical treatment and surgical consultation. For patients eligible for surgery, the cardiac surgery team offers both standard and minimally invasive approaches.

“Our aim is to identify patients with mitral valve disease before they develop the sequelae of disorders that result from prolonged mitral valve regurgitation, and to intervene with surgery before their condition worsens,” said Dr. Coady. “Even for patients with moderate regurgitation, surgery is associated with lower morbidity and mortality compared to patients with progressed disease.”

Celebrating a Robust TAVR Program

In spring 2018, the HVI was proud to perform its 100th transcatheter aortic valve replacement (TAVR), a lifesaving minimally invasive alternative to open heart surgery for high- and intermediate-risk patients with severe aortic stenosis.

TAVR is provided at the HVI’s Structural Heart and Valve Center, where a multidisciplinary team of cardiac surgeons, interventional cardiologists, vascular surgeons, cardiac anesthesiologists and cardiac imaging specialists closely collaborate on every phase of the TAVR process, from rigorous patient selection to developing a personalized treatment plan that addresses each patient’s unique needs. (continued on page 3)
Now in its fourth year, the TAVR program has grown to accommodate a wider and more varied patient population. Last year, the TAVR team adopted the minimalist approach to TAVR, which involves the use of conscious sedation instead of general anesthesia and non-invasive transthoracic echocardiography (TTE) instead of invasive transesophageal echocardiography (TEE) to further increase its safety and efficacy.

“Since adopting the TAVR minimalist approach, quality performance and safety measures are improving,” said Arzhang Fallahi, MD, Interventional Cardiologist and Director of the Structural Heart and Valve Center. “We are performing as well if not better than the national average for measures such as in-hospital mortality, myocardial infarction, stroke, pacemaker rates, bleeding and vascular complications.”

**Excellent Quality Outcomes for WATCHMAN™ Program**

In early 2017, Stamford Health was the first hospital in Connecticut to offer the WATCHMAN™, Left Atrial Appendage Closure (LAAC) device, a one-time, permanent implant that reduces the risk of stroke in patients with non-valvular atrial fibrillation (AFib), thereby eliminating the need for and long-term risk of bleeding caused by blood thinners such as warfarin. By the close of 2018, the WATCHMAN team at Stamford Health had performed over 30 cases and achieved excellent results with a 100% success rate.

“WATCHMAN is a game changer for patients who are not receiving adequate stroke protection,” said Sandhya Dhruvakumar, MD, Director of Electrophysiology at Stamford Health. “It reduces the risk of catastrophic stroke without the need for blood-thinning therapy, thereby enhancing quality of life and reducing the risk of bleeding.”

Reflecting on the WATCHMAN’s quality achievements in 2018, Dr. Dhruvakumar said, “Our excellent outcomes are due to our clinical experience, our strong collaboration with the Structural Heart Disease and Structural Heart Disease Specialist and Co-Director of the Structural Heart and Valve Program

**The New Cardio-Oncology Program**

At Stamford Health’s HVI and Bennett Cancer Center, a new Cardio-Oncology program addresses the growing and complex needs of cancer patients along the full continuum of care that begins at diagnosis and continues long into survivorship.

“The goal of our Cardio-Oncology program is to identify cancer patients at risk for acute and long-term cardiac complications from their cancer therapies and to initiate preventive strategies as early as possible,” said Mina Owlia, MD, Cardiologist and Director of the Cardio-Oncology program. “We seek to optimize cardiovascular health among this population with early identification and treatment in order to reduce interruptions of anticancer therapy and to assist with long-term surveillance in cancer survivors.”

Launched in 2018, the Cardio-Oncology program offers cancer patients collaborative care to the prevention, detection and treatment of cardiovascular disease that is tailored to their individual needs. Dr. Owlia, Dr. Hsi, who is serving as Co-Director of the Cardio-Oncology Committee, and Evelyn Cusack, MD, Cardiologist, closely collaborate with Steve Lo, MD, Medical Oncologist and Co-Director of the Cardio-Oncology Committee, and other Stamford Health medical oncologists. Dedicated Stamford Health cardiologists perform specialized echocardiograms for patients undergoing cardiotoxic chemotherapy for the early detection of sub-clinical myocardial damage.

**Saving a Life with the Impella RP® System**

In the summer of 2018, a critically ill patient at Stamford Hospital was the first to receive the Impella RP® System, an innovative right ventricular assist device that provides temporary right ventricular support for patients who develop acute right heart failure following myocardial infarction, heart transplant or open-heart surgery.

“This patient was suffering from end-stage lymphoma and left ventricular failure as a result of the lymphoma, and he was in cardiogenic shock from right ventricular failure,” said Thomas Nero, MD, Interventional Cardiologist at Stamford Health. “Although the Impella RP had never been used in this setting, we contacted the company and convinced them to let us use the device to support the patient through his chemotherapy.”

“Stamford Hospital was the first center outside of a transplant center to use this device,” said Dr. Nero. “This groundbreaking case demonstrates our ability to perform lifesaving procedures while thinking outside of the box. We achieved this through the multidisciplinary support of Infectious Diseases, Oncology, Critical Care and the Cath Lab nursing staff, who did a superb job supporting a novel device that they had never worked with before.”

**The HVI Multidisciplinary Heart Team**

At the HVI, a cohesive, multidisciplinary team of heart specialists delivers optimal patient-centered care:

- **David Hsi, MD**, Chief of Cardiology and Co-Director of the HVI
- **Michael Coady, MD**, Chief of Cardiac Surgery and Co-Director of the HVI
- **David Yuh, MD**, Cardiologist and Chair of the Department of Surgery
- **Sandhya Dhruvakumar, MD**, Director of Electrophysiology
- **Arzhang Fallahi, MD**, Interventional Cardiologist and Director of the Structural Heart and Valve Center
- **Wayne Miller, MD**, Cardiologist and Director of Interventional Echocardiography
- **Carolyn Kasov, APRN**, Nurse Practitioner and Clinical Coordinator for the Structural Heart and Valve Program
- **Scott Martin, MD**, Interventional Cardiologist, Structural Heart Disease Specialist and Director of Interventional Cardiology
- **Mina Owlia, MD**, Cardiologist and Director of the Cardio-Oncology Program
- **Edward Portnay, MD**, Interventional Cardiologist, Structural Heart Disease Specialist and Director of the Cardiac Catheterization Lab
- **Thomas Nero, MD**, Interventional Cardiologist and Structural Heart Disease Specialist
- **William Feng, MD**, Cardiac Surgeon
- **Joshua Lader, MD**, Electrophysiologist
- **Charles Rouse, MD**, Electrophysiologist
- **Timothy Hansen, PA**, Lead Surgical Physician Assistant
- **Yojana Patil, RN**, Cardiac Surgery Coordinator
- **Perry Burgess, MSN, RN**, Director of Clinical Operations for the HVI
Superior Performance Outcomes in the Cardiac Catheterization Lab

The Stamford Health Cardiac Catheterization Lab, under the direction of Scott Martin, MD, Director of Interventional Cardiology, and Edward Portnay, MD, Director of the Cardiac Catheterization Lab, consistently achieves excellent quality performance outcomes as a result of the steadfast dedication and teamwork of the physicians, nurses and support staff who champion best practices in patient safety and the Planetree ideal of patient-centered care. In 2018:

- Stamford Health was the proud recipient of the Mission: Lifeline® Gold Receiving STEMI Award and NSTEMI Bronze Quality Achievement Award for implementing specific quality improvement measures outlined by the American Heart Association (AHA) for the treatment of patients who suffer heart attacks. Stamford Health’s overall Mission: Lifeline® STEMI Receiving Center Composite Score for 2018 was 96.4%, outperforming the national benchmark of 95.8%.

- Stamford Health’s cardiac catheterization lab was ranked in the 99th percentile out of 1,700+ U.S. hospitals’ cardiac catheterization labs in the Press Ganey patient satisfaction survey.

- Stamford Health completed 97.8% of its “door-to balloon” (DTB) angioplasty procedures within 90 minutes or less, outperforming the national benchmark of 94.6%.

- Compared to the traditional femoral artery approach for angioplasty procedures, the radial artery reduces the chance of bleeding, improves healing and is more comfortable for patients. In 2018, Stamford Health performed 77.9% of angioplasty procedures through the radial artery, compared to national benchmark of 40.6%.

Investigating Renal Artery Denervation for Hypertension

In 2017, Stamford Health participated in the ambitious RADIANCE-HTN Hypertension Clinical Trial, a multicenter, international study that explored the efficacy of the Paradise Renal Denervation System on blood pressure in patients with hypertension. The Paradise System uses catheter ablation to reduce renal nerve activity, which is thought to cause high blood pressure. Dr. Hsi is the principal investigator for the trial at the Stamford site, where Suzanne Rose, MS, PhD, CCRC, Director of the Office of Research, Molly Daley, Clinical Trials Manager, and Juan Garcia, RN, Research Associate, are the key contributors to this important study in hypertension. Dr. Martin and Dr. Portnay perform renal artery ablation procedures for the patients.

Stamford Health was one of 30 hospitals in the U.S. that had been selected as a study center for the RADIANCE-HTN trial, and is among the top 10 centers including U.S. and international sites (44 total) for patient enrollment.

Initial data from the RADIANCE-HTN SOLO Cohort was presented in May 2018 indicating that the Paradise system was effective at two months in reducing blood pressure in patients who were taking 0-2 medications at time of consent.

This year, Stamford Health launched the RADIANCE II Pivotal Study, which is very similar to the RADIANCE-HTN SOLO Cohort. The RADIANCE-II study aims to demonstrate the effectiveness and safety of the Paradise System in subjects with Stage 2 hypertension and who are on 0-2 medications at the time of consent. Prior to randomization, subjects need to be hypertensive in the absence of hypertension medication.

“The Paradise System has the potential to radically change the lives of patients who struggle with hypertension medications,” said Dr. Hsi. “If proven durable, the therapy will enable hypertensive patients to potentially take fewer medications or get off of these medications altogether.”

“We have had great success in the previous Radiance HTN Clinical Trial, and we look forward to the next study phase,” said Ms. Rose. “I am grateful to the research study team who is supporting the RADIANCE trials through every study phase, including pre-screening and scheduling patient visits, ensuring safety and regulatory compliance and data reporting.”

For more information, please call the Stamford Health Office of Research at 203.276.8910, and mention RADIANCE or the hypertension clinical trial.