



Advanced Heart Failure &  
Cardiac Transplant Program  
**Heart & Vascular  
Institute**

Westchester Medical Center Health Network

# The Westchester Medical Center Heart Failure Program

State-of-the-Art Care, Compassion and Support  
Spring 2020





**Julio A. Panza, MD**

The well-known epidemic of heart failure, which will not be abated in the foreseeable future, has fueled an intense focus on this aspect of cardiovascular medicine. Heart Failure may well be considered not just a subspecialty of cardiology, but rather a vast and growing field of practice in and of itself.

The areas related to this discipline are extremely complex, from the treatment of patients presenting to the outpatient office or emergency department with heart failure, to the multi-disciplinary evaluation of patients that may be eligible for heart transplantation. Hence, it is no longer possible for a single physician to be knowledgeable about all aspects of care that can be offered to, and benefit, a patient with heart failure.

Over the last several years, the WMCHealth Heart and Vascular Institute has assembled the finest group of physicians and allied health professionals devoted to the evaluation and treatment of heart failure patients. Our patients' care is comprehensive and tailored to individual needs, and includes a focus on preventing the decline in their health status that would occur, without such care, as part of the natural history of the disease.

This booklet highlights the most salient aspects of our Heart Failure and Heart Transplant Program. Our mission is to continue to grow in order to bring the best possible care to the people of the Hudson Valley.

Julio A. Panza, MD  
Chief of Cardiology  
Westchester Medical Center Health Network (WMCHealth)

## Contents

Leadership	1
Heart Failure: An Overview	2
Meet the Heart Failure Program's Specialized Team	4
Exceptional Care, Conveniently Close to Home	6
Cardiac MRI Program	7
Heart Transplantation	8
Surgery	9
Mechanical Circulatory Support	10
A Growing Transplant Program with Specialized Expertise	12
Inpatient Transfers or Emergencies	13
About the Westchester Medical Center Health Network	13
Appointments, Referrals, Information	13



Vascular Heart Disease Program

**Heart & Vascular  
Institute**

Westchester Medical Center Health Network

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## Appointments, Referrals, Information

914.909.6900  
914.493.2828 fax

Ambulatory Care Pavilion  
at Westchester Medical Center  
First Floor  
100 Woods Road  
Valhalla, NY 10595

[WestchesterMedicalCenter.com/hvi-heart-failure](http://WestchesterMedicalCenter.com/hvi-heart-failure)

### Inpatient Transfers or Emergencies

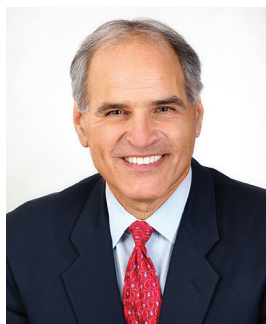
Contact the Westchester Medical Center  
Transfer Center at **914.493.7632**. Assistance is  
available around the clock, seven days a week.

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## Leadership

### Robust Expertise and Experience

**The WMCHHealth Heart and Vascular Institute, a member of the Westchester Medical Center Health Network (WMCHHealth), is proud of the excellence of its state-of-the-art Heart Failure Program. Program leaders are committed to providing cutting-edge, compassionate treatment and healing. This exceptional team is close by, trustworthy and accessible to all, and hopes patients and physicians across the region share its vision.**



**Alan L. Gass, MD**  
Director, Heart Failure Program

Dr. Gass is Medical Director of Cardiac Transplantation and Mechanical Circulatory Support at Westchester Medical Center, flagship of the Westchester Medical Center Health Network (WMCHHealth). From 1991 to 2005, Dr. Gass served as the Director of Transplant Cardiology at Mount Sinai Medical Center in New York City. He has personally followed hundreds of patients in various stages of heart failure, 750 of whom were transplanted, achieving among the top survival rates in the country. He is a member of the Medical Advisory Board of LiveOnNY, Past President of the New York Cardiothoracic Transplant Consortium and Medical Education Director for the National Institute of Whole Health. Dr. Gass also is a member of the Advisory Board of HealthCorps, a national foundation dedicated to teaching inner-city high school students about exercise, nutrition and mental resiliency.

Dr. Gass completed a residency in internal medicine at Long Island Jewish Medical Center, a cardiology fellowship at Newark Beth Israel Medical Center, and a fellowship in cardiac transplantation at Stanford University. He is well published in peer-reviewed journals and is an investigator participating in studies on transplantation and cardiac-assist devices. His work in tailored, minimal immunosuppression after transplant has gained international recognition.

Dr. Gass also helps train the next generation of physicians as Professor of Medicine at New York Medical College, the academic affiliate of Westchester Medical Center. He mentors first-year students, and second- and third-year students who are involved in the outpatient heart failure clinic and participate in hospital rounds and procedures.

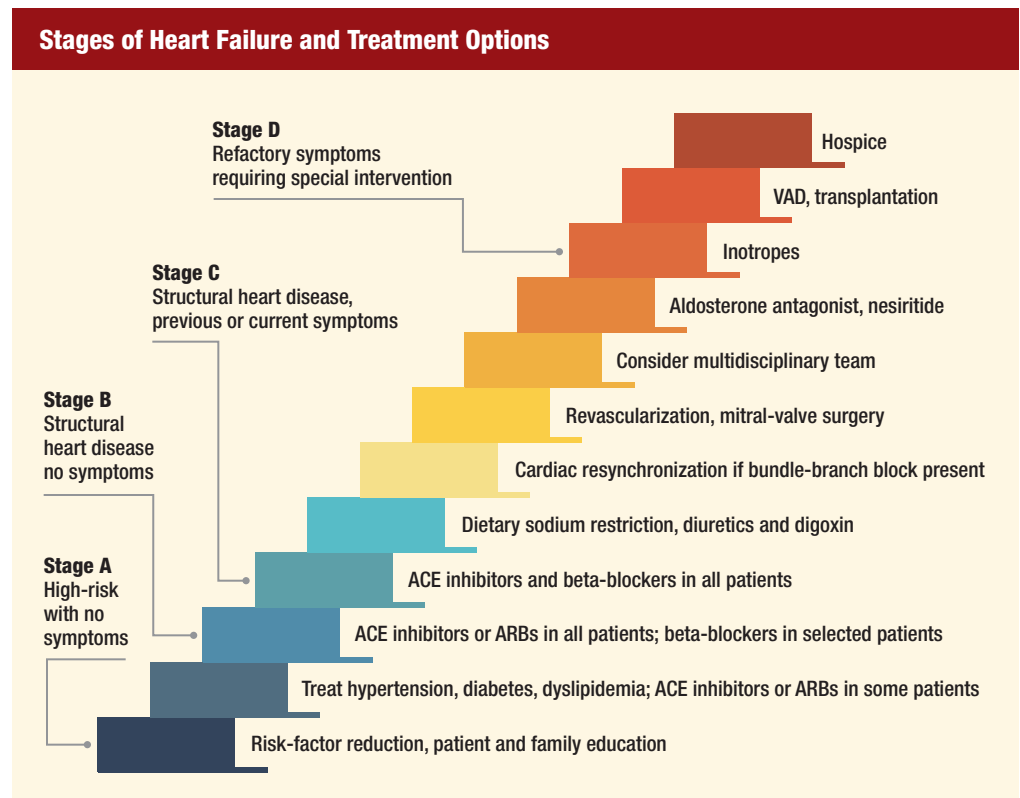
## Heart Failure: An Overview

**The most common causes of cardiac failure are hypertension and ischemic heart disease. Other etiologies include infiltrative cardiomyopathies, arrhythmias, hypertrophic cardiomyopathy and genetic abnormalities. Identification of the cause of heart failure is the first step in the management of these patients.**

Once heart failure has developed, the treatment in the initial stages focuses on the treatment of heart failure in the initial stages focuses on lifestyle modifications, medical therapy and, when indicated, resynchronization pacing. Patients that remain symptomatic require advanced therapies such as mechanical circulatory support and/or cardiac transplantation. The Westchester Medical Center Heart Failure Program's heart failure/transplant nurse practitioners are trained in all stages of heart failure and follow their patients from presentation through the evaluation, and during and after surgery.

The mission of the Heart Failure Program is to evaluate patients for reversible causes of heart failure and assess their candidacy for advanced therapies. Potential reversible causes include infiltrative cardiomyopathies, tachycardia-induced cardiomyopathy and conventional but high-risk cardiothoracic surgery. Our team is involved with many clinical trials utilizing investigational medications and various mechanical assist devices.

Heart Failure Program providers work closely with our electrophysiologists and often perform complex ablations designed to reverse certain cardiomyopathies. The physicians in the program have performed several voltage-guided cardiac biopsies targeting specific areas of inflammation in the investigation of diseases such as sarcoidosis.





Cardiac surgeons are involved in every patient's initial evaluation to assess the potential of surgeries such as coronary bypass, valve repair or replacement. This collaboration helps safely delay or avoid transplant, or implantation of a support device.

Our world-renowned cardiac pathologist is part of the team and has extensive experience in potentially reversible diseases such as amyloidosis, sarcoidosis, myocarditis and infectious etiologies. He also is instrumental in reading biopsies after transplant to ensure an accurate

assessment of rejection potential and the appropriate therapy.

Once a patient's diagnosis requires advanced therapies, the patient meets the team's members and undergoes further diagnostic testing to determine the urgency for transplant or an assist device. After the evaluation, a family meeting is convened to detail the patient's condition, prognosis and options. The patient and his or her support group are the center of this decision process. In cases where other organs have been affected, Westchester

Medical Center is one of the nation's leaders in performing combined heart/kidney and heart/liver transplant. Because many Westchester Medical Center Heart Failure Program patients are referred from across a wide geographic area, we will sometimes admit them to quickly and efficiently complete the evaluation process. Our goal is to return patients to their community and develop relationships with referring physicians to provide care locally.

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## Meet the Heart Failure Program's Specialized Team

### Sustained Excellence, Groundbreaking Approaches and Improved Lives



**Gregg M. Lanier, MD**  
Associate Director,  
Heart Failure Program  
Director, Pulmonary  
Hypertension Program

Dr. Lanier received his medical degree from Northwestern University Medical School and completed his medical residency and cardiology fellowship at Mount Sinai Hospital in New York. He then completed a fellowship in advanced heart failure and cardiac transplantation, with a specific interest in pulmonary hypertension, at Columbia University Medical Center. He is involved in translational research, including pulmonary hypertension in patients with scleroderma.

Dr. Lanier also is an Associate Professor at New York Medical College, the academic affiliate of Westchester Medical Center, and directs the cardiology physiology section for second-year students. In addition, he is Program Director of the Heart Failure and Transplant Cardiology Fellowship at Westchester Medical Center.

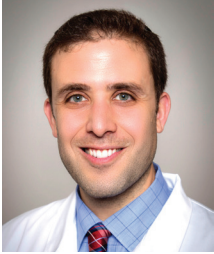


**Chhaya Aggarwal  
Gupta, MD, FACC**

Dr. Aggarwal Gupta received her medical degree from Maulana Azad Medical College in New Delhi, India, and completed her residency in internal medicine at Washington Hospital Center/Georgetown University Hospital. Dr. Aggarwal Gupta also completed a fellowship in cardiology at the University of Arkansas and a fellowship in advanced heart failure and cardiac transplantation at Cedars Sinai Medical Center in Los Angeles.

She is a heart failure/transplant attending physician and Associate Program Director of the Advanced Heart Failure and Transplant Cardiology Fellowship Program. She has a keen interest in cardiac transplant immunology and immunomodulation prior to surgery.





**Avi (Elliot) Levine, MD**

Dr. Levine received his medical degree from Harvard University and completed his internal medicine residency at Mount Sinai Medical Center in New York City. He then completed an advanced heart failure fellowship, with an interest in mechanical circulatory support, at Mount Sinai. He is a heart failure/

transplant attending physician specializing in clinical protocols and outcomes research in left ventricular assist device (LVAD) patients. He has co-authored numerous scholarly publications in the fields of advanced heart failure, nuclear cardiology and cardiac electrophysiology.



**Stephen Pan, MD,  
FACC**

Dr. Pan completed his undergraduate degree at Columbia University and attended medical school at the University of Pittsburgh, followed by further training in cardiovascular diseases at Stanford University. He completed an additional fellowship in heart failure and transplantation at Columbia Presbyterian Hospital. Afterward, he became an Assistant Professor of Medicine at New York University and Co-Director of the Cardiac Sarcoidosis Program before joining Westchester Medical Center. Dr. Pan's primary focus is heart muscle

disorders, especially those with infiltrative diseases of the heart. These include cardiac amyloidosis and sarcoidosis, as well as those affected by inherited diseases of the heart. He has conducted clinical trials and his work has been published in numerous cardiology publications and presented at national and international meetings. Dr. Pan is board-certified in cardiovascular medicine and advanced heart failure cardiology. He is a member of the Heart Failure Society of America and the International Society of Heart and Lung Transplant.



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## Exceptional Care, Conveniently Close to Home

**The Heart Failure Program consults on patients in all stages of heart failure and collaborates with the referring cardiologist or internist. Our team prepares and executes a therapeutic plan customize to the patient's needs.**

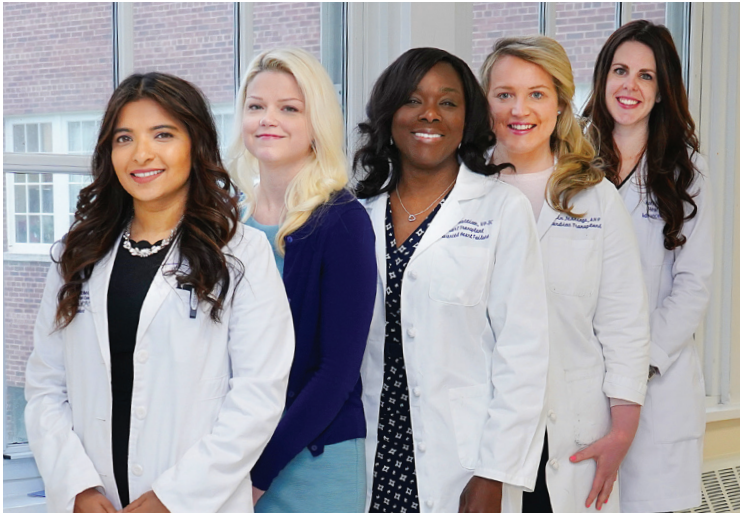
The program maximizes guideline-directed medical therapy, access to investigational protocols, and advanced surgical options. These include cardiac transplantation and mechanical circulatory support. Patients are referred to Westchester Medical Center from across WMCHHealth and beyond due in large part to our program's outstanding reputation and longstanding relationships with physicians across the tri-state area. The program has seen rapid and sustained growth – including the addition of two heart failure/transplant coordinators, three heart failure attending physicians and two cardiothoracic surgeons – in the last 10 years.

The WMCHHealth Heart and Vascular Institute and the Heart Failure Program seamlessly blend exceptional medical expertise, state-of-the art technology

and a trusted, steadfast commitment to patient-centered care. The entire medical team guides patients through care with dignity, compassion and educational information at every step. Each team member embraces the need for nuanced attention from initial consultation through treatment and every step of aftercare. This personal touch is essential: team members care for each patient the way they would care for their own families.

In addition, the WMCHHealth Heart and Vascular Institute is playing an increasingly vital role in the future of WMCHHealth by expanding services for patients at the main Westchester Medical Center campus in Valhalla and at WMCHHealth hospitals in communities where patients live and work across the Hudson Valley.

Physicians and patients choosing the WMCHHealth Heart Failure Program will find doctors' visits, hospitalizations and follow-up appointments easier and less stressful – important factors in healing and recovery.



Heart Failure support staff (from left to right) Bincy Abraham, NP ; Rebecca Townsend, Program Administrator; Caroline Austin-Mattison, NP; Erin Jennings, NP; Kathleen McCrink, NP.



David Spielvogel, MD and Alan Gass, MD consulting on a patient.



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## Cardiac MRI Program

The Cardiac MRI (CMR) Program, directed by Anthon Fuisz, MD, is integral in the assessment of cardiac viability, function, physiology and possible infiltrative diseases. The Cardiac MRI Program at Westchester Medical Center includes advanced functional, perfusion and full parametric imaging, all using the latest hardware and pulse sequences. In addition to precise measures of chamber size and function, these MRI techniques enable detection of macroscopic and microscopic fibrosis, changes in water content of the heart muscle, areas of inflammation and iron content. Flow in the aorta and pulmonary arteries can be measured non-invasively, and exact amounts of regurgitation can be measured for valvular heart disease. Perfusion abnormalities also can be detected and measured using vasodilator stress agents. Taken together, cardiac MRI is a powerful tool for diagnosing and establishing prognoses for patients with heart disease.



**Anthon Fuisz, MD**

**Anthon Fuisz, MD**, is an internationally known advanced imaging cardiologist who specializes in Cardiac MRI (CMR). Dr. Fuisz earned his undergraduate degree in physics and his medical degree from Georgetown University, and was the recipient of a National Institutes of Health research service award for CMR training at the University of Alabama in Birmingham. He later started the CMR program at Washington, D.C.'s Washington Hospital Center, one of the busiest programs in the United States. Dr. Fuisz has been actively involved in Cardiac MRI for over 20 years, and has lectured around the world.



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## Heart Transplantation

**Heart transplant remains the treatment of choice for patients with advanced Stage D heart failure who remain symptomatic despite optimal medical therapy.**

Once it is determined that a patient needs a heart transplant, he/she is placed on the UNOS (United Network of Organ Sharing) national waiting list. The patient's wait for a heart is determined by factors including medical acuity, blood type, body size and the presence of antibodies.

Westchester Medical Center is one of only a few transplant centers with a dedicated transplant immunologist and an on-site tissue typing lab. This helps accurately assess the patient's immunological risk and, if needed, undergo a tailored immunomodulation therapy to assure the best organ compatibility.

Our clinical team includes coordinators, heart failure physicians and surgeons available around the clock, every day, to evaluate organs

that become available for our transplant patients. After transplant, patients are placed on immunosuppressive therapy customized specifically for each patient. Westchester Medical Center physicians have participated in several clinical trials assessing the most minimal drug regimens after transplant. Our philosophy calls for using tailored therapy, based on individual risk of rejection, for each patient. We are involved with research using new molecular techniques to find noninvasive ways to detect rejection, and to understand mechanisms for rejection that may have future diagnostic and therapeutic implications.

After transplant, patients are seen at regular intervals for outpatient office visits, lab tests and heart biopsies. They retain access to our coordinators and physicians at all times. We encourage patients to maintain contact with their referring physicians, to ascertain the continuity of care and the relationship with the Westchester Medical Center transplant team.

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## Surgery



**David Spielvogel, MD**  
Surgical Director

**Dr. Spielvogel** is the Chief of Cardiothoracic Surgery and Director of the Heart Transplant Program at Westchester Medical Center. He also is a Professor of Surgery at New York Medical College, the academic affiliate of Westchester Medical Center.

He received his bachelor's degree from Pennsylvania State University and his medical degree from the State University of New York Health Science Center at Brooklyn, where he completed residency training in general surgery.

Dr. Spielvogel trained in cardiothoracic surgery at Mount Sinai Medical Center under Randall Griep, MD, a pioneer in cardiac transplantation. Dr. Spielvogel then spent a year at Harefield Hospital in the United Kingdom under Magdi Yacoub, MD, one of the world's leading transplant surgeons and an expert in heart and heart/lung transplantation. Dr. Spielvogel in

2005 joined what then was Westchester Heart and Vascular, along with Steven Lansman, MD, PhD, to restart the Heart Transplant Program. Dr. Spielvogel has been the primary surgeon for more than 350 transplants.

Dr. Spielvogel has written extensively on thoracic aortic aneurysm repair and has helped innovate many surgical techniques used in treating this condition. He has lectured nationally and internationally on aortic aneurysm surgery, and in particular, on his widely adopted method of aortic arch replacement. He has won numerous awards for his work, and has co-authored more than 100 original peer-reviewed articles, books and chapters. He is a board member of LiveOnNY and holds leadership positions in several national and international cardiothoracic societies.

Dr. Spielvogel has put together an experienced team of cardiac surgeons, physician assistants and cardiac perfusionists to evaluate and operate on patients with advanced cardiac failure. For many patients, the experienced cardiac surgical team can safely perform high-risk bypass or valve surgery — and delay, or in some cases avoid, the need for a transplant.



**Ramin Malekan, MD**

**Ramin Malekan, MD**, received his bachelor's degree from the Sophie Davis School of Biomedical Education at the City University of New York and his medical degree from the Mount Sinai School of Medicine. After completing this rigorous dual-degree program, Dr. Malekan completed a residency in general surgery at Long Island Jewish Medical Center and in cardiothoracic surgery at the Mount Sinai Medical Center. In addition, Dr. Malekan

served as a post-doctoral research fellow in the Harrison Department of Surgical Research at the University of Pennsylvania. He is Associate Chief, Cardiothoracic Surgery, and Assistant Professor of Surgery at New York

Medical College, the academic affiliate of Westchester Medical Center. Dr. Malekan is a Diplomate of the American Board of Thoracic Surgery and the American Board of Surgery.

Dr. Malekan has written on aortic dissection, cardiac bypass surgery and surgical treatment of heart failure. His expertise spans a wide spectrum of cardiothoracic procedures, including aortic aneurysm surgery, heart transplantation, mechanical assist devices, aortic and mitral valve replacement and repair, and coronary artery bypass surgery. Dr. Malekan also spearheaded a successful program for the surgical treatment of pulmonary venous thromboembolism, which includes surgery for acute pulmonary embolism and for pulmonary hypertension arising from chronic thromboembolic disease. He has presented at both national and international societies on these topics.

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## Mechanical Circulatory Support



**Masashi Kai, MD**

**Dr. Kai** is Director of Mechanical Circulatory Support at Westchester Medical Center and Assistant Professor of Surgery at New York Medical College. He received his medical degree from Jikei University in Japan and completed residency training in cardiovascular surgery at Kyoto University.

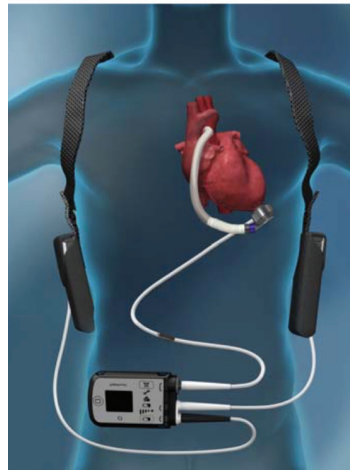
He then completed a fellowship in minimally invasive cardiothoracic surgery at New York University Medical Center, where he served as a chief fellow. Dr. Kai then completed an advanced fellowship at New York Presbyterian Hospital/ Columbia University Medical Center, where he underwent special training in heart transplantation and mechanical-circulatory-support-device implantation.

Dr. Kai has published articles on aortic arch aneurysms, left ventricular assist devices (LVAD), extracorporeal membrane oxygenation (EMCO), bilateral internal mammary artery grafting and off-pump coronary artery bypass.

### Left Ventricular Assist Device Therapy

Since the first left ventricular assist device (LVAD) implant in 1966, technology has advanced to today's third-generation devices that offer excellent therapy for patients with heart failure. Clinical indications for an LVAD include supporting a patient with this "bridge to transplant" until he or she receives an organ; or offering a device to patients with a contraindication to transplant. This is known as "destination therapy."

After recovery from LVAD surgery, patients return home with more energy, less shortness of breath and a greater quality of life. Patients can participate in regular daily activities and exercise as they seek optimal physical condition for transplant surgery.



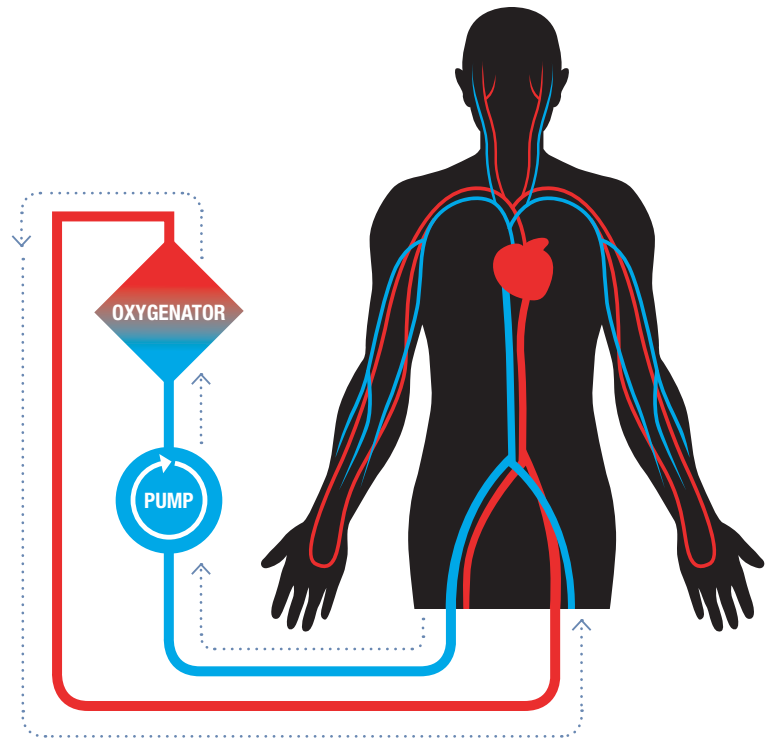
With a multidisciplinary team of cardiac surgeons, heart failure cardiologists, and dedicated nurse practitioners and physician assistants, Westchester Medical Center provides individualized care as part of a comprehensive LVAD experience. Westchester Medical Center surgeons implanted their first LVAD in 2009 and had performed more than 150 LVADs as of Spring 2019, with nearly 30 LVADs implanted during 2018. Westchester Medical Center utilizes the newest third-generation devices, including the HeartWare HVAD and HeartMate 3 LVAD centrifugal flow pumps. This embrace of cutting-edge technology and equipment places our team at the forefront of LVAD technology.

Westchester Medical Center has inpatient and outpatient LVAD care teams to ensure the best possible treatment for our patients. Our specialists work to ensure appropriate LVAD function and prevent common complications, including stroke, bleeding and infection, of LVAD support. Frequent dialogue with referring physicians helps them maintain a role in a patient's care and facilitate seamless transfers when a patient is hospitalized.

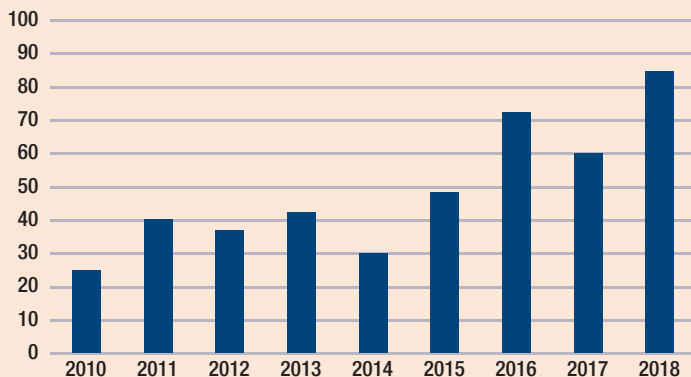
Westchester Medical Center also collaborates with specialists in psychiatry, social work and case management, and facilitates patient- and family-support groups to help patients manage emotionally and psychologically with their disease and life with an LVAD.

## Extracorporeal Membrane Oxygenator (ECMO)

Some patients admitted or transferred to Westchester Medical Center have advanced heart failure manifesting as cardiogenic shock. Without intervention, the immediate prognosis is extremely grave, with almost 100 percent mortality. Several years ago, Westchester Medical was one of only a few hospitals to place these patients on a temporary mechanical pump without needing open-heart surgery. We were among the pioneers in this field, and published accounts of our developing expertise and experiences in peer-reviewed journals. This unique surgical approach has received national recognition, resulting in Westchester Medical Center educating and assisting many hospitals in starting Extracorporeal Membrane Oxygenator (ECMO) programs. Westchester Medical Center's ECMO program now is one of the nation's busiest, with survival rates above 60 percent. Patients are placed on these pumps as a bridge to traditional heart surgery, an implantable LVAD or as a bridge to cardiac transplantation.



### VA ECMO for Cardiogenic Shock at Westchester Medical Center (Total 443)



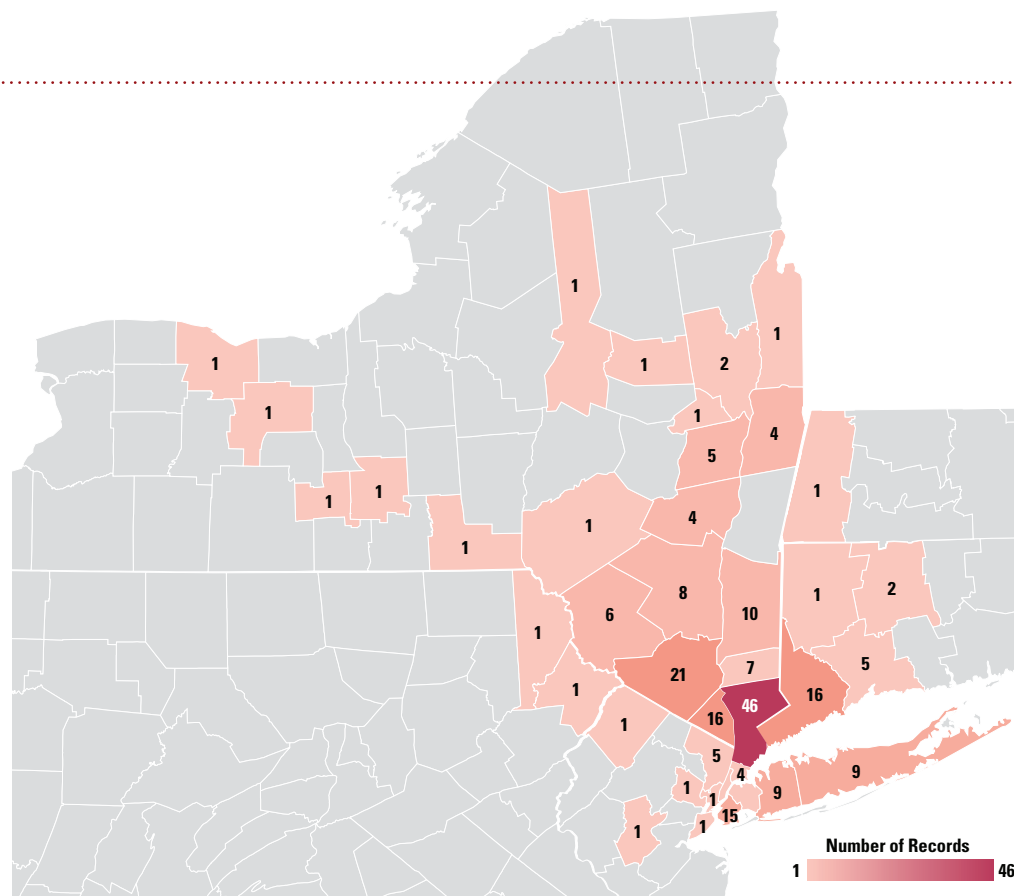
### Hospital Survival

All ECMO Patients	148/247 60%
Weaned off ECMO	112/141 79%
Bridge to Implantable LVAD	26/31 84%
Bridge to Heart Transplant	6/7 86%
Bridge to Temporary BIVAD	0/4 0%

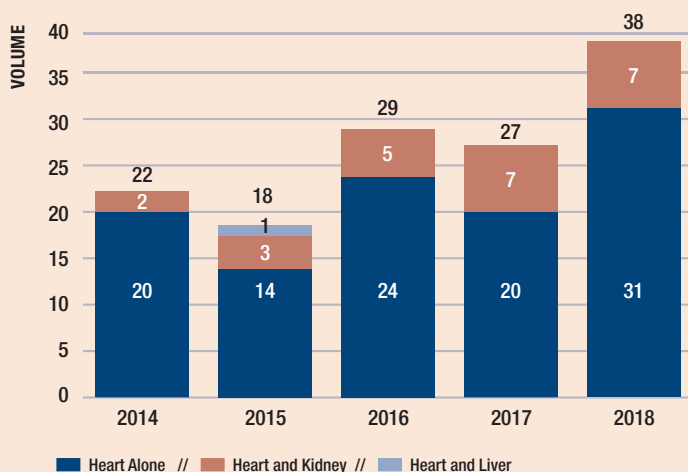
## A Growing Transplant Program with Specialized Expertise

The volume of heart transplants at Westchester Medical Center continues to grow; our team performed 38 transplants during 2018, making us the second-largest program in Region 9. The survival rate remains above national standards and is one of the best in New York State. Westchester Medical Center also performs dual organ transplants, including heart/kidney and heart/liver. Westchester Medical Center is a top-five program nationwide for performing the most heart/kidney transplants.

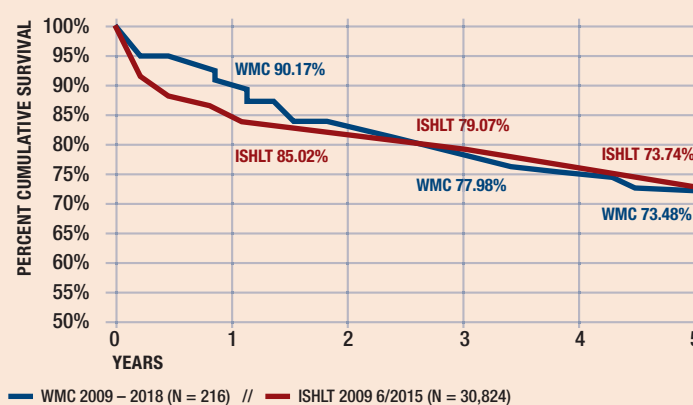
Right: Transplant patients at Westchester Medical Center reside across the New York metropolitan area and beyond.



### Heart Transplant Volume: 2014 – 2018 Annual Heart Transplant Volume by Type of Transplant



### Heart Transplant Patient Survival: WMC vs. ISHLT (2009 – 2018)



Note: Includes Multi-Organ Transplants

The Registry of the International Society for Heart and Lung Transplantation: Thirtyfifth Adult Transplantation Report, 2018; Focus Theme: Multiorgan Transplantation, JHLT, 2018 OCT; 37 [10], 155-1168

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## Inpatient Transfers or Emergencies

Contact the Westchester Medical Center Transfer Center at 914.493.5555.  
Assistance is available around the clock, seven days a week.

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## About the Westchester Medical Center Health Network

The Westchester Medical Center Health Network (WMCHHealth) is a 1,700-bed healthcare system headquartered in Valhalla, NY, with 10 hospitals on eight campuses spanning 6,200 square miles of the Hudson Valley. WMCHHealth employs more than 12,000 and has nearly 3,000 attending physicians. With Level 1, Level 2 and pediatric trauma centers, the region's only acute-care children's hospital, an academic medical center, several community hospitals, dozens of specialized institutes and centers, skilled nursing, assisted-living facilities, homecare services and one of the largest mental-health systems in New York State, WMCHHealth is the pre-eminent provider of integrated healthcare in the Hudson Valley. Visit [WMCHHealth.org](http://WMCHHealth.org).

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## Appointments, Referrals, Information

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Valhalla, NY 10595

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Westchester Medical Center  
100 Woods Road  
Valhalla, NY 10595  
866.WMCHEART (866.962.4327)  
914.493.7632  
[WestchesterMedicalCenter.com](http://WestchesterMedicalCenter.com)

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