Revolutionizing the Approach to Heart Valve Surgery

St. Luke's Heart Valve Center
St. Luke’s Heart Valve Center is part of a Network-wide Heart & Vascular program that offers a wide range of diagnostic and treatment options. St. Luke’s University Health Network was among the first in the region to offer minimally invasive aortic valve replacement surgery, and was named one of the nation’s 50 top cardiovascular hospitals by Thomson Reuters. St. Luke’s is the ONLY hospital in the region to earn this distinction.

St. Luke’s Heart Valve Center is distinguished by:

- Designation as one of the nation’s 50 Top Cardiovascular Hospitals by Thomson Reuters
- Minimally invasive aortic valve replacement surgery
- Comprehensive medical evaluation by heart valve specialists
- State-of-the-art diagnostics and treatment options
- Team approach to care by cardiac surgeons and cardiologists
- Personalized care through our experienced team of professionals
- Collaboration with primary care physicians and cardiologists
- Among the best cardiac surgery outcomes in the nation
An Experienced Team for Treating Heart Valve Disease

St. Luke’s University Health Network’s Heart Valve Center provides the most advanced and effective methods to diagnose and treat heart valve disease. Your patients receive the best possible care from our experienced, board-certified cardiothoracic surgeons, cardiologists, anesthesiologists, and interventional radiologists. Using a team approach, our specialists meet regularly to discuss each patient’s care and provide updates on the latest treatments and technology. They work closely with you and our dedicated heart valve program coordinator. She will coordinate your patient’s appointments and tests, and answer any questions during every phase of your patient’s care, whether it’s in the hospital or on an outpatient basis.

Stephen Olenchock, DO
Chief of Cardiothoracic Surgery

Dr. Olenchock is a locally and nationally renowned cardiothoracic surgeon with extensive experience in heart valve and aortic surgery. His techniques have resulted in outcomes that are consistently better than the national benchmarks. After assuming the position of chief of cardiovascular surgery in 2008, he has led the St. Luke’s program with a focus on excellence in quality and outcomes, as recognized by Society of Thoracic Surgeons awards and Thomson Reuters 50 top cardiovascular hospitals in the nation.

Dr. Olenchock’s medical education and training includes West Virginia School of Osteopathic Medicine, St. Francis Medical Center, St. Luke’s University Hospital – Bethlehem, and Tufts University – New England Medical Center. He is board certified by the American Board of Thoracic Surgery and is a fellow in the American College of Cardiology and the American College of Surgeons.

Raymond A. Durkin, MD
Chief of Cardiology

Dr. Durkin is an established cardiologist caring for patients in the Lehigh Valley for 18 years. In the office, Dr. Durkin evaluates all aspects of cardiovascular disease. His areas of special expertise include cardiac catheterization and coronary intervention as well as interventional endovascular treatment of peripheral arterial disease.

Dr. Durkin’s medical education and training includes Hahnemann University School of Medicine, Lehigh Valley Hospital – Cedar Crest and Lankenau Hospital.

Jose Amortegui, MD
Cardiothoracic Surgeon

Dr. Amortegui joined St. Luke’s as a cardiothoracic surgeon in July 2011. In addition, he directs the Network’s extracorporeal mechanical support of patients with cardiovascular or pulmonary collapse with devices such as ECMO (Extracorporeal Membrane Oxygenator), and guides the surgical treatment options of patients with end-stage heart failure in need of VAD (Ventricular Assist Device) support.

Dr. Amortegui’s medical education and training includes University of Tennessee Graduate School of Medicine, Pontificia Bolivariana University and the University of Maryland Medical Center.

Christopher Sarnoski, MD
Interventional Cardiologist

Dr. Sarnoski has been practicing cardiology in the Lehigh Valley since 2006. He practices general cardiology with a strong focus in interventional cardiology, endovascular treatment of peripheral arterial disease and an added interest in structural heart disease including management of atrial septal defects and patent foramen ovale in setting of cryptogenic stroke.

Dr. Sarnoski’s medical education and training includes the Philadelphia College of Osteopathic Medicine. After spending eight years training in New England at the University of Connecticut School of Medicine, Maine Medical Center and Medical Center Hospital of Vermont where he ultimately received sub-specialty training in interventional cardiology, he returned to his home state of Pennsylvania. Dr. Sarnoski is ABIM board certified in cardiovascular disease, Interventional Cardiology and by the American Society of Nuclear Cardiology.

Indications are that the TAVR procedure will be approved for other patients as the technology improves. Not only does it provide symptomatic relief, but it improves quality of life and increases longevity as well.”

– Dr. Stephen Olenchock
Jamshid Shirani, MD  
Director of Echocardiography Laboratory

Dr. Shirani has practiced cardiology for the past 18 years. He has a special interest in medical education and advanced cardiovascular imaging, particularly echocardiography.

Dr. Shirani’s medical education and training includes Shiraz University School of Medical Sciences, Saint Mary’s Hospital (Yale University School of Medicine), Michael Reese Hospital (University of Chicago), the National Institutes of Health and the Medical College of Virginia.

Robert DeQuevedo, MD  
Chief of Cardiac Anesthesia

Dr. DeQuevedo was born and raised in northeast Pennsylvania and is the son and grandson of physicians. He joined St. Luke’s in 1996.

Dr. DeQuevedo’s medical education and training includes Jefferson Medical College, the Hospital of the University of Pennsylvania including a fellowship in critical care with a focus on cardiothoracic critical care. He is certified in anesthesiology, critical care and transesophageal echocardiography.

Jose L. Rivera, MD  
Anesthesiologist

Dr. Rivera began his medical career in the US Navy as a hospital corpsman. After the Navy he attended Millersville University where he studied chemistry and mathematics. He obtained his medical degree from Harvard Medical School. After medical school he completed a medical internship at Pennsylvania Hospital in Philadelphia and an anesthesia residency at the Brigham Hospital in Boston. After his residency he did a fellowship in cardiovascular anesthesia at the Brigham Hospital. He is board certified in Anesthesiology and Peri-operative Transesophageal echocardiography. He has been on staff at St. Luke’s Hospital since 1988.

Christopher R. Roscher, MD  
Anesthesiologist

Dr. Roscher is a Lehigh Valley native, raised in Bethlehem. He returned to the Lehigh Valley in July of 2012 to join the St. Luke’s team.

Dr. Roscher attended medical school at the University of Pennsylvania, and continued with both residency in anesthesia and fellowship in cardiothoracic anesthesia at the Hospital of the University of Pennsylvania. As part of his fellowship training, he participated in and directed the anesthetic care of patients undergoing complex aortic reconstruction, valve repair and replacement, as well numerous TAVR procedures. He is board certified in both anesthesiology as well as perioperative transesophageal echocardiography.

Ellen Amedeo, RN  
Heart Valve Program Coordinator

Ellen has over 25 years of experience working with patients and families with cardiovascular disease. She collaborates with the Heart Valve Center team to streamline the process and coordinate the testing and follow-up for patients. She offers support and education for patients and their families.
abnormal segments, as well as the mechanism of valvular dysfunction. The diagnostic accuracy of echocardiography has been greatly improved with the use of RT3DTEE in the assessment of the severity of mitral stenosis, pathology of mitral regurgitation, and most recently in the diagnostic evaluation of patients with aortic stenosis in whom accurate valve area is not obtainable by 2D and Doppler evaluation. These advantages over the 2D imaging have improved patient selection, surgical planning and the outcome of valvular surgery. In addition, intra- and post-operative assessment of valve surgery using RT3DTEE has resulted in better evaluation of surgical results, early detection of potential complications and their immediate correction.

Valve disease can sometimes be treated with medication. However, if your patient needs a procedure to repair or replace a damaged heart valve, he or she will get the best care possible at St. Luke’s Heart Valve Center. Our cardiologists and surgeons are committed to providing the latest treatment innovations. Procedures and surgeries include:

- Transcatheter Aortic Valve Replacement (TAVR)
- Minimally Invasive Valve Surgery
- Valve Surgery
- Valvuloplasty
- Valve Repair
- Valve Replacement

After your patient receives treatment, we’ll work with you to offer:

- Cardiac Rehabilitation
- Home Care

Innovation & Technology

At St. Luke’s University Health Network’s Heart Valve Center, we use the most advanced technology to diagnose heart valve disease. Tests include:

- Cardiac Catheterization
- Cardiac Magnetic Resonance Imaging (MRI)
- CT Scan
- Echocardiogram (Echo)
- Stress Echocardiogram (Echo)
- Electrocardiogram (EKG or ECG)
- Real-Time 3D Transesophageal Echocardiogram (RT3DTEE)

RT3DTEE is now a well-developed modality for defining valvular anatomy and function. The images obtained using this highly advanced TEE more than complement current two-dimensional (2D) echocardiographic techniques in the assessment of valvular heart disease. By providing real-time “surgical view” of the mitral valve, RT3DTEE can provide detailed anatomic evaluation of the valve, location and number of abnormal segments, as well as the mechanism of valvular dysfunction. The diagnostic accuracy of echocardiography has been greatly improved with the use of RT3DTEE in the assessment of the severity of mitral stenosis, pathology of mitral regurgitation, and most recently in the diagnostic evaluation of patients with aortic stenosis in whom accurate valve area is not obtainable by 2D and Doppler evaluation. These advantages over the 2D imaging have improved patient selection, surgical planning and the outcome of valvular surgery. In addition, intra- and post-operative assessment of valve surgery using RT3DTEE has resulted in better evaluation of surgical results, early detection of potential complications and their immediate correction.

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Aortic Stenosis

Up to 1.5 million people in the United States suffer from aortic stenosis, a progressive disease that affects the aortic valve of the heart. Approximately 250,000 of these patients suffer from severe symptomatic aortic stenosis, often developing debilitating symptoms that can restrict normal day-to-day activities, such as walking short distances or climbing stairs. These patients can often benefit from surgery to replace their ailing valve, but only approximately two-thirds of them undergo the procedure each year. Many patients are not treated because they are deemed inoperable for surgery, have not received a definitive diagnosis or because they delay or decline the procedure for a variety of reasons.

Patients who do not receive an aortic valve replacement (AVR) have no effective, long-term treatment option to prevent or delay their disease progression. Without it, severe symptomatic aortic stenosis is life-threatening – studies indicate that 50 percent of patients will not survive more than an average of two years after the onset of symptoms.

“Surgical AVR is the gold standard and an effective treatment of severe aortic stenosis. Surgical AVR has been proven to provide symptomatic relief and long-term survival in adults...Surgical AVR is recommended for virtually all adult patients who do not have other serious medical conditions.”

For patients who have been deemed high risk or inoperable for traditional open-heart surgery by a surgeon, a new procedure called transcatheter aortic valve replacement (TAVR) is now available as a treatment option. In November of 2011, the Food and Drug Administration (FDA) approved the Edwards SAPIEN Transcatheter Heart Valve for the treatment of patients with severe symptomatic native aortic valve stenosis who have been determined by a cardiac surgeon to be high risk or inoperable for open aortic valve replacement and in whom existing co-morbidities would not preclude the expected benefit from correction of the aortic stenosis. This new transcatheter procedure allows the diseased native heart valve to be replaced without open-heart surgery.

Treatment

Surgical AVR is the gold standard and an effective treatment of severe aortic stenosis. Surgical AVR has been proven to provide symptomatic relief and long-term survival in adults. During the procedure, the damaged “native” heart valve is removed and replaced with a prosthetic valve. Surgical AVR is recommended for virtually all adult patients who do not have other serious medical conditions.
In November of 2011, the U.S. Food and Drug Administration (FDA) approved the Edwards SAPIEN Transcatheter Heart Valve for the treatment of patients with severe symptomatic native aortic valve stenosis. The Edwards SAPIEN Valve is the first transcatheter aortic valve replacement (TAVR) therapy approved for use in the United States. St. Luke’s University Hospital – Bethlehem was the first hospital in the region approved to perform this groundbreaking procedure independently.

The St. Luke’s Heart Valve Center was selected as one of a few institutions in the country to offer TAVR so soon after approval due to our exceptional outcomes and true multidisciplinary team approach. Such a procedure necessitates the use of the most advanced technology available, and that is why St. Luke’s is the FIRST hospital in the country to have the new General Electric Discovery IGS 730 Hybrid Operating Room. This state-of-the-art room allows our entire surgical team to work in an environment specifically designed to address the highly technical TAVR procedure as well as other minimally invasive approaches.

The TAVR procedure enables the placement of a collapsible aortic heart valve into the body via the catheter-based RetroFlex 3 transfemoral delivery system, which allows the Edwards SAPIEN valve to be inserted via the femoral artery in the groin. The valve is designed to replace a patient’s diseased native aortic valve without traditional open-heart surgery and while the heart continues to beat – thereby the need for cardiopulmonary bypass is not required.

“This is one of the true paradigm changing treatments of heart disease we will see in our lifetimes,” says Raymond A. Durkin, MD, “and at present, being able to do it independently carries significant status and responsibility. We want to use this status in the community to increase our efforts to treat not only valvular heart disease but all heart disease in general.”
Types of mitral valve disease include:

- **Mitral Valve Regurgitation** – In this condition, the flaps (leaflets) of the mitral valve weaken, causing blood to leak backward into the left atrium of the heart. If not treated, it can result in heart muscle damage. The most common cause of blood leakage is mitral valve prolapse, in which the leaflets bulge back into the left atrium as the heart contracts.

- **Mitral Valve Stenosis** – In this condition, the mitral valve opening is narrowed.

The superiority of mitral valve repair over mitral valve replacement with a mechanical or bioprosthetic valve is well established. In patients with mitral valve prolapse, our success rate in avoiding mitral valve replacement approaches 100 percent. We also have mitral valve repair expertise for patients with advanced cardiomyopathy. If patients have associated atrial fibrillation, we offer the latest in concomitant arrhythmia surgery, including the MAZE procedure. We also perform mitral valve repair surgery with minimally invasive approaches, when appropriate.

We have a dedicated team that focuses on all aspects of the care of mitral valve repair patients. Essentially, all degenerative mitral valves are repairable. By matching echocardiographic findings to the appropriate surgical skill level required to consistently deliver a repair, valve replacement for degenerative mitral valve disease should be infrequent.

Most patients with mitral regurgitation remain asymptomatic for long periods of time. The most common presenting signs and symptoms include fatigue, decreased exercise capacity, shortness of breath, and palpitations or supra-ventricular arrhythmias such as atrial fibrillation. Auscultatory examination usually reveals a high-pitched systolic murmur radiating from the apex to the axilla. A holosystolic murmur suggests prolapse simultaneous with ejection typical of chordal rupture, whereas a murmur beginning in mid- or late systole favors billowing or chordal elongation. Radiographic findings may include left atrial and ventricular dilatation and prominent pulmonary vasculature in patients with long standing severe mitral regurgitation. The electrocardiogram may be normal, or show evidence of left atrial enlargement or atrial fibrillation.

Two dimensional echocardiography is essential to determine the mechanism (dysfunction) and severity of mitral regurgitation. Semi-quantitative assessment of regurgitant flow using maximal jet length, area, and ratio of jet to left atrial area is recommended to assess the severity of mitral regurgitation.1 Regurgitant jet geometry and area are assessed in multiple views and mitral regurgitation severity is graded typically as a rank order variable (e.g. 1+, 2+, 3+ moderate and 4+ severe mitral regurgitation). The direction of the jet provides evidence of segmental involvement as it is typically opposite to the prolapsing segment. Quantitative grading of mitral regurgitation is gaining popularity and is based on the calculation of regurgitant volume (the difference between the mitral and aortic stroke volumes) and effective regurgitant orifice (ratio of regurgitant volume to regurgitant time velocity integral). Transesophageal echocardiography (TEE) is a useful adjunct to confirm the diagnosis and understand the mechanism of degenerative valve disease in the case of a non-definitive transthoracic examination. Experience is also gaining with three dimensional echocardiography in the assessment of annular geometry and leaflet dysfunction in the setting of mitral regurgitation, and can be predicted to have a more significant role in planning reparative procedures in the future.

Mr. Wilbur Boyer was St. Luke’s first TAVR patient.

According to Mr. Boyer, he had discussed addressing his heart valve issues with his cardiologist, Gerald Pytlowski, DO, for about a year. “We had some very frank conversations about it,” he says. “Once this procedure was available, it was not a hard decision to make to get it done. There were too many limitations on me. It had to be done.”

At 87 years old, Mr. Boyer, who summers in the Poconos and is an avid boater, came through the procedure without complication. “I felt better right away,” he says, “and I feel stronger every day.”

Mr. Boyer’s wife, Gloria, agreed. “He got his color back immediately,” she says. “As soon as he woke up after the surgery.”

This came as no surprise to his surgeon, Stephen Olenchock, DO. “No. I am not surprised,” he says. “No one who has met Mr. Boyer would be surprised. This is the man, after all, who woke up in the ICU and immediately asked if we could get him a wi-fi connection so he could send some emails...”
New “Universal Care” Model Enhances Patient- and Family-Centered Care Concept

St. Luke’s has always had at the center of its care philosophy the patient and his or her family. But a new “universal care model” unit focusing on cardiothoracic and neuroscience patients, has been created on Priscilla Payne Hurd Pavilion 4 (PPPH4) at St. Luke’s University Hospital – Bethlehem. It will enhance this concept and take it to a whole other level. The universal care model will bring to one place three levels of care – critical care, intermediate care and acute care. The change means that patients will move from room to room on the same floor as their conditions improve while a single team of caregivers look after them throughout their stay at St. Luke’s.

The team expects the movement of patients from room to room to create a sense of “progression” and to have a significant positive psychological and clinical impact.

“It’s a one-stop shop for patients,” explains Janice T. Concilio, RN, vice president for Patient Services. “You have surgery and recovery on the same unit. You are there for all phases of your care. The same team cares for you, so there is better communication among staff and between the staff and patients and their families. Bringing these services to patients rather than moving patients around the hospital to the services is a powerful concept,” she adds. “Highly coordinated care results in excellent patient safety and service, enhanced outcomes and an improved personal experience for patients and their families.”

The new unit has 31 beds; 25 are acute care and intermediate care, and six are critical care. All rooms are private, and will allow for family members to stay over if that is what they desire. There also are rooms for family meetings with staff. The unit also has been certified as a stroke unit by the Joint Commission, which accredits and certifies hospital services.

The state-of-the-art technology in the new unit combined with the universal care concept allows the team to care for some of the Network’s most critical patients, including those receiving extra corporeal membrane oxygenation (ECMO) and those who have undergone minimally invasive heart valve replacement surgery – even those who have undergone St. Luke’s transcatheter aortic valve replacement (TAVR) procedure.

St. Luke’s Clinicians Participate in Development of First GE Hybrid OR

St. Luke’s clinicians participated in the development of the first laser-guided interventional imaging system that provides access to patients “like never before”.

St. Luke’s University Hospital recently unveiled the Discovery IGS 730 Hybrid OR from GE Healthcare, becoming the first hospital in the United States to offer this exciting new technology. This interventional suite combines the advanced imaging world and the surgical world into the Operating Room.

St. Luke’s University Health Network clinicians traveled to Buc, France three years ago to provide surgical insight that served in the development of the first GE Hybrid OR which comes equipped with laser-guided navigation. The system is completely mobile and can be programmed to move widely within the operating room, giving physicians the ultimate in precision and flexibility during even the most complex procedures.

The Discovery IGS 730 Hybrid OR is neither floor nor ceiling-mounted, and enables full patient access. It has the mobility of a C-arm with the power and image quality of a fixed system. This laser-guided, motorized mobile gantry creates an interventional environment without boundaries. It allows complete access to the patient and multiple parking possibilities, while helping maintain sterility for a flexible and secure OR environment. The unique gantry comes with a new wide bore design, which allows for steep angles and ease in 3D visualization, especially for large patients. Thanks to its flexibility, multiple or combined endovascular and open procedures, can be done in one room at one time when necessary.

The system also provides a large field, or flat panel, for precise 3D visualization, according to Hal Folander, MD, chairman of the Radiology Department and section chief of Interventional Radiology at St. Luke’s University Health Network. Critical organs and vessels can be imaged with lower dose radiation. The wide C-arm can help accommodate larger patients; and multiple, or combined procedures, can be done in one room at one time if necessary.

Specialists using the hybrid OR at St. Luke’s include vascular surgeons, cardiothoracic surgeons, interventional cardiologists, cardiac electrophysiologists and interventional radiologists. Procedures to be performed in this new environment include endovascular repair of thoracic and abdominal aortic aneurysms; pacemaker lead extractions; transcatheter aortic valve replacement (TAVR); and trauma cases requiring multiple or combined procedures.
You can feel confident your patient is receiving the best possible heart valve care.

Please call St. Luke’s Heart Valve Program Coordinator at 484-526-3939 with questions or for more information.